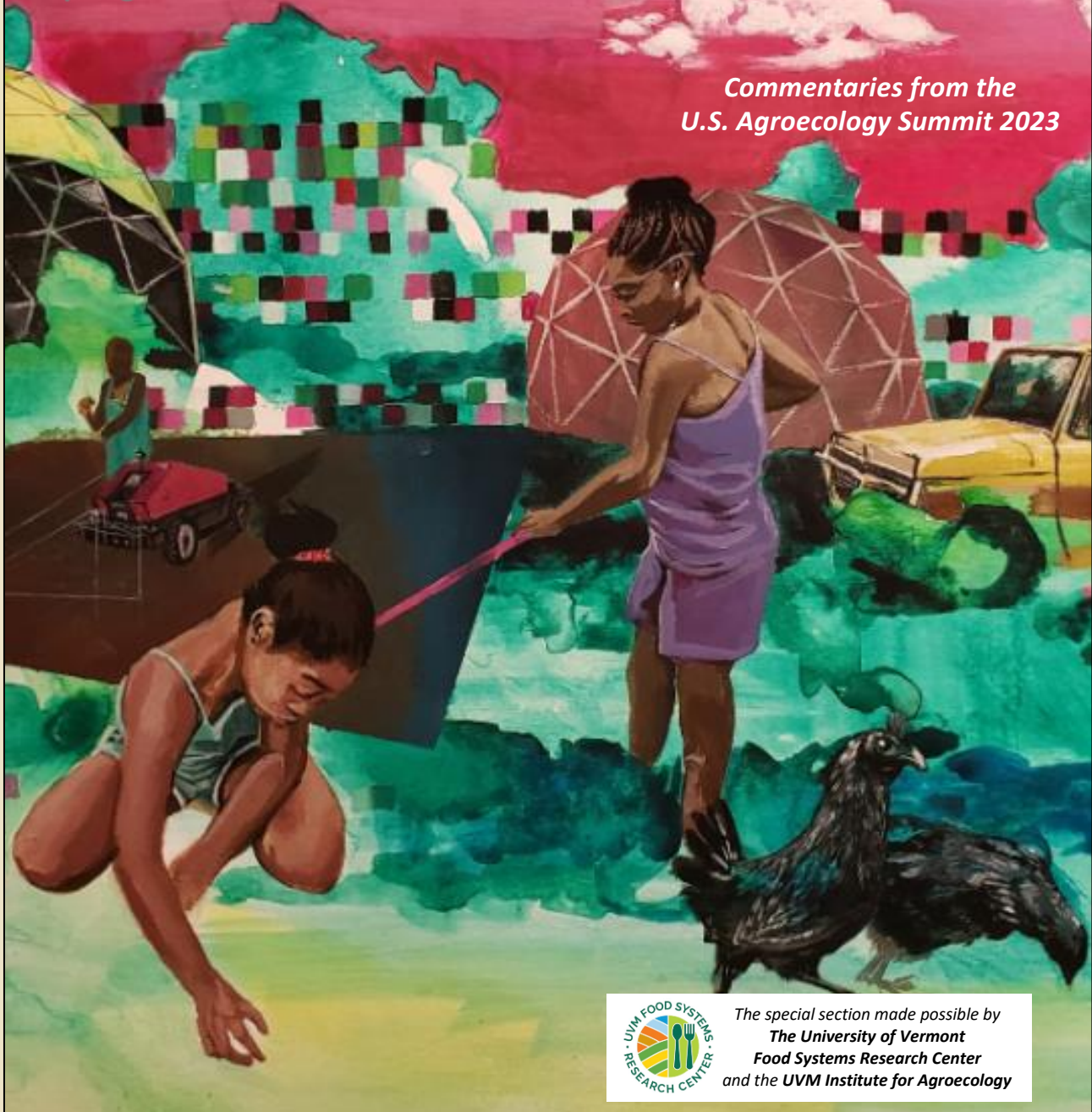


Journal of Agriculture, Food Systems, and Community Development

Volume 13, Issue 3
Spring-Summer 2024

*Commentaries from the
U.S. Agroecology Summit 2023*



*The special section made possible by
The University of Vermont
Food Systems Research Center
and the UVM Institute for Agroecology*



<https://FoodSystemsJournal.org>
ISSN 2152-0801 (online only)

Published by the Thomas A. Lyson Center for Civic Agriculture and Food Systems with the support of:



and all members of the JAFSCD Shareholder Consortium

Journal of Agriculture, Food Systems, and Community Development

*Published by the Thomas A. Lyson Center for Civic Agriculture and Food Systems,
a project of the Center for Transformative Action, with the support of our institutional sponsors:*



Lyson Center Leadership Team

Kareem M. Usher, City and Regional Planning, Knowlton School of Architecture, The Ohio State University (Chair)

Loretta Carrillo, Latino Studies Program and Romance Studies, Cornell University (Retired)

Ardyth Harris Gillespie, Nutritional Sciences, Cornell University (Retired) and Harrisdale Homestead, Iowa

Gilbert W. Gillespie, Development Sociology, Cornell University (Retired)* and Harrisdale Homestead, Iowa

Amy Guptill, Sociology, The College at Brockport, State University of New York (SUNY)

Heidi Mouillesseaux-Kunzman, Development Sociology, Cornell University

Kenneth L. Robinson, Sociology, Clemson University, and Agribusiness Extension Specialist, Sandhill Research and Education Center, Columbia, South Carolina

Debra Tropp, U.S. Department of Agriculture (Retired) and Debra Tropp Consulting

JAFSCD Editorial Board

See more about the JAFSCD editorial board members at <https://www.foodsystemsjournal.org/index.php/fsj/jeb-members>

Dr. Selena Ahmed, Montana State University

Dr. Alice Ammerman, University of North Carolina-Chapel Hill

Dr. Colin Anderson, University of Vermont

Dr. Molly Anderson, Middlebury University

Dr. Mapuana C. K. Antonio, University of Hawai'i

Dr. Jody Beck, University of Colorado Denver

Ms. Sue Beckwith, Texas Center for Local Food

Dr. Laurel Bellante, University of Arizona

Dr. Allison Blay-Palmer, Wilfrid Laurier University

Dr. Dara Bloom, North Carolina State University

Dr. Joseph Brewer, University of Kansas

Dr. Analena Bruce, University of New Hampshire

Dr. Rachael Budowle, University of Wyoming

Dr. Catherine Campbell, University of Florida

Dr. Libby Christensen, Colorado State University

Dr. Jill Clark, Ohio State University

Dr. Nevin Cohen, City University of New York

Dr. Sean Connelly, University of Otago

Dr. Kristen Cooksey, University of Connecticut

Dr. Sarah Cramer, Stetson University

Dr. James Farmer, Indiana University

Ms. Lisa Fernandes, University of New Hampshire

Dr. Jill Fitzsimmons, University of Massachusetts

Ms. Julia Freedgood, American Farmland Trust

Dr. Vanessa Fry, Boise State University

Dr. Gil Gillespie, Harris Homestead, Inc.

Dr. Stephan Goetz, Pennsylvania State University

Dr. Cassandra Hawkins, Mississippi Valley State University

Dr. Oran Hesterman, Fair Food Network

Dr. Lesli Hoey, University of Michigan

Dr. Denise Holston, Louisiana State University

Dr. Leslie Hossfeld, Clemson University

Dr. Mrill Ingram, University of Wisconsin-Madison

Dr. Krista Jacobsen, University of Kentucky

Dr. Philippe Jeanneaux, VetAgro Sup

Dr. Alice Julier, Chatham University

Ms. Tanya Kerssen, Real Food Media

Dr. Kathleen Kevany, Dalhousie University

Ms. Miranda B. Klugesherz, Kansas Alliance for Wellness

Dr. Michael Kotutwa Johnson, Native American Agriculture Fund

Dr. Jane Kolodinsky, University of Vermont

Dr. David Lamie, Clemson University

Dr. Kathleen Liang, North Carolina A&T

Dr. Philip Loring, University of Guelph

Dr. Lindsey Lunsford, Tuskegee Institute

Ms. Jennifer Marshman, Wilfrid Laurier University

Dr. Fally Masambuka-Kanchewa, University of Georgia

Dr. Steven Robert McGreevy, Kyoto University

Dr. Phil McMichael, Cornell University

Dr. Philip McNab, Johns Hopkins University

Dr. Dawn Mellion-Patin, Southern University

Ms. Rachael Miller, Alaska Pacific University

Ms. Spencer Moss, West Virginia Food and Farm Coalition

Dr. Kent Mullinix, Kwantlen Polytechnic University

Dr. Kim Niewolny, Virginia Tech

Dr. Marcia Ostrom, Washington State University

Dr. Jacob Park, Castleton University

Ms. Natalia Pinzón Jiménez, University of California, Davis

Dr. Christine Porter, University of Wyoming

Dr. Kami Pothukuchi, Wayne State University

Dr. Alicia Powers, Auburn University

Dr. Madeleine Pullman, Portland State U School of Business

Ms. Naomi Robert, Kwantlen Polytechnic University

Dr. Ricardo Salvador, Union of Concerned Scientists

Dr. Joshua Shicca, Colorado State University

Dr. Kirsteen Shields, University of Edinburgh

Dr. Bobby Smith II, University of Illinois at Urbana-Champaign

Dr. Keiko Tanaka, University of Kentucky

Dr. Jennifer Jo Thompson, University of Georgia
Dr. Shirley Thompson, University of Manitoba
Dr. Daniel Tobin, University of Vermont
Dr. Kareem Usher, Ohio State University
Dr. Phil Warsaw, Michigan State University
Dr. Jennifer Wilkins, Cornell University and Syracuse University
Mr. Keith Williams, First Nations Technical Institute

Dr. Mary Willis, University of Nebraska–Lincoln
Ms. Joan Wilson, Emory University
Mr. Mark Winne, Independent
Dr. Laura Witzling, Iowa State University
Dr. Jim Worstell, Delta Enterprise Network
Ms. Laura Zaks, Northeast Farm Access
Dr. Rami Zurayk, American University of Beirut

JAFSCD Reviewers

See the current list of reviewers at <https://www.foodsystemsjournal.org/index.php/fsj/jafscdreviewers>

JAFSCD Staff

Publisher and Editor in Chief: Duncan Hilchey / duncan@lysoncenter.org / +1-607-342-0259

Managing Editor: Amy Christian / amy@lysoncenter.org / +1-607-342-0258

The *Journal of Agriculture, Food Systems, and Community Development*, ISSN 2152-0801 (online only), is published quarterly (Summer, Fall, Winter, Spring) with occasional supplements by the Thomas A. Lyson Center for Civic Agriculture and Food Systems, a project of the Center for Transformative Action (a nonprofit affiliate of Cornell University). Editorial office: 26 Elm Street, Floor 1, Westerly, Rhode Island 02891 USA. Administrative and financial office: Center for Transformative Action, P.O. Box 760, Ithaca, New York 14851 USA. The publisher assumes no responsibility for any statements of fact or opinion expressed in these published papers.



JAFSCD is open access through the support of our annual partners, our academic program shareholders, nonprofit shareholders, library shareholders, individual shareholders, and foundation shareholders. Our transition to open access was supported by a grant from the W.K. Kellogg Foundation. Learn more about how to support the broad distribution of research published in JAFSCD at <http://jafscdcommunity.org>.

Since JAFSCD is an open access publication, article authors retain copyright. Contents are licensed using the Creative Commons BY 4.0 license (CC BY 4.0). Learn more at <https://creativecommons.org/licenses/by/4.0>

Permanent link for this entire issue: <https://doi.org/10.5304/jafscd.2024.133.035>

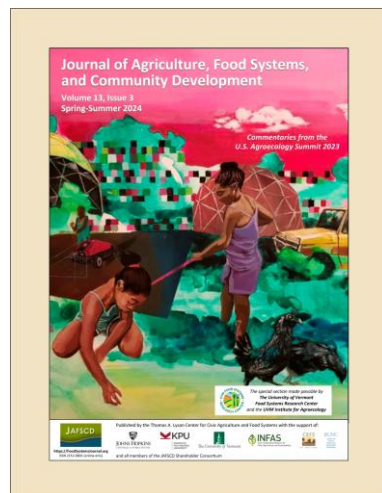
Contents | Volume 13, Issue 3 / Spring-Summer 2024

On our cover: This issue's cover features a work by farmer Ryan Tenney from his Sankara Farm Agroecology Zine. According to Ryan, "This painting is a view into a Black Agrarian future, with geodesic domes and autonomous microtractor out in the fields behind two youth cultivating the soil, planting seeds for the future. The red, black and green hues signal a post-colonial ecology."

Artwork by Ryan Tenney and used with permission.



The spring-summer 2024 issue of JAFSCD includes a set of commentaries that emerged from attendees of the U.S. Agroecology Summit 2023 in Kansas City, Missouri, USA. Publication of this special section is supported by The University of Vermont Food Systems Research Center and the UVM Institute for Agroecology.



Editorial

IN THIS ISSUE: Commentaries from the 2023 Agroecology Summit in the U.S., and open-call papers / *Duncan Hilchey* 1

Column

THE ECONOMIC PAMPHLETEER: Perspectives on past and future food systems / *John Ikerd* 5

Commentaries from the U.S. Agroecology Summit 2023

Toward care-full plural agroecologies: Lessons from the U.S. Agroecology Summit 2023 / *Catherine E. Horner, Karen Crespo Triveño, Ana Fochesatto, Antonio Roman-Alcalá, and Ivette Perfecto* 13

Grassroots agroecology advocates challenge funding objectives focused on U.S. Department of Agriculture / *Mollie Wills, J. Antonio Tovar-Aguilar, and Patti Naylor*.....19

Finding synergies between agroecology and industrial ecology toward sustainable agricultural systems / *Christine Costello*.....23

Reflections on research agendas in agroecology: In search of a practical guide / *Ivette Perfecto and John Vandermeer*.....27

Enantiomorphs no more: Indigenous agroecology and the future of food sovereignty
Reflections on the U.S. Agroecology Summit 2023 / *Devon G. Peña* 35

Agroecology in the belly of the beast: Reflections and contradictions from the U.S. Agroecology Summit 2023 / <i>Catherine E. Horner, Martha Caswell, Colin R. Anderson, V. Ernesto Méndez, and Janica Anderzén</i>	39
Blending knowledge systems for agroecological nutrient management and climate resilience / <i>Jennifer Blesb and Meagan Schipanski</i>	45
Itadakimasu, ikigai, and wabi-sabi: Poems and reflections on trust after the U.S. Agroecology Summit 2023 / <i>Christopher D. Murakami</i>	49
Grain agriculture and the end of the fossil fuel era / <i>Timothy E. Crews</i>	56
Broadscale diversification of Midwestern agriculture requires an agroecological approach / <i>Nicholas R. Jordan, Matt Liebman, Mitch Hunter, and Colin Cureton</i>	61
Increasing the scope and scale of agroecology in the Northern Great Plains / <i>Bruce D. Maxwell and Hannah Duff</i>	67
Growing change at the intersection of art and agroecology / <i>Ana Fochesatto, Karen Crespo Triveño, Ryan Tenney, Jesús Nazario, Garrett Graddy-Lovelace, and Mariel Gardner</i>	73
A declaration of commitments toward agroecology pluralities A critical gaze on the U.S. Agroecology Summit 2023 / <i>Agroecology Summit 'Outside Empire' Subgroup</i>	85
Agroecology beyond the statist quo? Transforming U.S. imperial agricultural policy / <i>Garrett Graddy-Lovelace and Antonio Roman-Alcalá</i>	99
Agroecology and corporate power in the U.S. / <i>Sarah E. Lloyd, Jordan Treacle, and Mary K. Hendrickson</i>	107

Voices from the Grassroots



Reversing food-land relationships in the city Insights from the Seeding East Buffalo Fellowship Program / <i>Carol E. Ramos-Gerena, Allison DeHonney, Shireen Guru, Rachel Grandits, Insha Akram, and Samina Raja</i>	113

Commentaries

Pakistan's path to sustainability: Advancements in cleaner production, a circular economy, and climate-smart solutions / <i>Amanullah</i>	117
Assessment of households' food consumption strategies during the COVID-19 pandemic in Ilorin-South LGA, Kwara State, Nigeria / <i>Opeyemi P. Babafemi and Adetunji L. Kehinde</i>	127
Developing a nascent agriculture industry: Lessons learned with sugar kelp / <i>Stacey F. Stearns and Anoushka Concepcion</i>	131

Open Call Papers

Smart Little Campus Food Pantries: Addressing food insecurity at Virginia Commonwealth University / <i>John C. Jones, Lauren Linkous, Lisa Mathews-Aiksworth, Reyna Vazquez-Miller, Elizabeth Chance, Jackie Carter, and Isaac Saneda</i>	135
A sentiment and keyword analysis of college food pantry stigma among users and non-users / <i>Alisa T. Duong, Ayron E. Walker, Amanda R. Bossert, and Matthew E. Arnold</i>	153
Are we meeting student needs? Developing a measure for college food pantry satisfaction / <i>Kelsey D. Gardiner and Susan P. Harvey</i>	165
Toward a justice approach to emergency food assistance and food waste: Exploring pantry–urban gardener partnerships in California’s Santa Clara County / <i>Christopher M. Bacon, Ava Gleicher, Emma McCurry, and Christopher McNeil</i>	177
Food democracy as food security strategy: The case of a Costa Rican tourism town / <i>Mary Little, Taylor Horn, and Madeline Sit</i>	199
Online tools helped direct market farmers during the COVID-19 pandemic, but resources are needed for equitable adoption / <i>Sasha Pesci, Jennie Durant, Gwyneth M. Manser, Ryan E. Galt, Lauren Asprooth, and Natalia Pinzón</i>	217
Care, agency, and social reproduction in the H-2A program: A case study from Ohio / <i>Anisa Kline</i>	237
The food and agricultural nonprofit landscape / <i>Alicia Papanek, Chelsea DeMasters, Micayla Richardson, and Kimberly Wiley</i>	255
Barriers and opportunities to agrihood development in growing cities of the Rocky Mountain Region: A comparative case study / <i>Amaia P. Sangroniz, Roland Ebel, and Mary Stein</i>	271
Grassroots organizing for food systems change in the San Joaquin Valley, California / <i>Brittany Oakes</i>	289
Challenging agricultural norms and diversifying actors: Building transformative public policy for equitable food systems / <i>Johanna Wilkes</i>	317
Establishing alternative grain networks: A comparison of case experiences in South Tyrol, Italy, and Colorado, United States / <i>Nanna L. Meyer, Giovanna Sacchi, Camilla Sartori, and Christian Fischer</i>	337

Book Review

From market concentration to political corruption (review of <i>Barons: Money, Power, and the Corruption of America’s Food Industry</i> , by Austin Frerick) / <i>Leland Glenna</i>	363

Members of the JAFSCD Shareholder Consortium

The American University of Rome MA in Food Studies  THE AMERICAN UNIVERSITY OF ROME	Northeast Regional Center for Rural Development, Penn State University 
Arizona State University Food Systems Transformation Initiative 	Ohio State University Agroecosystem Management Program  THE OHIO STATE UNIVERSITY
Bowie State University Department of Natural Sciences 	Oregon State University Center for Small Farms & Community Food Systems 
Center for Environmental Farming Systems  NCSU NCA&TSU NCDA&CS	Portland State University Supply Chain Program  The School of Business PORTLAND STATE UNIVERSITY
Chatham University Food Systems Program 	Prescott College Sustainable Food Systems 

City University of New York (CUNY) CUNY Urban Food Policy Institute 	Rich Earth Institute 
College at Brockport, State University of New York (SUNY) 	Rural Coalition 
Dalhousie University Rural Research Collaboration 	San Jose State University Department of Nutrition, Food Science, and Packaging 
DePaul University Graduate Program in Sustainable Urban Development 	Sustainable Agriculture Education Association (SAEA) 
Dillard University Ray Charles Program 	Texas Center for Local Food 

Fair Food Network 	Tuskegee University Cooperative Extension Program 
First Nations Technical Institute 	Union of Concerned Scientists 
Georgia Rural Health Innovation Center 	University at Buffalo, SUNY Growing Food Connections, Food Systems Planning and Healthy Communities Lab 
Harrisdale Homestead (Atlantic, Iowa) Affiliated with the Wallace Foundation for Rural Research & Development 	University of Arizona Center for Regional Food Studies 
Indiana University Sustainable Food Systems Science 	University of Hawai'i at Mānoa Office of Public Health Studies, Thompson School 

Initiative for Agriculture and Rural Development (Mali) 	University of Houston Downtown 
INFAS (the Inter-institutional Network for Food, Agriculture, and Sustainability) 	University of Kentucky The Food Connection 
Iowa State University Extension and Outreach 	University of Michigan Sustainable Food Systems Initiative 
Johns Hopkins Center for a Livable Future 	University of Missouri 
Kwantlen Polytechnic University Institute for Sustainable Food Systems 	University of North Carolina-Chapel Hill Center for Health Promotion and Disease Prevention 

Lakehead University Sustainable Food Systems Lab 	University of the District of Columbia College of Agriculture, Urban Sustainability & Environmental Sciences 
Louisiana State University AgCenter 	University of Vermont Food Systems 
Michigan State University Center for Regional Food Systems 	YOUR PROGRAM HERE!
Middlebury College Food Studies Program  Middlebury	University of Wyoming Growing Resilience 
Mississippi Valley State University Rural Public Policy and Planning Program 	W.K. Kellogg Foundation 

National Farm to School Network  The logo for the National Farm to School Network features a stylized red apple with a green leaf, set against a circular background. To the right of the apple, the text "NATIONAL FARM to SCHOOL NETWORK" is displayed in a green, sans-serif font.	Wallace Center  The Wallace Center logo includes a colorful illustration of various farm products like a cow, pig, sheep, and vegetables. To the right of the illustration, the text "Wallace Center" is written in a large, bold, black font, with "AT WINROCK INTERNATIONAL" in a smaller font below it.
New Mexico State University Agricultural Economics and Agricultural Business  The New Mexico State University logo consists of a maroon square containing the letters "NM" in large white font, with "STATE UNIVERSITY" in smaller white font below it.	Wayne State University SEED Wayne  The SEED Wayne logo features a stylized black and white illustration of a seed pod with a single seed. To the right of the illustration, the text "SEED Wayne" is written in a bold, black, sans-serif font.
North American Raspberry & Blackberry Association  The logo for the North American Raspberry & Blackberry Association shows a cluster of raspberries and blackberries. Above the fruit, the letters "NARBA" are written in a stylized, outlined font. Below the fruit, the full name of the association is written in a small, black, sans-serif font.	YOUR PROGRAM HERE!

Library Shareholders

Agricultural Research Council (South Africa)
American University of Beirut (Lebanon)[°]
Appalachian State University
Berea College[°]
Bloomsburg University of Pennsylvania
California State Polytechnic University, Pomona[°]
California State University, San Marcos[°]
Carleton University (Canada)
Chatham University
Chinese Academy of Agricultural Sciences,
Agricultural Information Institute (China)
Clemson University
Colorado State University
Columbia University
Cornell University
Dalhousie University (Canada)
Emory University
Florida State University
Gettysburg College
Harris-Stowe State University[°]
Harvard University & Harvard Business School
Indiana State University
Indiana University
Iowa State University
Johns Hopkins University*
Kenyon College
Kwantlen Polytechnic University* (Canada)
Laval University | Université Laval (Canada)
Louisiana State University
Massachusetts Institute of Technology (MIT)
Memorial University of Newfoundland (Canada)
Michigan State University
Middlebury College
Minnesota State University, Mankato
Missouri Southern State University
Montana State University
New York University
Ohio State University
Okanagan College (Canada)
Oregon State University
Pennsylvania State University
Portland State University
Purdue University
San Jose State University
Simon Fraser University (Canada)
Soka University of America
Southern Illinois University
Southern Oregon University
Stanford University
Syracuse University
Temple University

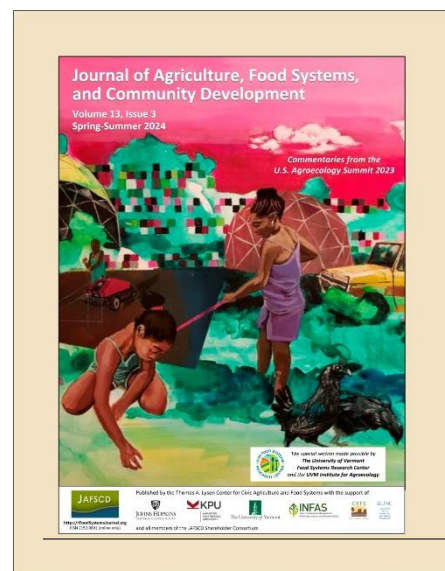
Texas A&M University
Toronto Metropolitan University (Canada)
Tufts University
Union of Concerned Scientists USA
University at Albany (SUNY)
University at Buffalo (SUNY)
University of Alaska–Fairbanks
University of Arizona
University of Arkansas
University of British Columbia (Canada)
University of California, Berkeley
University of California, Davis
University of California, Los Angeles (UCLA)
School of Law
University of California, Santa Barbara
University of California, Santa Cruz
University of Chicago
University of Colorado Boulder
University of Florida
University of Illinois at Chicago
University of Illinois at Urbana-Champaign
University of Kansas
University of Maryland
University of Massachusetts Amherst
University of Michigan
University of Minnesota–Twin Cities
University of Mississippi
University of New Hampshire
University of Northern British Columbia (Canada)
University of Oregon
University of Ottawa (Canada)
University of Pennsylvania
University of Regina (Canada)
University of Rhode Island
University of South Florida
University of Tennessee–Knoxville
University of Texas–Arlington[°]
University of Toronto (Canada)
University of the West Indies (Trinidad and Tobago)
University of Vermont*
University of Washington
University of Wisconsin–Stevens Point
University of Wyoming
Utah State University
Vermont Law and Graduate School
Virginia Tech
Washington State University
West Virginia University
Wilfrid Laurier University (Canada)
Yale University
Yukon University (Canada)

* JAFSCD's institutional partners, who receive complimentary shareholder status in recognition of their annual underwriting support.

[°] HBCUs, Hispanic-serving institutions, and Tribal colleges and universities, and those in economically distressed nations receive complimentary shares.

IN THIS ISSUE DUNCAN HILCHEY

Commentaries from the 2023 Agroecology Summit in the U.S., and open-call papers



Published online July 4, 2024

Citation: Hilchey, D. (2024). In this issue: Commentaries from the 2023 Agroecology Summit in the U.S., and open-call papers [Editorial]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 1–3. <https://doi.org/10.5304/jafscd.2024.133.034>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Our spring-summer 2024 issue is devoted largely to a set of commentaries prepared by more than two dozen participants in the U.S. Agroecology Summit 2023 in Kansas City, Missouri, USA. Their individual and collective voices challenge the hegemony of the dominant global industrial food system. However, they acknowledge that there are significant philosophical and pragmatic divisions between progressives in the agroecology “movement” that need to be openly addressed before significant progress can be made in building a cohesive movement.

Reflecting a shared vision of an agroecological future, our cover for this issue features a work by farmer **Ryan Tenney** from his Sankara Farm Agroecology Zine. According to Ryan, “This painting is a view into a Black Agrarian future, with geodesic domes and autonomous microtractor out in the fields behind two youth cultivating the soil, planting seeds for the future. The red, black and green hues signal a post-colonial ecology.” We appreciate Ryan sharing this work and vision on JAFSCD’s cover.

Also calling for unity among progressives is our Economic Pamphleteer, **John Ikerd**. In his present column, *Perspectives on past and future food systems*, he describes the evolution of the food system during his lifetime and argues that transformational change will not happen without a food sovereignty approach led by networks of like-minded activists—a pretty radical point of view coming from an agricultural economist!

The JAFSCD special section of commentaries from the U.S. Agroecology Summit 2023 is supported by The University of Vermont Food Systems Research Center and the UVM Institute for Agroecology. It begins

On our cover: The cover is a work by farmer Ryan Tenney from his Sankara Farm Agroecology Zine, depicting a view into a Black Agrarian future. Ryan’s work appears in one of agroecology commentaries in this issue, [Growing change at the intersection of art and agroecology](#).

Artwork by Ryan Tenney: 2020, gouache on paper. Used with permission.

with an overview editorial entitled *Toward care-full plural agroecologies: Lessons from the U.S. Agroecology Summit 2023* by **Catherine Horner, Karen Crespo Triveño, Ana Fochesatto, Antonio Roman-Alcalá, and Ivette Perfecto**. I will not summarize the content of this special section other than to say that it is an extraordinary collection of views and reflections that is a must read for scholars and practitioners who want to catch up on the state of the art in agroecology and related fields.

The open-call content of this issue begins with a *Voices from the Grassroots* essay by **Carol E. Ramos-Gerena, Allison DeHonney, Shireen Guru, Rachel Grandits, Insha Akram, and Samina Raja**, entitled *Reversing food-land relationships in the city: Insights from the Seeding East Buffalo Fellowship Program*.

Next are three commentaries, including *Pakistan's path to sustainability: Advancements in cleaner production, a circular economy, and climate-smart solutions* by **Amanullah**; an *Assessment of households' food consumption strategies during the COVID-19 pandemic in Ilorin-South LGA, Kwara State, Nigeria* by **Opeyemi P. Babafemi and Adetunji L. Kehinde**; and *Developing a nascent agriculture industry: Lessons learned with sugar kelp* by **Stacey F. Stearns and Anoushka Concepcion**.

Our collection of open-call papers begins with three papers focused on college student food security. In *Smart Little Campus Food Pantries: Addressing food insecurity at Virginia Commonwealth University*, **John C. Jones, Lauren Linkous, Lisa Mathews-Ailsworth, Reyna Vazquez-Miller, Elizabeth Chance, Jackie Carter, and Isaac Saneda** use a clever pantry door sensor to collect student usage data. They report the program costs, benefits, and limitations of self-contained pantry units.

Alisa T. Duong, Ayrone E. Walker, Amanda R. Bossert, and Matthew E. Arnold next explore stigma among college students regarding utilizing a food pantry and find that power hierarchy, financial burden, embarrassment, and feeling superfluous are barriers to pantry usage in *A sentiment and keyword analysis of college food pantry stigma among users and non-users*.

In *Are we meeting student needs? Developing a measure for college food pantry satisfaction*, **Kelsey D. Gardiner and Susan P. Harvey** create a survey instrument to measure student satisfaction with their campus food pantry.

Next, in *Toward a justice approach to emergency food assistance and food waste: Exploring pantry-urban gardener partnerships in California's Santa Clara County*, **Christopher M. Bacon, Ava Gleicher, Emma McCurry, and Christopher McNeil** develop a new, holistic strategy for helping volunteers more fully appreciate the issues of food justice and racial inequity.

In *Food democracy as food security strategy: The case of a Costa Rican tourism town*, **Mary E. Little, Taylor Horn, and Madeline Sit** document the challenge of build farm-to-fork value chains that actually promote food democracy.

Documenting another food supply chain disconnect, **Sasha Pesci, Jennie Durant, Gwyneth M. Manser, Ryan E. Galt, Lauren Asprooth, and Natalia Pinzon** find that producers with the capacity to use social media are more resilient than those without the capacity, in their study *Online tools helped direct market farmers during the COVID-19 pandemic, but resources are needed for equitable adoption*.

In *Care, agency, and social reproduction in the H-2A context: A case study from Ohio*, **Anisa Kline** highlights how a more nuanced understanding of Mexican workers' agency and humanity will lead to better farm labor policy in the U.S.

In *The food and agricultural nonprofit landscape*, **Alicia Papanek, Chelsea DeMasters, Micayla Richardson, and Kimberly Wiley** find that, despite competition for resources, there is a plethora of opportunities for collaboration across food and agricultural nonprofit organizations and Extension programs in the state of Florida.

Next, in *Barriers and opportunities to agrihood development in growing cities of the Rocky Mountain Region: A comparative case study*, **Amaia Sangroniz, Roland Ebel, and Mary Stein** explore this emerging alternative lifestyle neighborhood type.

Brittany Oakes then highlights how grantmaking supports, or otherwise influences, industrial agriculture

in the North America’s “salad bowl” in her study, *Grassroots organizing for food systems change in the San Joaquin Valley, California*.

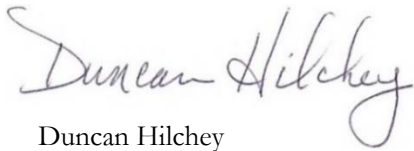
In *Challenging agricultural norms and diversifying actors: Building transformative public policy for equitable food systems*, **Johanna Wilkes** explores the use of advocacy coalition frameworks (ACFs) to build “thick legitimacy” in local food policy that elevates the voices of stakeholders in policy deliberations.

In our final peer-reviewed paper, **Nanna L. Meyer, Giovanni Sacchi, Camilla Sartori, and Christian Fischer** look at the differences and similarities—and what can be learned from both—in *Establishing alternative grain networks: A comparison of case experiences in South Tyrol, Italy, and Colorado, United States*.

Wrapping up the issue, we offer a book review by **Leland Glenna** of *Barons: Money, Power, and the Corruption of America's Food Industry*, by Austin Frerick.

And with that we come full circle in this spring-summer issue. It is an issue with strong undercurrent of speaking truth to power. I would only add that while there is a time for confrontation and a time for compromise, to be truly transformative we will need to find ways to minimize “us-versus-them thinking.” The world needs us productively collaborating to find win-wins—regardless of scale, race, production system, country, political view, and so on. How to find the common ground is the existential question. 

Yours for a more equitable and resilient global food system,



Duncan Hilchey
Publisher and editor-in-chief



THE ECONOMIC PAMPHLETEER JOHN IKERD

*A new series of Economic Pamphleteer columns:
Perspectives on Agriculture, Food Systems, and Communities*

Perspectives on past and future food systems

Published online April 16, 2024

Citation: Ikerd, J. (2024). The Economic Pamphleteer: Perspectives on past and future food systems. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 5–11.
<https://doi.org/10.5304/jafscd.2024.133.001>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

John Ikerd has contributed “Economic Pamphleteer” columns to the *Journal of Agriculture, Food Systems, and Community Development* since its inaugural issue in 2010. His columns have provided economic perspectives on a wide variety of agricultural, food systems, and community development issues. He provides a perspective that comes from someone who has lived through the transition from small, independent family farms, local food systems, and vibrant rural and urban communities to a corporately controlled agriculture, a global food system, and economic and socially desolate rural and urban communities.

His perspectives are also informed by spending the first half of his 30-year academic career as an advocate for the extractive, exploitative system of economic development that brought about these changes and in the years since as one of its most outspoken critics. He has been a relentless advocate for sustainable family farms, community-based food systems, and an economic and social renaissance of rural and urban communities. The next several columns will focus on John’s unique perspectives on changes in farms, foods, and communities over the past 70 years and why understanding the past is relevant in planning and preparing for the future.

In my previous column, I described the transformational changes I have seen in the past and expect to see in the future of American agriculture. Transformational change is not the usual incremental or adaptive change but is defined as “a

dramatic evolution of some basic structure of the business itself—its strategy, culture, organization, physical structure, supply chain, or processes” (Harvard Business School Online, 2020, “Transformational Change,” para. 1). I believe the changes in

John Ikerd is professor emeritus of agricultural economics, University of Missouri, Columbia. He was raised on a small farm and received his B.S., M.S., and Ph.D. degrees from the University of Missouri. He worked in the private industry prior to his 30-year academic career at North Carolina State University, Oklahoma State University, the University of Georgia, and the University of Missouri. Since retiring in 2000, he spends most of his time writing and speaking on issues of sustainability. Ikerd is author of six books and numerous professional papers, which are available at <https://ikerdj.mufaculty.umsystem.edu> and <http://johnikerd.com>.

*Why an **Economic Pamphleteer**? In his historic pamphlet Common Sense, written in 1775–1776, Thomas Paine wrote of the necessity of people to form governments to moderate their individual self-interest. In our government today, the pursuit of economic self-interest reigns supreme. Rural America has been recolonized, economically, by corporate industrial agriculture. I hope my “pamphlets” will help awaken Americans to a new revolution—to create a sustainable agri-food economy, revitalize rural communities, and reclaim our democracy. The collected Economic Pamphleteer columns (2010–2017) are available at <https://bit.ly/ikerd-collection>*

food systems, past and future, have been and will be just as transformational as the changes in agriculture.

When I was growing up in the 1940s in rural Missouri, we had a local food system. Most of what we ate was grown, hunted, fished, or foraged on our farm. Most of the rest was grown and processed within about 50 miles of our farm. There were local meat processors and locker plants, dairy processing plants, fruit and vegetable canneries, and even local flour mills. Coffee, tea, spices, some canned and packaged foods, and occasional bananas and oranges came from elsewhere. My best guess is that at least 75% of what we ate in the 1940s was homegrown or grown and processed locally.

We did most of our shopping at the nearby Rader country store or the farmers' cooperative exchange in the little town of Conway, about 7 miles from home. There were no self-service supermarkets in our area during the 1940s. In those days, you handed a prepared list of grocery items to the grocery clerk behind a counter. The clerk selected your canned and packaged goods from bookcase-like shelves, scooped dried beans and rice from large bins, and sliced meat from whole hams, sides of bacon, or primal cuts of beef. Bulk goods were weighed, packaged, and placed in paper bags along with the canned and packaged goods. Your bill was totaled on an adding machine. You either paid with cash or "put it on the bill" to be paid when the milk check came in.

The first true self-service grocery store in the U.S. was a Piggly Wiggly store that opened in Memphis, Tennessee, in 1916 (Piggly Wiggly, n.d.). It was the first grocery store to have prices marked on each item, shopping carts, and checkout stands. However, the idea of self-service didn't catch on in the grocery business until after World War II, and it didn't come into our area until the late 1940s or early 1950s. The Great Atlantic and Pacific Tea Company or A&P had a nationwide chain of more

than 16,000 full-service stores at the time and controlled about 10% of the U.S. grocery market ("A&P," 2024). However, the emergence of self-service supermarkets paved the way for a transformational change in food retailing.

By the late 1950s, self-service supermarkets dominated food retailing, even in rural Missouri.

After graduating from college in 1961, I did product merchandising and in-store promotion work for Wilson & Co., which was the third-largest meat packer in the nation at the time. The largest grocery chains in the U.S. were A&P, Safeway, Kroger, Food Fair, and National. There were also numerous regional chains. When I returned to graduate school during the late 1960s, the growing market power of supermarket chains was a common topic of discussion among agricultural economists. By the 1970s, self-service supermarkets sold roughly 70% of the nation's groceries (Macfadyen, 1985).

Between the 1940s and 1960s, a similar transformation took place in the restaurant business. Restaurants in the 1940s were mainly small family businesses. Most restaurants in our towns opened early for breakfast and coffee, had plate lunches, hamburgers, and hot dogs for lunch, and closed in the afternoon. Only the truck stops along Highway 66 were open at night. Eating supper out was a rare event, even when I was a teenager. Our towns had no franchised restaurants, fast-food places, or pizza parlors.

I didn't eat my first fast-food hamburger until at least 1957, sometime after I started college. McDonald's had recently opened a fast-food restaurant in Columbia, Missouri, featuring 19-cent hamburgers. A decade earlier, the McDonald brothers operated a car-hop drive-in restaurant in California (MacDonald's, n.d.). After realizing they made most of their profits on hamburgers, in 1948 they closed the drive-in, streamlined their system, and sold only hamburgers, cheeseburgers, potato chips, coffee, soft drinks, and apple pie. The

When I was growing up in the 1940s in rural Missouri, we had a local food system. . . . There were local meat processors and locker plants, dairy processing plants, fruit and vegetable canneries, and even local flour mills.

change proved so successful that they franchised the concept and soon had nine franchise restaurants. Ray Kroc opened his first McDonald's restaurant in Illinois in 1955 and expanded with additional franchises across the Midwest. Kroc bought the McDonald's company in 1961 for US\$2.7 million and grew it into an international fast-food empire (MacDonald's, n.d.).

The first Pizza Hut opened in 1958 in Wichita, Kansas (Pizza Hut, n.d.), and followed the franchising model pioneered by McDonald's. By the time I started working for Wilson & Co. in Kansas City in the early 1960s, Pizza Hut had already grown to be our largest buyer of cheese and meat toppings. By 1971, Pizza Hut had grown into the largest pizza chain in the world (Pizza Hut, n.d.).

Major changes also took place between the 1940s and 1970s in food processing and distribution, but those changes were more incremental and adaptive than transformational. The "Big Four" meatpacking companies—Armour, Swift, Wilson, and Cudahy—controlled about 40% of the U.S. beef trade in the 1940s when the government stepped in to break them up (Merritt, 2021). They also accounted for large shares of hog and lamb slaughter. The United Packinghouse Workers Association signed nationwide union contracts with the Big Four at around the same time, forcing them to increase wages and improve working conditions.

Wages and benefits of packinghouse workers continued to increase into the 1970s. This left the old, multispecies, multistory slaughter plants of the Big Four vulnerable to displacement as new, single-species, streamlined, disassembly plants opened and operated with non-union labor. Iowa Beef Packers/IBP, Excell/Cargill, Tyson, Smithfield/WH Group, and other companies that dominate meat packing today took advantage of this opportunity (Human Rights Watch, 2005).

Most of the changes in food manufacturing, warehousing, and transportation between the 1940s and 1970s were made to accommodate the trans-

formational changes in food retailing (Hoover, 2018). The national food corporations dominated the markets for manufactured, canned, and packaged foods. The major national brands in the 1950s included Borden, General Mills, Nabisco, Campbell Soup, Pillsbury Mills, Carnation, Quaker Oats, H. J. Heinz, and Kellogg (Hoover, 2018). The national brands were heavily promoted in newspapers and television, and supermarkets were essentially forced to stock them to satisfy their customers. Major brands could influence pricing and demand display space for their products in stores. However, the balance of power between food manufacturers and retailers was destined to change.

The first item and price barcode scanners were installed in Marsh Supermarket in Troy, Ohio, in 1974 (Garry, 2022). I learned about barcodes in a graduate course in food industry logistics in the late 1960s. I didn't realize how significant scanners and computers would be in shaping the future of food retailing. Sam Walton opened his first discount store in 1962 in Rogers, Arkansas (Walmart, n.d.). His idea of "always low prices" proved popular, and Walmart stores were soon scattered across the country. Walmart replaced its cash registers with computerized

The national brands were heavily promoted in newspapers and television, and supermarkets were essentially forced to stock them to satisfy their customers.

point-of-sale systems in 1983 (Walmart, n.d.). This new system not only significantly reduced labor costs but also allowed Walmart to keep track of inventories, deliveries, and the other logistical challenges of its rapidly expanding network. The system proved particularly useful when Walmart opened its first supercenter in 1988 and started selling groceries (Walmart, n.d.).

The Walmart way of doing business worked well for supermarkets and soon began transforming the entire agri-food system (Walmart, n.d.). The Walmart business model is comprehensive and too complex to explain in a few sentences. However, its relentless focus on "always lowest prices" drives virtually everything else at Walmart. Its strategy for profitability and expansion has always been low prices for quality products. Walmart buys in such

large quantities that it can force its suppliers to contract for delivery at the lowest possible prices. Walmart prefers to be the major or sole customer of its suppliers, which forces them to meet Walmart's terms to survive. If Walmart finds another supplier, anywhere in the world, willing to sell at lower prices, it buys from the lowest-cost supplier. Another strategy pioneered by other supermarkets but perfected by Walmart is to offer private-label products generically equivalent to national name-brand products at lower prices. Walmart sells a wide variety of generic alternatives to popular national brands in virtually all departments, including groceries, and its private labels are among the most popular in the retail industry ("List of Walmart Brands," 2024).

With the rapid expansion of Walmart supercenters, other supermarket chains were forced to follow similar cost-cutting strategies to compete. They also consolidated to gain the market power to compete with Walmart. The surviving supermarket chains restrict their purchases to suppliers large enough to supply all their stores and then pressure those suppliers, including food processors, to reduce their selling prices. The supermarket chains also developed private-label equivalents to national brands for packaged products and their own standards for meats and fresh produce.

The balance of market power shifted from processors and manufacturers to food retailers. The processors and manufacturers were then forced to follow the Walmart model of buying in large quantities at low prices from large-scale industrial producers. The contracts offered to producers force them to sell at prices that will just allow them to survive economically, regardless of the social or environmental consequences. Whenever food processors or contractors find lower-cost suppliers elsewhere, anywhere in the world, they drop their current suppliers, often leaving them to find an alternative market.

Widespread adoption of the Walmart business model was facilitated by a critically important shift

in antitrust policy during the 1980s. As I have explained in a previous column, the only way to ensure that markets respond to the needs of consumers rather than create excess profits for suppliers is to ensure that no single supplier, or small group of suppliers, is large enough to influence overall market prices (Ikerd, 2023). Whenever four firms control 40% more of a market, it is called an oligopoly, and the market is not sufficiently com-

petitive to ensure that consumers will be offered an assortment of products that would best meet their needs at competitive prices ("Four-Firm Concentration Ratio," n.d.).

In the early 1980s, the U.S. Justice Department decided to focus enforcement of antitrust policy on retail prices, or market performance rather than the number and size of firms, or market structure. The new strategy is commonly referred to as the Chicago Business School

"consumer welfare" standard (Stucke & Ezrachi, 2017). This change essentially removed government restraints on corporate consolidation or share of markets. The strategy of gaining market share by cutting prices protected corporations' growth from government restraints as they gained the ability to manipulate markets to maximize corporate profits rather than to benefit consumers.

A 2021 market concentration study revealed that today's agri-food system is dominated by a small number of large multinational agribusiness corporations (Hendrickson et al., 2021). The consolidation is apparent in nearly every slice of the food industry. At the time of the study, General Mills, Kellogg, and Post had 83% of the cold cereal market (Hendrickson et al., 2021). Walmart, Kroger, Albertsons, and Costco controlled 45% of the retail grocery business, and McDonald's, Yum Brands (which includes Pizza Hut, Taco Bell, and KFC), Wendy's, and Subway accounted for 39% of the fast-food market (Hendrickson et al., 2021). JBS and Marfrig (both Brazilian firms), Tyson, and Cargill controlled 73% of U.S. beef processing (Hendrickson et al., 2021). JBS and Cargill were

The contracts offered to producers force them to sell at prices that will just allow them to survive economically, regardless of the social or environmental consequences.

joined by Chinese firm WH Group and by Hormel to control 67% of pork processing (Hendrickson et al., 2021). Tyson and JBS plus Perdue and Sander-son controlled 54% of chicken processing (Hen-drickson et al., 2021). JBS now owns Swift; Marfrig took over National Beef; and WH Group owns Smithfield Foods. Smithfield, once the largest meat packer in the U.S., started in Smithfield, Virginia, selling Smithfield hams from hogs fed on peanuts.

The corporately controlled, global food system of today is very different from the community-based, local food systems of the 1940s. Most im-portant, there is no assurance that consumers are being offered an assortment of foods that best meet their needs and preferences or that food prices are as low as they would be in competitive markets.

So, what are the implications for the future? First, it will be very difficult to bring about transformational change in food systems overall until economic competitiveness is restored to agri-food markets. Corporate economic power has been translated into political opposition to doing any-thing to restore the competitiveness of agri-food markets (Ikerd, 2023). Some Democrats campaign on anticorporate issues and propose anticorporate legislation, but “corporatism” is firmly entrenched in both political parties. However, the current cor-porately controlled global food system is not sus-tainable. The always-low-price business strategy is forcing farmers to degrade and destroy the resources of nature upon which the productivity of agriculture ultimately depends.

A variety of anticorporate social movements, such as Occupy Wall Street and the World Trade Organization protests, could eventually coalesce and focus on prohibiting for-profit corporations from participating in political matters. However, social movements tend to ebb and flow and pro-gress slowly over time. In the meantime, a large growing number of consumers/customers are searching for alternatives to mainstream foods and food systems. Many are willing to pay at least

somewhat higher prices for foods that conform to their values. Others are searching for ways to ensure nutritional food security for those who can-not afford to pay higher prices for good food. This may remain a niche market for some time, but the niche seems to be growing at least as fast as the number of farmers and food entrepreneurs who are willing and able to supply it. Those who take advantage of these opportunities as they arise will be creating the agri-food systems of the future.

I believe the guiding principles for future food systems will be the principles of food sovereignty: “the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems” (quoted in Ikerd, 2015, p. 13). I have expressed my vision for future food systems in many previous

columns, so I will limit this perspective to a few key concepts that I see as defining future food systems:

- **Relocalization:** Transformation change in the global food system will depend on farmers and their customers/eaters retain-ing a personal connectedness and commit-ment to working together and helping each other. The logical place for this to start is at the local level, where people can get to know each other and share a common future.
- **Community Food Sovereignty:** Systemic change in food systems must move beyond individual commitments between buyers and sellers to community commitments to ensure the right of everyone in the commu-nity to enough sustainably produced and processed food to meet their nutritional needs and to proclaim the rights of their communities to determine their own food systems (see Ikerd, 2016).

**It will be very difficult
to bring about
transformational change in
food systems overall until
economic competitiveness
is restored to agri-food
markets.**

- **Devolution:** To support the development of local food systems, state and federal funding for and implementation of agricultural, environmental, community development, and supplemental nutritional assistance programs must be administered through local communities to meet their specific needs. Community Food Utilities or other vertical cooperative organizations could serve as local administrators of these programs.
 - **Networks of Food-Sovereign Communities:** Food-sovereign communities must network with each other to meet needs that cannot be met locally. Substantial economies of scale exist for food processing, meaning that local food systems may need to recruit or establish regional food processors as members of their networks.
 - **Global Food Networks:** Local networks can grow into regional networks, regional networks, and eventually global networks. The networks must be sustained by a sense of personal connections and a common commitment both within and among communities to the social and ecological principles of food sovereignty.
- The ultimate success of this vision depends on many different elements, but nothing is more critical than the ability and willingness of people to come together and function as communities rather than collections of self-interested consumers and producers. Food-sovereign communities need not include everyone in current legal or geographic communities. They need only include like-minded people with a common vision of food sovereignty for the future of their community. My next column will present my perspectives on the past and future of community development.

References

- A&P. (2024, February 9). In *Wikipedia*. <https://en.wikipedia.org/w/index.php?title=A%26P&oldid=1205552012>
- Four-firm concentration ratio. (n.d.). In *Oxford Reference*. <https://www.oxfordreference.com/display/10.1093/oi/authority.20110803095831707>
- Garry, M. (2022, July 22). Scanning transforms the store. *Supermarket News*. <https://www.supermarketnews.com/archive/scanning-transforms-store>
- Harvard Business School Online. (2020, March 20). *Common types of organizational change & how to manage them*. <https://online.hbs.edu/blog/post/types-of-organizational-change>
- Hendrickson, M. K., Howard, P. H., Miller, E. M., & Constance, D. H. (2021). *The food system: Concentration and its impacts*. Family Farm Action Alliance [now Farm Action]. <https://farmaction.us/concentrationreport/>
- Hoover, G. (2018, September 27). *Largest US food companies 1954 based on Fortune 500 list*. American Business History Center. <https://americanbusinesshistory.org/largest-us-food-companies-1954-based-on-fortune-500-list/>
- Human Rights Watch. (2005, January). *Blood, sweat, and fear: Workers' rights in U.S. meat and poultry plants*. <https://www.hrw.org/report/2005/01/25/blood-sweat-and-fear/workers-rights-us-meat-and-poultry-plants>
- Ikerd, J. (2015). The Economic Pamphleteer: Food sovereignty: A new mandate for food and farm policy. *Journal of Agriculture, Food Systems, and Community Development*, 5(2), 11–14. <https://doi.org/10.5304/jafscd.2015.052.004>
- Ikerd, J. (2016). The Economic Pamphleteer: Enough good food for all: A proposal. *Journal of Agriculture, Food Systems, and Community Development*, 7(1), 3–6. <https://doi.org/10.5304/jafscd.2016.071.00>
- Ikerd, J. (2023). The Economic Pamphleteer: Voting with your food dollars is not enough! *Journal of Agriculture, Food Systems, and Community Development*, 12(3), 5–8. <https://doi.org/10.5304/jafscd.2023.123.001>
- Kumari, P. (2022, November 22). *Everything you must know about the business model of Walmart: World's largest retail giant*. Hackernoon. <https://hackernoon.com/everything-you-must-know-about-the-business-model-of-walmart-worlds-largest-retail-giant>
- List of Walmart brands. (2024, January 11). In *Wikipedia*. https://en.wikipedia.org/w/index.php?title=List_of_Walmart_brands&oldid=1194882024
- MacDonald's. (n.d.). *History*. <https://corporate.mcdonalds.com/corpmcd/our-company/who-we-are/our-history.html>

- Macfadyen, T. (1985). The rise of the supermarket, *American Heritage*, 3(6).
<https://www.americanheritage.com/rise-supermarket>
- Merritt, M. (2021, August 17). The monopoly in the beef packing industry. *The Progressive Rancher*.
<https://progressiverancher.com/the-monopoly-in-the-beef-packing-industry/>
- Piggly Wiggly. (n.d.). *Our history*. Retrieved March 29, 2024, from <https://www.pigglywiggly.com/history/>
- Pizza Hut. (n.d.). *Our story*. Retrieved March 29, 2024, from <https://blog.pizzahut.com/our-story/>
- Stucke, M. E., & Ezrachi, A. (2017, December 15). The rise, fall, and rebirth of the U.S. antitrust movement. *Harvard Business Review*. <https://hbr.org/2017/12/the-rise-fall-and-rebirth-of-the-u-s-antitrust-movement>
- Walmart. (n.d.). *About/Walmart history: From humble beginnings. To redefining retail*. Retrieved March 29, 2024, from <https://corporate.walmart.com/about/history>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023: INTRODUCTION TO THE SPECIAL SECTION

Toward care-full plural agroecologies: Lessons from the U.S. Agroecology Summit 2023

Catherine E. Horner ^{a *}
University of Vermont

Karen Crespo Triveño ^b
University of California, Santa Cruz

Ana Fochesatto ^c
University of Wisconsin-Madison

Antonio Roman-Alcalá ^d
Agroecology Research-Action Collective (ARC)
and California State University East Bay

Ivette Perfecto ^e
University of Michigan, Ann Arbor

Submitted February 23, 2024 / Published online May 28, 2024 / Minor update published June 18, 2024

Citation: Horner, C. E., Crespo Triveño, K., Fochesatto, A., Roman-Alcalá, A., & Perfecto, I (2024). Toward care-full plural agroecologies: Lessons from the U.S. Agroecology Summit 2023 [Introduction]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 13–17. <https://doi.org/10.5304/jafscd.2024.133.002>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

In May 2023, approximately 100 people gathered in Kansas City, Missouri, for a national convening on scaling agroecology in what is now known

as the United States. The gathering (referred to throughout this special section of JAFSCD as the Agroecology Summit or simply the Summit) was

^{a *} *Corresponding author:* Catherine E. Horner, Institute for Agroecology, University of Vermont; Jeffords Hall, 63 Carrigan Drive; Burlington, Vermont 05405 USA; +1-646-734-2823;  <https://orcid.org/0000-0002-9938-3376>; chorner@uvm.edu

^b Karen Crespo Triveño, Environmental Studies Department, University of California, Santa Cruz; 1156 High Street; Santa Cruz, CA 95064 USA;  <https://orcid.org/0009-0005-5473-8021>; krespot@ucsc.edu

^c Ana Fochesatto, Nelson Institute for Environmental Studies, University of Wisconsin-Madison; Science Hall, 122, 550 North Park Street; Madison, WI 53706 USA;  <https://orcid.org/0000-0002-0564-2024>; fochesatto@wisc.edu

^d Antonio Roman-Alcalá, Agroecology Research-Action Collective (ARC), and Department of Anthropology, Geography & Environmental Studies, California State University East Bay; 25800 Carlos Bee Blvd., Robinson Hall; Hayward, CA 94542 USA;  <https://orcid.org/0000-0001-9209-8786>; antidogmatist@gmail.com

^e Ivette Perfecto, School for Environment and Sustainability, University of Michigan, Ann Arbor; 440 Church Street; Ann Arbor, MI 48109 USA;  <https://orcid.org/0000-0003-1749-7191>; perfecto@umich.edu

Disclosures

We declare no relevant financial or other interests that constitute an actual, potential, or apparent conflict of interest in the authorship of this paper.

The U.S. Agroecology Summit 2023, from which this set of commentaries emerged, was supported in part by the intramural research program of the U.S. Department of Agriculture, National Institute of Food and Agriculture, USDA-NIFA Sustainable Agroecosystems Conference, NIFA grant no. 2023-67019-38805. The JAFSCD special section of commentaries from the U.S. Agroecology Summit 2023 is supported by The University of Vermont Food Systems Research Center and the UVM Institute for Agroecology.



convened by people working at research institutions throughout the U.S. The organizing committee aimed to identify how research can support the growers, organizations, and communities enacting agroecology in the U.S. Initially funded by a US\$50,000 grant from the U.S. Department of Agriculture (USDA), the committee also hoped to create a “roadmap” for agroecological research in the U.S.

While a co-created research agenda for agroecology is arguably an important long-term goal, what unfolded at the Summit indicates that pursuing this goal was premature—putting the research cart before the agroecology horse, so to speak. Many summit participants from civil society and social movement spaces pushed against the idea of a roadmap. Some pushed against the idea of working collectively on a goal that was not collectively identified or co-designed; others, against the idea of engaging in collective work without first establishing trust, especially where deep reparative work between and among communities and institutions is still needed. Bringing together people who span diverse identities, positionalities, and ways of knowing is both an epistemologically and ethically complex endeavor. Given the diversity of historical, cultural, and practical orientations to agroecology, it is unsurprising that the Summit revealed tensions. Two editors on this special section (Roman-Alcalá and Horner) were on the summit organizing committee. Roman-Alcalá and Horner shared that it was not always comfortable for Summit organizers to receive some of the critiques voiced before the summit (as shared by Wills, Tovar-Aguilar, and Naylor in this issue), at the summit, and further articulated in this special section. However, the necessity of ongoing dialogue—of engaging in generative discussions across points of difference—was and is evident (Roman-Alcalá, 2022). Although the Summit did not ultimately yield a research agenda or roadmap, it was not an unfruitful event. Participants did not coalesce around a singular goal. Instead, they gave voice to the many goals, needs, and visions driving agroecology in the U.S. The commentaries in this special section highlight some of the research, policy, organizing, and reparative priorities that emerged during and after the Summit.

Reading the commentaries in this special section, one cannot miss the diversity of approaches to knowing, engaging with, and practicing agroecology. In this issue, Costello proposes that integrating multiple approaches to sustainable agriculture can propel life cycle assessments and material flow analyses toward equity, justice, and representation of diverse values. On the other hand, Perfecto and Vandermeer (in this issue) focus on the intersection of ecological complexity science and agroecology, naming six research priorities where work is needed to strengthen agroecology in the U.S. In other instances, diverse orientations to agroecology are evident in pieces that explore similar topics but do so from different vantage points. For example, both Peña and Horner, Caswell et al. address the difficulty of reconciling knowledges and lifeways inside and outside academic contexts. Peña, however, engages this topic through an Indigenous worldview, reflecting on the role of universities in supporting community-based agroecology, environmental justice, and food sovereignty to center pluriversal Indigenous knowledges via ceremony, spirituality, communal values, reciprocity, interconnectedness, and mutual aid.

Indeed, honoring and navigating diverse cosmologies and epistemologies, and the implications of this diversity, are central to several commentaries in this special section. Peña, Horner, Caswell et al., Blesh and Schipanski, and Murakami (all in this issue) all engage with the politics of knowledge, albeit in distinct ways. These pieces illuminate the necessity of putting diverse future visions into conversation with each other to support a collective movement toward epistemic justice and complementarity. Glimmers of epistemic complementarity can be seen in other commentaries, such as those by Crews and by Blesh and Schipanski (in this issue), who advocate for ideological and practical shifts within grain production and soil science, respectively. While they, and contributors like Jordan et al. and Maxwell and Duff (in this issue) focus on biophysical dimensions of agroecological science, they situate their work amidst wider social realities, which contributes to dismantling the false divide between the ‘natural’ and the ‘social.’

During the Summit, the diverse orientations to agroecology evidenced above seeded critical dialogue, debates, and reflections. Often, differences led to diverging conversations, despite many participants sharing a common mission to advance agroecology. Yet throughout the Summit, moments of convergence emerged from conversations underpinned by efforts toward transparency, relationality, reflexivity, and accountability. These moments offered hope that ideas, actions, and priorities could be brought together toward an agroecology research agenda in the U.S.

In much the same way that diversity strengthens agricultural systems, the richness and abundance of diverse ways of knowing and engaging with agroecology, while a source of tension, also has the potential to strengthen the agroecological movement in the U.S. The power of diverse approaches is centered in the work of Fochesatto et al. (in this issue), who remind readers that various art forms can move people in ways that peer-reviewed publications might not. Murakami (in this issue), for example, moves readers by sharing poetry from his Japanese heritage and foodways. Similarly, Indigenous summit attendee Jonny Bearcub Stiffarm powerfully questioned the level of trust and addressed the lack of spirit at the Summit. Her moving words are captured in “A declaration of commitments toward agroecology pluralities: A critical gaze on the U.S. Agroecology Summit 2023” (by the Agroecology Summit ‘Outside Empire’ Subgroup, in this issue) and exemplify how status quo procedures in academia do not reflect agroecology’s diverse philosophical bases. In echoes of Jonny’s words, Graddy-Lovelace and Roman-Alcalá (in this issue) call out the ongoing harm inflicted by existing colonial-statist systems and their counter-agroecological nature. Yet these authors touch upon an important question for conversation: whether and how to use that colonial system’s ‘tools’ to prevent further destruction—reflecting on Audre Lorde’s (2018) famous contention that “the master’s tools will never dismantle the master’s house.” Graddy-Lovelace and Roman-Alcalá bring us to an important signpost reflecting the U.S. Agroecology Summit 2023, arguing that social transformation is an ongoing living process rather than a binary before-and-after, or an “it is or it isn’t” scenario.

The Summit highlighted the inherent difficulty of building diverse coalitions to scale agroecology across different contexts. Working toward shared goals is complex; it entails critically and iteratively identifying, accepting, and supporting many pathways toward those goals. Only by embracing plural pathways can we honor the diverse histories, needs, capacities, and struggles that people bring to the work of scaling agroecology. As Mariel Gardner reflects in Fochesatto et al. (in this issue), “A reluctance to be vulnerable and share deep personal experiences is hindering the agroecology movement in the United States, as witnessed in my experiences in Kansas City.” Along similar lines, Horner et al. (in this issue) emphasize that reflexive, transparent, and accountable dialogue is foundational for healing, building trust, and co-constructing more just and resilient futures. This special section is intended to be an avenue for highlighting the complexities of scaling agroecology and celebrating the diversity of orientations to agroecology.

Agroecology celebrates polycultural diversity, but the path toward a *diálogo de saberes* (or a dialogue of diverse knowledges) is not always evident. Both within and outside the academy, there is often uncertainty around how to integrate polycultural approaches to addressing agroecology’s wicked problems. Dismissiveness and demonization can be lobbed both ways, from academia towards “community,” and from various communities towards academia. In either case, painting with broad brushstrokes can preclude dialogue grounded in individuals reciprocally recognizing each other’s full humanity. What processes and practices are needed to hold space for the multiple, embodied, and collaborative ways of knowing and enacting agroecology in the U.S.? To advance plural agroecology, we need practices that honor the coexistence of epistemologies (ways of knowing), ontologies (ways of being), and realities based on multiple truths.

Making space to share diverse histories, practices, and visions for the future seems like a vital first step in convening and collaborating across difference. In both the Summit and this special section, we have witnessed people determinedly carving out this space—space to share and

(hopefully, eventually) to come together. There is likely to be tension in such spaces. This stems from the fact that there is deep love and hope woven into people's visions for the future, and yet there is also deep pain woven into the histories that inform those visions. In short, there is deep feeling, which we might also understand as deep caring.

The pains and hopes embedded in many agroecological processes indicate that the work of coming together to scale agroecology must be care-full. Inspired by the work of Moriggi (2022) and their three caring dimensions (ethically informed practices, relational response-ability, and emotional awareness), we suggest that engaging care-fully within agroecology spaces entails offering critiques in good faith and with compassion and receiving critiques with curiosity and open-heartedness. Demands for humility and accountability, important as they are, must be accompanied by an equal willingness to reciprocate—to be humble and accountable in return.

While there are many points of convergence, people have different approaches, methodologies, and lenses through which they engage with agroecological visions. It is important to recognize that in this work, people are not only defending their ways of life but are also actively forging new connections (human and beyond human) and strategies to grow agroecology while seeking to leverage resources that they think will advance those strategies. For example, Lloyd, Treacle, and Hendrickson (in this issue) call for vigilance in policy-making processes to ensure that politics and power dynamics do not suppress local grassroots communities, while also advocating for agroecology to imbue new perspectives and energy into national policy discussions about consolidation and wealth disparities.

Love—for land, foodways, culture, ancestors, and community—can motivate defense. Defense can also be motivated by trauma—the trauma of land dispossession, separation, colonialism, genocide, racism, heteropatriarchy, and struggles to materially survive under competitive and alienating capitalism. In other words, it can be a response to experiences and systems of “othering.” And while this defense is necessary, especially in the face of oppression and asymmetries in power, it must be

accompanied by reparative processes to truly heal and transform relationships. Reparation involves acknowledging and addressing historical and ongoing harms and working to rebuild trust and create more just and equitable systems. Without these reparative processes, defense alone can hinder identifying where there is alignment and solidarity with one another despite differences. As influential Black feminist scholar-activist bell hooks (2000) noted, defense and counterattacks solely rooted in pain can sever bonds in relationships rather than maintain commitment and build bridges with one another. Severed bonds are unlikely to underpin the strengthened agroecological movements needed to bring about a truly transformed status quo for food and farming. Professor John A. Powell (2022) notes that the act of bridging is key to co-creating systems, movements, and institutions centered on belonging, the antithesis of othering.

Building bridges across differences requires creating spaces for open dialogue that help communities recognize each other's histories, approaches, and intentions. This special section offers a small but valuable platform for fostering this dialogue within North America's agroecological movement. What we see and hear, as summit participants and editors of this special section, are divides that desperately need to be bridged. One apparent division is between Western scientific research and the political focus of social movements. A wider lens, however, reveals ontological, epistemological, and axiological differences that manifest as divisions. In this introduction, we propose care-full collaboration and bridging as two practices that we believe hold promise for illuminating pathways towards coalition-building and collective action despite these differences. Perhaps these practices can even help harness the power of differences. The extent to which this is possible seems linked to collective capacities to listen and care deeply, and to critique with the goal of bridging. Citing Noddings (2013), Moriggi notes that, “caring is an iterative practice”; it also entails failure, which is a vital site of learning and growth.

Questions remain, however, regarding how we move forward in the face of such failures and their attendant harms, particularly when these failures re-enact painful pasts. How do those of us com-

mitted to agroecology avoid reproducing the othering we have experienced—as women and femmes, as queer people, as Indigenous people, as people of color? And what of experiences of epistemological violence, as Peña draws attention to? Undeniably, Western science and universities have incriminating pasts, many aspects of which extend into the present. But these spaces also house people who have much to offer in terms of capacity to support farms, farmers, farmworkers, and movements. How can we avoid throwing the proverbial baby—a fragile being deserving of love and care—out with the dirty bathwater of historical violence and injustice? How do we foster plural agroecologies that decry and address epistemic vio-

lence and injustice while also leveraging the value of various scientific approaches, such as participatory entomological research, among many others, to improve on-farm outcomes and livelihoods?

As editors, we invite further generative dialogue transcending the academy and moving us toward plural agroecological imaginaries. We hope the commentaries in this special section constitute seedlings of ideas that can be stewarded and nourished into an even stronger agroecological movement in the North. We believe that to dismantle industrial agriculture, this movement must encompass ongoing introspection and critique motivated by relationality, communal care, and collective power.



References

- hooks, b. (2000). *All about love: New visions*. William Morrow.
- Lorde, A. (2018). *The master's tools will never dismantle the master's house*. Penguin Classics.
- Moriggi, A. (2022). An ethos and practice of appreciation for transformative research: Appreciative inquiry, care ethics, and creative methods. In A. Franklin (Ed.), *Co-creativity and engaged scholarship: Transformative methods in social sustainability research* (pp. 131–164). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-84248-2_5
- Noddings, N. (2013). *Caring: A feminine approach to ethics and moral education* (2nd ed.). University of California Press.
- powell, j. a. (2022). Overcoming toxic polarization: Lessons in effective bridging. *Minnesota Journal of Law & Inequality*, 40(2), 247–280. <https://doi.org/10.24926/25730037.645>
- Roman-Alcalá, A. (2022). Five practical strategies for those who work for food systems change. *Journal of Agriculture, Food Systems, and Community Development*, 12(1), 9–12. <https://doi.org/10.5304/jafscd.2022.121.001>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Grassroots agroecology advocates challenge funding objectives focused on U.S. Department of Agriculture

Mollie Wills^a
Rural Vermont

J. Antonio Tovar-Aguilar^b
Farmworker Association of Florida

Patti Naylor^{c*}
Family Farm Defenders

Submitted April 16, 2024 / Published online May 28, 2024 / Format updated June 4, 2024

Citation: Wills, M., Tovar-Aguilar, J. A., & Naylor, P. (2024). Grassroots agroecology advocates challenge funding objectives focused on U.S. Department of Agriculture [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 19–21. <https://doi.org/10.5304/jafscd.2024.133.015>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

In the spring of 2023, members of the organizations in La Via Campesina’s North America region who participate in the Seeds, Agroecology, and Biodiversity Collective became aware of plans for a summit on agroecology to take place in Missouri in May 2023. At the time, the Summit website stated that “The primary goal of the meeting is to elevate agroecology in the USDA

National Institute of Food and Agriculture’s (NIFA) portfolio and ultimately increase the quality and quantity of public funding available for agroecology research.” Although this goal was later edited, the U.S. Agroecology Summit 2023 was partially funded by USDA NIFA.

As members of the global peasant movement La Via Campesina, and as supporters, promoters, and practitioners of the principles of agroecology, we recognize the dangers of involving the U.S. Department of Agriculture (USDA) in our growing but fragmented movement, especially through funds allocated by the USDA for research into agroecology.

Here in the United States, it is our responsibility to ourselves and to peasants around the world to insist that any research, promotion, or discussion of agroecology be grounded in food sover-

^a Mollie Wills, Director of Grassroots Organizing, Rural Vermont, Montpelier, Vermont, USA.

^b J. Antonio Tovar-Aguilar, Research Associate, Farmworker Association of Florida, USA;  <https://orcid.org/0000-0002-1462-3220>; tonytoovar@hotmail.com

^{c*} *Corresponding author:* Patti Naylor, President of the Board, Family Farm Defenders, Madison, Wisconsin, USA;  <https://orcid.org/0009-0009-4295-2521>; edwardsonp0625@gmail.com

eignty, feminism, Indigenous knowledges, and biodiversity, and to defend its fierce demand to end imperialism, capitalism, patriarchy, neoliberal market-based economies, free trade, false climate solutions, and corporate control of globalized food systems and resources.

Millions of people around the world, including farmers, peasants, fishers, workers, and consumers, have identified food sovereignty based on agroecological systems as the only path toward a future that respects their contribution to society, affords them dignified livelihoods, and ensures us all the ability to live in harmony with Mother Nature.

Peasants pursue agroecology on the ground and in their territories as resistance and struggle against the injustices and inequalities of the capitalist system. As such, agroecology inspires practical, action-oriented means of countering these injustices through a social/political component that educates people on the why and how we have the agriculture system we have today and why it must be transformed. In order to make a real difference, we have to establish agroecological systems worldwide that protect biodiversity, traditional seeds, and culturally specific foods while also combatting climate change. Agroecology practices and principles are shared in a horizontal manner, peasant to peasant, rather than top-down, and respect for collective rights, recognition of commons, and advocacy for agrarian reforms. At La Via Campesina's 8th International Conference in Bogota, Colombia, in December 2023, hundreds of peasants and farmers gathered under the theme "Faced with global crises, we build food sovereignty to ensure a future for humanity!"

We know that agroecology must be viewed as a political goal first and foremost. In a letter, we called on the organizers and participants of the Agroecology Summit to recognize that this political aspect must not be erased or ignored, but instead must be the basis of any discussion on agroecology, and that producers and practitioners should be leading the research agenda. We insist that any USDA involvement will be an obstacle to these demands. The exploitative, extractive, and unecological agribusiness model that is supported by policies of the United States government does not allow for coexistence with genuine agroecology and

food sovereignty. The danger of USDA involvement is of co-optation, a watering-down of the principles of agroecology, a corporate-friendly definition of agroecology based only on a few practices and technologies, and a token pittance of funding to appease critics of the U.S.'s dominant yet unsustainable agriculture system.

The USDA and the U.S. government in general—independent of which party has the current majority—have continuously and repeatedly undermined efforts to advance agroecology and food sovereignty at the local, national, and international level and to transform our agriculture system in the radical and revolutionary way that is desperately needed and called for by La Via Campesina and other social movements.

In fact, the global movement for agroecology and food sovereignty is a direct challenge to the policies of the U.S. government and to agribusiness. It is our view that the USDA cannot uplift agroecology in its authentic form given that the political position of agroecology would render the USDA obsolete. Thus, it is not a trustworthy partner in any proposal or funding of initiatives to support agroecology.

Some recent examples of U.S. government positions that exemplify this contradiction include:

- Support of the anti-democratic and corporately controlled process of the United Nations Food System Summit in 2021.
- Support of climate-false solutions, including climate-smart agriculture, carbon markets, CO₂ pipelines, and the all-out advancement of genetically engineered plants and animals. Technologies are touted as solutions to problems that were created by corporate technologies, instead of recognizing that these are social-political-economic problems.
- Opposition to other nations' governments in their efforts to build food sovereignty for their people. These include Mexico's demand to stop GMO corn imports; India's demand to ensure a rice supply management program; Puerto Rico's demand to abolish the Jones Act; and the global demands to end the decades-long Cuban embargo.

- Opposition to the UN Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP), a United Nations resolution adopted in 2019 with 121 member states in support (“United Nations Declaration on the Rights of Peasants,” 2019).

Furthermore, if the world is to enjoy the benefits of agroecology as the foundation of its agriculture, economic as well as social, cultural, and environmental aspects must be addressed. There must be laws—national and international—ensuring economic justice for farmers and peasants. As long as prices are determined by supply and demand in a global market, this will not be the case. The courageous Indian farmer protesters in 2020–2021, many of whom are LVC members, were fighting for their survival and demanding the return of minimum support prices. Democratic governance must include programs to support the prices of what farmers and peasants produce. Such policies will include actual price supports at parity levels (not government subsidies), public food reserves, supply management, and import controls. Contrary to the public narrative, we cannot rely solely on individual farmers to change their practices or establish sound crop rotations without these protections.

Reference

United Nations Declaration on the Rights of Peasants. (2019, January 21).

https://defendingpeasantsrights.org/wp-content/uploads/2023/09/A_RES_73_165_English.pdf

With this economic foundation, further agroecological reforms like land tenure and reparations can be realized. The policies and regulations of the USDA—and the World Trade Organization—that rely on free markets and defend the status quo do not support these reforms.

As we stated in our letter to the Summit organizers, our intent was not to diminish the good intention and dedicated work that many conscientious researchers are doing to advance agroecological processes in the U.S., including many who organized or participated in the conference, and we understand the limitations they face to access public funding for their work. Food sovereignty is not a source of endless capitalistic function. Academics who have embraced agroecology and food sovereignty too often cannot finance their important work. While we deeply criticized this engagement with the USDA, our hope is that this process will generate positive outcomes for our academic partners’ continued efforts and encourage them to partner with grassroots movements. After all, agroecology and food sovereignty advocates around the world embrace scientific research that begins with their needs and that respects and reinforces their struggle against exploitative, extractive industrial agriculture. 

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Finding synergies between agroecology and industrial ecology toward sustainable agricultural systems

Christine Costello *

The Pennsylvania State University

Submitted February 29, 2024 / Published online May 9, 2024 / Format updated June 4, 2024

Citation: Costello, C. (2024). Finding synergies between agroecology and industrial ecology toward sustainable agricultural systems [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 23–26. <https://doi.org/10.5304/jafscd.2024.133.010>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

The question of how humans will co-create better food and agricultural systems is extremely complex, and responses vary significantly due to experiences, worldviews, and values. Those of us working on this question typically agree that the goal is to realize systems that are equitable, just, minimize harm to, and ultimately support healthy ecosystems for current and future generations. I will refer to this goal as sustainability. My training

is in industrial ecology and civil and environmental engineering, and my professional research focuses on questions of the climate and nutrient impacts associated with agriculture and food products as they are in our time, i.e., dominated by commodity crops. I was introduced to agroecology about 15 years ago while looking into ways to reduce nutrient runoff and improve soil and ecosystems, such as alternative cropping systems, integrated farming practices, permaculture, and more. Eventually, I learned of agroecology as a science, movement, and practice, which increased my interest to learn more. Both industrial ecology and agroecology, and the many branches within them, earnestly pursue facets of sustainability in agriculture, food, and other bio-based systems, and collaboration could lead to synergistic efforts.

Industrial ecology is a relatively new field with no singular definition, initially stemming from engi-

* Christine Costello, Assistant Professor, Agricultural and Biological Engineering, and Research Associate, Rock Ethics Institute, The Pennsylvania State University; 201 Agricultural Engineering Building; University Park, PA 16803 USA;  <https://orcid.org/0000-0002-2121-6930>; chriscostello@psu.edu

Funding Disclosure

This work is supported by USDA HATCH AES project 4877, accession number 7005719, and USDA NIFA award 2023-68016-40134.

neering and economics. One succinct definition is a “systems-based, multidisciplinary discourse that seeks to understand emergent behavior of complex integrated human/natural systems” (Allenby, 2006, p. 33). Industrial ecology’s beginning is associated with the hypothesis that ecosystems serve as the best models for how human-made systems can be made more sustainable. One example is the observation that in ecosystems, materials and energy are cycled among multiple species at intertwined scales, enabling waste from one community to be used by another (Gallopoulos & Frosch, 1989). Thus, one major focus in industrial ecology research is on how materials flow from the earth (e.g., minerals, water), through human systems (e.g., manufacturing operations, cities), and ultimately back to earth systems, with the goals of minimizing waste and supporting human well-being. Industrial ecology methods associate material and energy flows to goods and services produced and consumed by humans and the resulting environmental impacts. There is a recognition in industrial ecology that humans and our cultures and values and resulting institutions, policies, and markets, drive the use and management of materials and energy, as well as what is produced, consumed, or wasted (Clift & Druckman, 2016). Understanding and mathematically relating production, consumption, and impact enables the analysis of how an intervention may contribute to an overall goal, such as reducing the risk of hypoxia in a waterbody. Reactive nitrogen applied to soil used for agriculture is the leading cause of hypoxia in coastal waterbodies. Industrial ecologists relate the reactive nitrogen applied to land to the harvested crop, resulting in a metric, e.g., grams of nitrogen per kilogram of crop. The creation of these per-unit metrics is the core idea of life cycle assessment (LCA).

LCA is a method that aims to account for the risk of impacts introduced across the entire supply chain of a good or service—that is from mining or harvesting of materials, manufacturing, use, and disposal—in order to avoid moving burdens from one area to another. LCA has long promoted the representation of multiple facets of sustainability when considering options among alternatives. There has been active work on developing methods to include social metrics within LCA for many

years (United Nations Environment Programme [UNEP], 2009, 2020). However, environmental metrics are the most actively researched. In all cases, the goal is to use science-driven metrics to account for materials and energy use and relate them to impact, with a preference for quantitative metrics; for example, relating greenhouse gas (GHG) emissions to the risk of climate change as a function of the relative warming potential of each GHG. LCA methodology has gained attention due to being specified in regulations, policy, and market incentives to calculate carbon intensity scores (California Air Resources Board [CARB], 2023; Energy Independence and Security Act [EISA], 2007).

There are four steps in an LCA. The first is the “goal and scope,” a critical step that ideally involves clarifying perspectives on what it would mean to achieve sustainability in a specified system and what metrics will be used to assess movement toward or away from the goal. The system’s functional unit is also defined in this step, which captures the function(s) of the product, process, service, or system and serves as the quantitative unit of reference for analysis, e.g., one ton of dry switchgrass. The inclusion of agroecology perspectives during this stage is critical for the best representation of novel management options, as well as to aid in addressing questions related to food sovereignty, shifts in socio-political relations, or variations on economic systems. Historically and currently, there has been a lack of full inclusion of all relevant voices in LCA research and the formalized metrics used in incentive programs, although there are examples of efforts to develop participatory approaches in LCA (Rouault et al., 2019) and much to be learned from social scientists and agroecologists.

The second step in LCA methodology is to create a life cycle inventory of materials and energy flows within the system to be analyzed. This is time-consuming and involves site-specific data collection, informed estimation, and the use of databases that capture upstream common processes like mining or power generation. There is great need to better understand the nuanced changes in biogeochemistry that, for example, result in nutrient pollution and GHG emissions from agricultural management options recommended by agroecolog-

ical research. The GHG emissions from agricultural soils, livestock, and manure management are often estimated using country-specific multipliers from the Intergovernmental Panel on Climate Change, which do not capture geographic nor practice-specific variability.

The third step is life cycle impact assessment. This step uses established methods for approximating the relative risk of substances identified in the inventory in relation to a particular impact category, e.g., climate change or eutrophication potential (Bare et al., 2002). Impact assessment values are updated given new science and analytical methods. There is great need to improve impact assessment methods for application in agricultural and food systems, particularly for nondominant practices. A few important areas currently under scrutiny are the estimation of location-specific GHGs, notably nitrous oxide (Basche et al., 2014; Gaillard et al., 2018), nutrient pollution due to agricultural systems (Henderson et al., 2021), and how to represent the potential benefits of regenerative practices (Schulte et al., 2022). The final step is the interpretation of results in relation to the goal and scope. Typically, there is not a single option that performs best across all impacts. Thus, LCA makes explicit the tradeoffs among choices and provides a framework within which to deliberate and negotiate toward improvements in as many areas as possible.

While LCA, and derivatives like carbon accounting, can be very useful, there are risks of oversimplification and valuation of efficiency, particularly in agricultural systems (Berardy et al., 2020; International Panel of Experts on Sustainable Food Systems [IPES-Food], 2022). Oversimplification can arise from the lack of sufficient perspectives on what makes a system sustainable or the lack of a mechanism to value those perspectives in markets. On the quantitative side, oversimplification can occur due to assumptions embedded in LCA methods, e.g., simple representations of emis-

sions. There is also a danger of focusing on the efficiency of an individual operation rather than systemwide impacts (Algren et al., 2021; Hill, 2022) or singularly focusing on carbon accounting (IDS & IPES-Food, 2022).

As industrial ecologists turn their attention and methods to agricultural and food systems, there is a need to integrate knowledge from agroecology. There are many frameworks for defining agroecology; most include a robust consideration of biophysical, social, and relational principles central to defining a sustainable food system (Wezel et al., 2009). Industrial ecology could improve the capacity to provide analysis that communicates systemwide benefits, given agroecologists' knowledge of the details of diverse and integrated cropping and livestock systems, and of the social and economic arrangements required to support these systems. To realize the promise of truly sustainable systems requires understanding them from the atomic and microbial level to field, watershed, and even global scales.

Envisioning future food systems is for all people to participate in along with farmers, growers, herders, and others who tend to plants and animals. Agroecologists and industrial ecologists can engage with these stakeholders to envision and evaluate options for realizing ever-improving and sustainable agriculture and food systems. However, working with communities and researchers outside of one's own field of expertise is challenging and sometimes contentious. My observation from working in multidisciplinary teams and communities is that these areas of contention are where the effort toward shared understanding is most needed while being the most difficult aspect of a research project. The Agroecology Summit was a rare moment in my professional experience where I felt that tangible efforts were made to address contention across people with different foundations and a shared vision. I look forward to crossing paths more frequently.



References

- Algren, M., Landis, A. E., & Costello, C. (2021). Estimating virtual nitrogen inputs to integrated U.S. corn ethanol and animal food systems. *Environmental Science & Technology*, 55(12), 8393–8400. <https://doi.org/10.1021/acs.est.1c02208>
- Allenby, B. (2006). The ontologies of industrial ecology? *Progress in Industrial Ecology, An International Journal*, 3(1–2), 28–40. <https://doi.org/10.1504/PIE.2006.010039>

- Basche, A., Miguez, F. E., Kaspar, T. C., & Castellano, M. J. (2014). Do cover crops increase or decrease nitrous oxide emissions? A meta-analysis. *Journal of Soil and Water Conservation*, 69(6), 471-482. <https://doi.org/10.2489/jswc.69.6.471>
- Berardy, A., Seager, T., Costello, C., & Wharton, C. (2020). Considering the role of life cycle analysis in holistic food systems research policy and practice. *Journal of Agriculture, Food Systems, and Community Development*, 9(4), 209–227. <https://doi.org/10.5304/jafscd.2020.094.009>
- California Air Resources Board (CARB). (2023). *LCFS pathway certified carbon intensities*. CA.GOV. <https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities>
- Clift, R., & Druckman, A. (2016). *Taking Stock of Industrial Ecology*. Springer Cham. <https://doi.org/10.1007/978-3-319-20571-7>
- Energy Independence and Security Act (EISA), Pub. L. 110-140 § 2, (2007). <https://www.govinfo.gov/content/pkg/BILLS-110hr6enr/pdf/BILLS-110hr6enr.pdf>
- Gaillard, R. K., Jones, C. D., Ingraham, P., Collier, S., Izaurralde, R. C., Jokela, W., Osterholz, W., Salas, W., Vadas, P., & Ruark, M. D. (2018). Underestimation of N₂O emissions in a comparison of the DayCent, DNDC, and EPIC models. *Ecological Applications*, 28(3), 694–708. <https://doi.org/10.1002/eap.1674>
- Gallopoulos, N., & Frosch, R. (1989, September). Strategies for manufacturing: Wastes from one industrial process can serve as raw materials for another, thereby reducing the impact of industry on the environment. *Scientific American*, 261(3), 144. <https://doi.org/10.1038/scientificamerican0989-144>
- Henderson, A. D., Niblick, B., Golden, H. E., & Bare, J. C. (2021). Modeling spatially resolved characterization factors for eutrophication potential in life cycle assessment. *The International Journal of Life Cycle Assessment*, 26, 1832–1846. <https://doi.org/10.1007/s11367-021-01956-4>
- Hill, J. (2022). The sobering truth about corn ethanol. *Proceedings of the National Academy of Sciences*, 119(11), Article e2200997119. <https://doi.org/10.1073/pnas.2200997119>
- International Panel of Experts on Sustainable Food Systems [IPES-Food]. (2022). *Smoke and mirrors: Examining competing framings of food system sustainability: Agroecology, regenerative agriculture, and nature-based solutions*. https://ipes-food.org/_img/upload/files/SmokeAndMirrors.pdf
- Rouault, A., Perrin, A., Renaud-Gentié, C., Julien, S., & Jourjon, F. (2020). Using LCA in participatory eco-design approach in agriculture: The example of vineyard management. *The International Journal of Life Cycle Assessment*, 25(7), 1368-1383. <https://doi.org/10.1007/s11367-019-01684-w>
- Schulte, L. A., Dale, B. E., Bozzetto, S., Liebman, M., Souza, G. M., Haddad, N., Richard, T. L., Basso, B., Brown, R. C., Hilbert, J. A., & Arbuckle, J. G. (2022). Meeting global challenges with regenerative agriculture producing food and energy. *Nature Sustainability*, 5(5), 384–388. <https://doi.org/10.1038/s41893-021-00827-y>
- United Nations Environment Programme [UNEP]. (2009). *Guidelines for social life cycle assessment of products*. <https://www.unep.org/resources/report/guidelines-social-life-cycle-assessment-products>
- UNEP. (2020). *Guidelines for social life cycle assessment of products and organisations 2020*. <https://wedocs.unep.org/20.500.11822/34554>
- Wezel, A., Bellon, S., Doré, T., Francis, C., Vallod, D., & David, C. (2009). Agroecology as a science, a movement and a practice. A review. *Agronomy for Sustainable Development*, 29(4), 503–515. Scopus. <https://doi.org/10.1051/agro/2009004>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Reflections on research agendas in agroecology: In search of a practical guide

Ivette Perfecto^{a*} and John Vandermeer^b
University of Michigan

Submitted February 1, 2024 / Published online April 12, 2024 / Format updated June 4, 2024

Citation: Perfecto, I., & Vandermeer, J. (2024). Reflections on research agendas in agroecology: In search of a practical guide [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 27–33. <https://doi.org/10.5304/jafscd.2024.133.006>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Dismantling the Capitalist Industrial Food System Should Be a Priority

Food systems are crucial to the stability of our planet's ecosystems and the future of humanity. The industrial capitalist global food system has generated multiple crises that pose a significant threat to the future of our planet. The environmental, health, and social impacts of this system of agriculture are multifaceted and well-documented. Pesticides poison us and destroy the world's biodiversity (Ali et al., 2020; Beaumelle et al., 2023; Beketov et al., 2013; Kumar et al., 2023). Pesticides and fertilizer runoff pollute our water and create dead zones (Craswell, 2021, Diaz & Rosenberg, 2008). Greenhouse gas emissions from the global food

system contribute up to a third of total global emissions (Crippa et al., 2020). Land concentration and land grabbing condemn millions to poverty (DeShutter, 2011). Food insecurity persists even as food production continues to increase (Long et al., 2020; Müller et al., 2021). Not only is our current agri-food system environmentally and socially damaging, but it is also extremely cost-inefficient. Diet-related health problems, for example, overburden global public health systems and affect workers' productivity, costing an estimated 9 trillion dollars annually (Food and Agriculture Organization [FAO], 2023).

These well-documented impacts suggest that continuing business as usual is not an option. What is needed urgently is the transformation of the global industrial food system. This requires a divestment from, and dismantling of, the industrial food system and an investment strategy that prioritizes sustainable and equitable food production practices. Developing alternative systems that operate at the margins of an ever-expanding industrial capitalist system is not a viable solution. It is evident that in order to achieve the transformation of

^{a*} Corresponding author: Ivette Perfecto, School for Environment and Sustainability, University of Michigan, Ann Arbor, Michigan, USA;  <https://orcid.org/0000-0003-1749-7191>; perfecto@umich.edu

^b John Vandermeer, Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, Michigan, USA;  <https://orcid.org/0000-0002-3366-4343>; jvander@umich.edu

our agri-food system into a just and sustainable one, it is essential to simultaneously disassemble the agro-industrial system responsible for the social, economic, and environmental crises we are facing today, while building sustainable and just alternatives in its place. Today, the largest 1% of farms (>50 ha.) in the world control more than 70% of the farmland (Lowder et al., 2021), and these tend to be managed in a conventional way (monocultures with high agrochemical inputs). Additionally, intensive commodity production continues to expand (Estrada et al., 2019; Meyfroidt et al., 2014). Merely strengthening agroecology and promoting diverse agroecological systems on a small percent of the land not controlled by large farms will not be sufficient to solve these crises. Therefore, the focus should be on a complete transformation of the agri-food system, including land redistribution, rather than just constructing alternative systems that will perform parallel to the agro-industrial ones.

For an effective and truly transformative change, we need to clearly articulate what the old system should be replaced with. Agroecology is emerging as a strong alternative to the discredited industrial agricultural system, and it is gaining recognition from grassroots movements like La Via Campesina to international establishment institutions like the United Nations Food and Agriculture Organization (FAO). However, there are still social, political, and technical barriers that need to be better understood for a full implementation of agroecology. We need to combine our knowledge of basic ecology, local and traditional practices, and socio-political analyses to pave the way forward to complete transformation.

The Quest for Profits and Control

In order to advance agroecology, we must first acknowledge the two primary factors that anchor current agricultural research in the U.S. These factors are the pursuit of profit by the agro-industrial corporate sector and their quest for social and market control. This has been the case for more than 70 years, as Levins and Lewontin (1987) previously elaborated in *The Dialectical Biologist*, and it continues to hold true today, with even higher profits and expanded control (Lloyd et al., 2024 [in this Special

Issue]; Murphy, 2008). Agroecology can provide the autonomy that farmers need to resist this new form of empire (Holt-Giménez et al., 2021; Van der Ploeg, 2021).

There are many factors that impede the necessary transformation, among them political will and power imbalances. Another factor receiving inadequate attention is system lock-ins—the incentives, policies, and structures that set farmers on a particular trajectory from which it is difficult to diverge. Hence, farmers' needs are determined by the system of production in which they are trapped. Thus, the farmer becomes the agent by which the providers of inputs and the purchasers of outputs benefit from the socialized (and frequently publicly funded) establishment of research. In that way, public agricultural research, indirectly but significantly, serves the needs of capital through the evident goal of responding to the needs of farmers. In fact, the research establishment has been effectively captured for capital accumulation, and this is why only a small fraction of what consumers pay in the supermarket goes to the farmers and farmworkers that produce that food.

Agroecology offers both a vision for the future and a practical way for farmers to regain their lost autonomy and become less dependent on market forces that are beyond their control (Lucas et al., 2016). However, as an intellectual field and actual practice, there are gaps in our knowledge. Even though we can easily apply many agroecological practices that have been verified both socio-politically and ecologically, many others remain only “rules of thumb” and require a more comprehensive understanding. This framework cries out for an expanded research agenda in agroecology.

What Questions Should Drive the Direction of Research in Agroecology in the U.S.?

There are six general areas of research we propose should receive special attention: (1) documentation and understanding of current agroecological systems that work well; (2) climate change adaptation and mitigation; (3) multifunctionality of agroecological systems; (4) complexity of agroecosystems; (5) the intersection of biodiversity and agriculture, and (6) the ecology, management, and preparation of orphan crops.

First, we need to document current examples of agroecological systems that are working well from a productive, ecological, social, and economic perspective, and conduct research to understand these systems. In contrast to the reductionist approach that effectively seeks to solve problems after they emerge, agroecological research should ask, “When a system is working well, what are the characteristics that drive it to do so?” These are the systems that could serve as examples for the scaling out of agroecology (Gascuel-Oudoux et al., 2022), yet to do so requires a knowledge of precisely why they are working. Expansion of those successful examples needs to be grounded in concrete knowledge if we are to adapt them to new circumstances and environments. This line of research will require more on-farm research and participatory action research, as well as strengthening a farmer-to-farmer methodology that will facilitate the scaling-out, or massification, of agroecology (Mier y Teran Giménez Cacho et al., 2018; Nicholls & Altieri, 2018).

Second, in the face of evident problems posed by climate change, we need research into the factors and conditions that confer socio-ecological resilience to small- and medium-scale agroecological farms, especially as related to expected new climate regimes (Altieri et al., 2015; Amoak et al., 2022). Likewise, we need more research on how agroecological production can contribute to the reduction of greenhouse gas emissions (Nair, 2012). In these efforts, a deeper understanding of the carbon cycle, the role of microorganisms, and biochemical processes in soils and plants in sequestering and releasing carbon is essential. Likewise, we need a better understanding of how agroecological practices, such as cover crops and intercropping with N-fixing legumes, affect the nitrogen cycle and, more specifically, how these practices can reduce nitrous oxide emissions. This line of research will require the integration of crop and soil ecologists, climate modelers, and social scientists working together in a transdisciplinary fashion.

Third, we need research on the multifunctionality of agroecological systems. We need to better understand the mechanisms that generate synergies and tradeoffs among ecosystem services, as well as socio-economic and political benefits of diverse

agroecological systems, to design multifunctional systems. Agroecological planning should have multiple goals, not just productivity. Conventional agricultural research agencies funnel millions of dollars each year into research on how to increase yields of a few crops grown in monocultures. For a true agroecological transformation, more research should be devoted to other benefits of agriculture and yields of multiple crops grown together. We need to redesign agricultural systems all the way up to the global food system (Mason et al., 2021). Intellectually, this requires the integration of diverse kinds of knowledge and a recognition of the inseparability of the natural and the social fields.

Fourth, it is important to recognize that nature is complex, and therefore, any intervention in the rich network of interacting variables is likely to have many indirect and unexpected consequences—there is an inevitability of surprise. The magic bullet, “one problem-one solution” approach should be abandoned. Rather, seeking an understanding of the agroecosystem as a complex system, a challenging goal to be sure, should be a guiding principle. This will require the application of complexity science, including complex adaptive systems, chaos, critical transitions, multidimensionality, and other complexity topics applied to the analysis of agroecosystems and food systems more generally (Vandermeer & Perfecto, 2017).

Fifth, we need to understand the role of biodiversity in agroecological systems. This research area is related to all the previously discussed research foci. Industrial agriculture is the main driver of biodiversity loss. To reverse that trend, we need to design diverse farming systems that maintain biodiversity at local and landscape levels. In this context, farm diversification through genetic diversity, intercropping, and agroforestry is essential. Despite some popular misconceptions, our understanding of the ecology of diverse farming systems remains underdeveloped. How can we encourage synergies and discourage tradeoffs among various crops? How do nonlinearities in crop-to-crop competition affect production, promote long-term sustainability, and protect against pathogens? A host of such issues are incompletely understood. We also need to better understand the influence of landscape-

level diversity on local farms, as well as the role of the agroecological matrix on the conservation of biodiversity at the landscape level (Perfecto et al., 2019). It is important to recognize and understand biodiversity's role in the productivity and sustainability of agricultural systems. As part of increasing agrobiodiversity, we need to better understand processes of seed conservation and dissemination. Furthermore, complicated issues involved with the genetic basis of crop improvement need to be better understood, if for no other reason than to challenge some of the standard narratives about crop improvement.

Although a fair amount of ecological research has been devoted to biodiversity and ecosystem function, the mechanisms of how biodiversity affects ecosystem function and ecosystem services in agricultural systems have eluded us. A better mechanistic understanding is essential to harness the agricultural benefits of biodiversity, especially in the context of supporting farmers' autonomy from the market forces that keep extracting the fruits of their labor.

Finally, when thinking about farm diversification, we must also pay more attention to the ecology, management, and preparation of the so-called "orphan" or "minor" crops. These crops have received little attention from the agricultural establishment because they do not play a major role in international trade. However, such crops tend to play major roles in regional food security and can have great potential for adaptation to climate change and other extreme conditions (Tadele, 2019; Talabi et al., 2022). Many of these crops have significant nutritional and cultural value, but the traditional knowledge related to their cultivation and preparation is being lost.

Knowledge Gaps for the Implementation of Agroecology

We need to focus on transformation processes within restricted localities: How do we move from the local conventional to locally adapted agroecological systems? The social sciences are clearly important in this applied question. What local impediments do farmers face when attempting to adopt agroecological techniques? The obstacles and difficulties in adopting agroecology vary greatly de-

pending on the specific local context. Therefore, there is no one-size-fits-all solution. However, gaining a deeper understanding of the local conditions, including environmental, economic, cultural, social, and political factors, can significantly help to overcome the barriers farmers may face when implementing agroecology.

There is also a need to understand justice and equity issues related to agroecological transformations, a central socio-political agenda item. In this context, gender plays a major role, as it has been shown to intersect with almost all other forms of inequity (Mora & Muro, 2018). As Rachel Bezner-Kerr and colleagues (2019) have shown for Malawi, feminist concepts of intersectionality and participatory praxis are essential for agroecological transformation and for mobilizing agroecology to promote and protect food sovereignty. Other studies have shown that improved gender equity can result in improved nutritional outcomes, higher use of agri-biodiversity, and other aspects of agroecology (Anderson et al., 2019). Therefore, a research agenda for the transformation of agriculture would be incomplete without a strong gender focus.

We must understand the scalability of agroecology. What is the appropriate planning scale (both ecological and social) for agroecology given different circumstances? Are there essential contradictions between ecological and socio-political referents regarding scale? With respect to diversification (within fields, farms, and landscapes), how do we manage agroecological systems? In particular, the management of intercropping, crop rotations, agroforestry systems, biological control with multiple agents, and soil dynamics and conservation at different scales. These are all things that extant agroecological systems have grappled with and for which at least partial solutions have been found. That is why a strong farmer-to-farmer approach is essential for the transformation process and the scaling-up and scaling-out of agroecology. More than a landscape or regional approach, we need a territorial approach, not restricted to biophysical factors, but incorporating essential social, cultural, and political factors, which is what "the territory" implies (Wezel et al., 2016).

As we envision more small- and medium-scale diversified farms replacing large-scale ones, we

need to consider appropriate technologies. Suitable mechanization technologies and agricultural equipment adapted specifically for agroecological systems should be a focus of research, since easing the work of farmers can address an important barrier for the implementation of agroecology. However, this research needs to be carried out with farmers leading the way. Initiatives of farmer-designers have already proven to be successful at innovations of farm equipment appropriate for agroecology (Salembier et al., 2020). Here, we need to acknowledge and study the obvious benefit for renewable energy use in the small-scale sector (e.g., solar tractors work better on small farms with small tractors). Additionally, we need to harness communication technology to strengthen local and regional food distribution systems.

Conclusion

In all of the above, we must remember that agroecology, in principle, seeks to employ “**gentle, thought-intensive technologies**” rather than a nature-dominating capital and fossil fuel intensiveness. An overall practical guide to such an agenda is to reduce off-farm inputs, harness biodiversity,

and let nature work for the farmer. But for that, we need to understand the ecology of the system, a goal that cries out for ecological research as well as the adoption of local, traditional, and indigenous knowledge, and participatory action research. More than anything, we need to promote the interpenetration of traditional knowledges with scientific knowledges.

More research is needed to clarify the path to a sustainable agroecological system. However, the transformation can't wait for complete knowledge since completeness is illusory in agroecosystems, as in all other systems in which knowledge translates into practice. With each advance in knowledge comes a realization that yet further knowledge is lacking. Understanding this truth need not paralyze the practitioner. Taking a cue from traditional farmers, in the face of incomplete knowledge, there are nevertheless “rules of thumb” that anchor the agroecological practices that are already in place. Respecting those rules is essential. Yet, seeking deeper understanding should be part and parcel of an overall research agenda (Vandermeer & Perfecto, 2024).



References

- Ali, S., Ullah, M.I., Sajjad, A., Shakeel, Q., & Hussain, A. Environmental and health effects of pesticide residues. In I. M. I. Ahamed & E. Lichtfouse (Eds.), *Sustainable Agriculture Reviews 48* (pp. 311–336). Springer.
https://doi.org/10.1007/978-3-030-54719-6_8
- Altieri, M.A., Nicholls, C.I., Henao, A. & Lana, M.A. 2015. Agroecology and the design of climate change-resilient farming systems. *Agronomy for Sustainable Development*, 35(3), 869–890. <https://doi.org/10.1007/s13593-015-0285-2>
- Amoak, D., Luginaah, I., & McBean, G. (2022). Climate change, food security, and health: Harnessing Agroecology to build climate-resilient communities. *Sustainability*, 14(21), Article 13954. <https://doi.org/10.3390/su142113954>
- Anderson, C. R., Bruil, J., Chappell, M. J., Kiss, C., & Pimbert, M. P. (2019). From transition to domains of transformation: Getting to sustainable and just food systems through agroecology. *Sustainability*, 11(19), Article 5272. <https://doi.org/10.3390/su11195272>
- Beaumelle, L., Tison, L., Eisenhauer, N., Hines, J., Malladi, S., Pelosi, C., Thouvenot, L., & Phillips, H. R. (2023). Pesticide effects on soil fauna communities—A meta-analysis. *Journal of Applied Ecology*, 60(7), 1239–1253.
<https://doi.org/10.1111/1365-2664.14437>
- Beketov, M. A., Kefford, B. J., Schäfer, R. B., & Liess, M. (2013). Pesticides reduce regional biodiversity of stream invertebrates. *Proceedings of the National Academy of Sciences*, 110(27), 11039–11043.
<https://doi.org/10.1073/pnas.1305618110>
- Bezner Kerr, R., Hickey, C., Lupafya, E., & Dakishoni, L. (2019). Repairing rifts or reproducing inequalities? Agroecology, food sovereignty, and gender justice in Malawi. *The Journal of Peasant Studies*, 46(7), 1499–1518.
<https://doi.org/10.1080/03066150.2018.1547897>
- Bijay-Singh & Craswell, E. (2021). Fertilizers and nitrate pollution of surface and ground water: An increasingly pervasive global problem. *SN Applied Sciences*, 3(4), Article 518. <https://doi.org/10.1007/s42452-021-04521-8>

- Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2(3), 198–209. <https://doi.org/10.1038/s43016-021-00225-9>
- De Schutter, O. (2011). How not to think of land-grabbing: Three critiques of large-scale investments in farmland. *The Journal of Peasant Studies*, 38(2), 249–279. <https://doi.org/10.1080/03066150.2011.559008>
- Diaz, R. J., & Rosenberg, R. (2008). Spreading dead zones and consequences for marine ecosystems. *Science*, 321(5891), 926–929. <https://doi.org/10.1126/science.1156401>
- Estrada, A., Garber, P. A., & Chaudhary, A. (2019). Expanding global commodities trade and consumption place the world's primates at risk of extinction. *PeerJ*, 7, Article e7068. <https://doi.org/10.7717/peerj.7068>
- Food and Agriculture Organization (FAO). (2023). *The State of Food and Agriculture 2023: Revealing the true cost of food to transform agrifood systems*. <https://doi.org/10.4060/cc7724en>
- Gascuel-Odoux, C., Lescourret, F., Dedieu, B., Detang-Dessendre, C., Faverdin, P., Hazard, L., Litrico-Chiarelli, I., Petit, S., Roques, L., Reboud, X., Tixier-Boichard, M., de Vries, H., & Caquet, T. (2022). A research agenda for scaling up agroecology in European countries. *Agronomy for Sustainable Development*, 42(3), Article 53. <https://doi.org/10.1007/s13593-022-00786-4>
- Holt-Giménez, E., Shattuck, A., & Van Lammeren, I. (2021). Thresholds of resistance: Agroecology, resilience and the agrarian question. *The Journal of Peasant Studies*, 48(4), 715–733. <https://doi.org/10.1080/03066150.2020.1847090>
- Kumar, P., Kumar, R., Thakur, K., Mahajan, D., Brar, B., Sharma, D., Kumar, S., & Sharma, A. K. (2023). Impact of pesticides application on aquatic ecosystem and biodiversity: A review. *Biology Bulletin*, 50(6), 1362–1375. <https://doi.org/10.1134/S1062359023601386>
- Levins, R., & Lewontin, R. (1987). *The dialectical biologist*. Harvard University Press.
- Long, M. A., Gonçalves, L., Stretesky, P. B., & Defeyter, M. A. (2020). Food insecurity in advanced capitalist nations: A review. *Sustainability*, 12(9), Article 3654. <https://doi.org/10.3390/su12093654>
- Lowder, S. K., Sánchez, M. V., & Bertini, R. (2021). Which farms feed the world and has farmland become more concentrated? *World Development*, 142, Article 105455. <https://doi.org/10.1016/j.worlddev.2021.105455>
- Lucas, V., Gasselin, P., & Van der Ploeg, J. D. (2016, July). Increasing searches for autonomy among French farmers: a starting point for agroecology. In *Proceedings of the 12th European IFSA Symposium*.
- Mason, R. E., White, A., Bucini, G., Anderzén, J., Méndez, V. E., & Merrill, S. C. (2021). The evolving landscape of agroecological research. *Agroecology and Sustainable Food Systems*, 45(4), 551–591. <https://doi.org/10.1080/21683565.2020.1845275>
- Meyfroidt, P., Carlson, K. M., Fagan, M. E., Gutiérrez-Vélez, V. H., Macedo, M. N., Curran, L. M., DeFries, R. S., Dyer, G. A., Gibbs, H. K., Lambin, E. F., Morton, D. C., & Robiglio, V. (2014). Multiple pathways of commodity crop expansion in tropical forest landscapes. *Environmental Research Letters*, 9(7), Article 074012. <https://doi.org/10.1088/1748-9326/9/7/074012>
- Mier y Terán Giménez Cacho, M., Giraldo, O. F., Aldasoro, M., Morales, H., Ferguson, B. G., Rosset, P., Khadse, A., & Campos, C. (2018). Bringing agroecology to scale: Key drivers and emblematic cases. *Agroecology and Sustainable Food Systems*, 42(6), 637–665. <https://doi.org/10.1080/21683565.2018.1443313>
- Mora, A., & Muro, P. D. (2018). Political economies: Inequality and malnutrition. *UNSCN News*, 43, 15–23.
- Müller, M. F., Penny, G., Niles, M. T., Ricciardi, V., Chiarelli, D. D., Davis, K. F., Dell'Angelo, J., D'Odorico, P., Rosa, L., Rulli, M. C., & Mueller, N. D. (2021). Impact of transnational land acquisitions on local food security and dietary diversity. *Proceedings of the National Academy of Sciences*, 118(4), Article e2020535118. <https://doi.org/10.1073/pnas.2020535118>
- Murphy, S. (2008). Globalization and corporate concentration in the food and agriculture sector. *Development*, 51(4), 527–533. <https://doi.org/10.1057/dev.2008.57>
- Nair, P. K. R. (2012). Climate change mitigation: A low-hanging fruit of agroforestry. In P. K. R. Nair & D. Garrity (Eds.), *Agroforestry: The future of global land use* (pp. 31–67). Springer. https://doi.org/10.1007/978-94-007-4676-3_7
- Nicholls, C. I., & Altieri, M. A. (2018). Pathways for the amplification of agroecology. *Agroecology and Sustainable Food Systems*, 42(10), 1170–1193. <https://doi.org/10.1080/21683565.2018.1499578>

- Perfecto, I., Vandermeer, J., & Wright, A. (2019). *Nature's matrix: Linking agriculture, biodiversity conservation and food sovereignty* (2nd ed.). Routledge. <https://doi.org/10.4324/9780429028557>
- Salembier, C., Segrestin, B., Sinoir, N., Templier, J., Weil, B., & Meynard, J. M. (2020). Design of equipment for agroecology: Coupled innovation processes led by farmer-designers. *Agricultural Systems*, 183, Article 102856. <https://doi.org/10.1016/j.agsy.2020.102856>
- Tadele, Z. (2019). Orphan crops: Their importance and the urgency of improvement. *Planta*, 250, 677–694. <https://doi.org/10.1007/s00425-019-03210-6>
- Talabi, A. O., Vikram, P., Thushar, S., Rahman, H., Ahmadzai, H., Nhamo, N., Shahid, M., & Singh, R. K. (2022). Orphan crops: A best fit for dietary enrichment and diversification in highly deteriorated marginal environments. *Frontiers in Plant Science*, 13, Article 839704. <https://doi.org/10.3389/fpls.2022.839704>
- Van Der Ploeg, J. D. (2021). The political economy of agroecology. *The Journal of Peasant Studies*, 48(2), 274–297. <https://doi.org/10.1080/03066150.2020.1725489>
- Vandermeer, J., & Perfecto, I. (2017). Ecological complexity and agroecosystems: Seven themes from theory. *Agroecology and Sustainable Food Systems*, 41(7), 697–722. <https://doi.org/10.1080/21683565.2017.1322166>
- Vandermeer, J., & Perfecto I. (in press). *The dialectical agroecologist*. Cambridge University Press.
- Wezel, A., Brives, H., Casagrande, M., Clement, C., Dufour, A., & Vandenbroucke, P. (2016). Agroecology territories: Places for sustainable agricultural and food systems and biodiversity conservation. *Agroecology and Sustainable Food Systems*, 40(2), 132–144. <https://doi.org/10.1080/21683565.2015.1115799>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Enantiomorphs no more: Indigenous agroecology and the future of food sovereignty: Reflections on the U.S. Agroecology Summit 2023

Devon G. Peña *

University of Washington and The Acequia Institute

Submitted April 4, 2024 / Published online May 9, 2024 / Format updated June 4, 2024

Citation: Peña, D. G. (2024). Enantiomorphs no more: Indigenous agroecology and the future of food sovereignty: Reflections on the U.S. Agroecology Summit 2023 [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 35–38. <https://doi.org/10.5304/jafscd.2024.133.014>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

I was part of a plenary panel on “Bridge Builders” at the 2023 Colorado Food Summit in Denver in December 2023. Echoing a statement I first made at the U.S. Agroecology Summit 2023, I explained how the first “bridge” we are building at The Acequia Institute (TAI) is between Indigenous Knowledge (IK) and so-called Western Science (WS). TAI does this work not to verify and legitimize IK by invoking the presumably more rigorous and mathematical methods and materials of WS. TAI enunciates and practices IK through autonomous place-based food sovereignty initiatives. In this work we have determined how best to inte-

grate the methods and materials of *selected* domains of Western knowledge systems in forms useful for us and the locality. These issues were discussed at the U.S. Agroecology Summit, but in the end they were left largely unresolved. The entire Summit was, as Carmen Cortez and others have rightly observed, plagued by being “Devoid of this spirit of place and people...” (Agroecology Summit ‘Outside Empire’ Subgroup, 2024, p. 2). In my view, it was a gathering fractured by pre-existing and possibly inadvertent and unconscious acts of epistemic violence reminding me of the difference Michael Redclift (1987) observed between top-down environmental managerialism and bottom-up collaborative environmental management.

Continuing dialogue is important in seeking to implement strategies that address the power/knowledge inequities currently constraining the possibilities for a *BIPOC-led* future for agroecology in the U.S. and especially across institutional

* Devon G. Peña, Professor of American Ethnic Studies and Anthropology, Department of Anthropology, University of Washington; and Founder and President, The Acequia Institute; P.O. Box 129; San Luis, CO 81152 USA;
 <https://orcid.org/0000-0002-9903-3763>;
devonpena@gmail.com

spheres that reside and thrive outside academia. This means reconceptualizing the problem as involving much more than an academic struggle worthy of support; it points at a shift in focus toward *agroecology as a community-based asset-building movement* serving the larger goals and objectives of environmental justice and food sovereignty. A “net that works” already exists across a broad range of civil society associations, many of them rhizomatic in their cycles of organization and mobilization. They can be hard to pinpoint, which is both a virtue and a political puzzle.

In building our version of the bridge, at TAI we are disrupting the trap of the position of the “Mirroring Other”—the enantiomorph—a positionality that tortures and disappoints so many of the marginalized and subaltern actants caught inside the legitimization games authored and controlled by someone else’s institutions, the dominant neoliberal capitalist organizations that include academia and certainly most fields of agricultural studies in land-grant and other universities.

Smashing the hegemon’s mirror, we eschew the politics of representation and instead embrace a politics of self-enunciation. Ours is an engagement with a strategy of “epistemic delinking” (Mignolo, 2007) focused on generating and transmitting local place-based knowledge outside and beyond the reductive frames of the dominant forms of scientific inquiry and discourse that reside in academia as a form of coloniality. This focuses our intellectual energy away from discursive game frames structured by dominant settler colonial fields of power/knowledge relations. It moves our focus to the here and now, in this place, and our natural, cultural, and economic assets. We eschew being asked to merely imitate and seek refuge in so-called Western methods and materials and instead seek to participate in the resurgence of place-based institutions of collective action, including those dedicated to the mentoring of the next generation of acequia agroecologists in our bioregion. The university, and university-based agroecologists, can play a positive role, but they are not, strictly speaking, needed for this kind of project whose aim is not purely discursive.

The Acequia Institute focuses on practicing established and evolving place-based epistemes

including all the various fields of Indigenous Ethnoecological Knowledge such as agroecology, ethnobotany, ethnoedaphology, ethnohydrology, etc., each with their traditions of emic-based observation, experimentation, and verification. In our case, this requires a focus on careful study and advocacy on behalf of the contemporary resurgence of the social norms and customs of self-governance that have historically defined the acequia watershed commonwealth communities and our heritage institutions of collective action like mutual aid societies, cooperatives, and informal civic associations directly involved in watershed management through the water democracy of the community irrigation system of acequias. You cannot separate knowledge of agroecology from understanding the sociocultural subsystem within a shifting mosaic of evolving institutional norms, customs, and unavoidable political (which is to say economic) conflicts. Should we teach these methods and materials in the universities? If so, how and by whom? And: Is there any acceptable option for rapprochement other than coeval and well-compensated collaborative-participatory pedagogies led by BIPOC practitioners in which scholars and universities respect Indigenous intellectual properties, as is increasingly the case, for example, with archeology and Native American tribes in an unfolding struggle over sovereignty?

I did not see much progress at the U.S. Agroecology Summit on a comprehensive strategy to address the marginalization of agroecology in academic institutions. This, I believe, is largely a result of the deeper failure by those of us in attendance at the Summit to fully address the nuances involved in the continued marginalization of BIPOC activists, advocates, and practitioners within the circles and access to power and resources enjoyed from the privileged positionality of academic agroecologists.

This privileged positionality further raises a threat for opportunism and self-serving careerism in the “mainstreaming” of Indigenous agroecological knowledge domains, which by the way always have a “spiritual” and therefore ethical dimension. We have witnessed this in the co-optation of environmental justice scholarly research and programmatic funding within academia, which has required

special attention by the EPA and other funding agencies to prioritize so-called underserved populations and community organizations that seldom gain access to the level of resource support awarded to academics. We call for an explicit statement of ethical commitment to *coeval participatory knowledge co-production* by university- and college-based scholars of agroecology and related fields. Seed sovereignty is food sovereignty and knowledge sovereignty.

As practiced on the ground by BIPOC farmers and their community-based organizations, agroecology is primarily focused on work that moves toward the goals and objectives of food sovereignty, which is itself part of the broader roots and branches of the environmental justice movement. As a basic tenet, most BIPOC agroecologists view this as simultaneously an environmental and community health movement, a “dirt-to-gut-and-spirit” movement, as I like to phrase it. Food sovereignty serves the environmental justice goal of health equity.

The extent of positive and non-appropriative involvement by academic agroecologists, therefore, depends precisely on how they can democratically negotiate coeval collaborations with BIPOC farmers and their allied movement organizations, and this will further depend on their professional ethical commitments and the much more challenging process of exposure to “socialization” in the history, philosophy (values), and practices of the environmental justice and food sovereignty movements. This type of discussion got a jumpstart at the Summit but needs further concerted and sustained attention.

The greatest challenge to the future of agroecology as a community asset-building movement is not just the inequitable access to funding sources and capital but the epistemic quandaries born of an organizational academic culture that largely remains white and male. There must be a reckoning about what exactly diversity, equity, and inclusion (DEI) strategies mean since these often serve as perfunctory window-dressing behind which a Euro-masculinist professional cadre remains relatively intact. Academic agroecologists must become community-based and only at the invitation of BIPOC communities. Indigenous agroecologists can assert

a profound pedagogical presence within academia but only if our intellectual property rights and dignity are respected. We are knowledge-praxis experts rather than mere subjects of someone else’s research.

The spiritual dimension of this matter requires the “scientists” among us, at a minimum, to suspend disbelief in the truth claims of the Other. A post-positivist and critical realist reinvention of agroecology must move academics past Westernized (reductively quantitative) scientific norms, and this must also confront the spiritless nature of the dominant scholarly and pedagogical canons and their social rituals (e.g., conferences, symposia, publications). Such a confrontation means we must understand how all knowledge is intersubjective (emergent) and situated (embodied and emplaced), and so we need to rethink the type of training agroecology students receive in institutions of higher education.

Indigenous agroecologists engage “research as ceremony” (Wilson, 2008). Many Indigenous customary practices give meaning to our farm work. We produce heirloom food crops and in doing so also produce meaning of and relation to the world. This requires mindful prayer, ceremonies, and even ritual practices that we use to name our relations and identify and celebrate the sources of agroecological knowledge embedded in a communal spirit of solidarity with ourselves and more-than-human beings. You can call this ethics if you prefer. Spirituality in this sense involves the principle of interconnection, which is familiar enough to all agroecologists. But in our post-Summit context, this also involves recognition of all subjectivities, including those that reside beyond the solely human or the specialized attributes of professional scientists.

In the end, despite land acknowledgments and prayers at the Summit, I believe many of us who are Indigenous left feeling these were an obligatory courtesy and a form of performative allyship. The Summit organization failed to embrace—from the initial planning stages to the actual gathering—a wholistic decolonizing and communal process that would have fostered the coeval sharing of Indigenous Knowledge in a manner that values the deeper spiritual and

political values shaping a movement linking agroecology to the specific goals of food sovereignty: A democratic agri-food system based on self-management through place-based institu-

tions and the mobilization of resources for mutual aid. In other words, a solidarity economy is itself the expression of Indigenous spiritual values of interconnection and reciprocity.



References

- Agroecology Summit 'Outside Empire' Subgroup. (2024). A declaration of commitments toward agroecology pluralities: A critical gaze on the U.S. Agroecology Summit 2023. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 85–98. <https://doi.org/10.5304/jafscd.2024.133.013>
- Mignolo, W. D. (2007). Delinking: The rhetoric of modernity, the logic of coloniality, and the grammar of de-coloniality. *Cultural Studies*, 21(2–3), 449–514. <https://doi.org/10.1080/09502380601162647>
- Redclift, M. (1987). *Sustainable development: Exploring the contradictions*. Routledge.
- Wilson, S. (2008). *Research is ceremony: Indigenous research methods*. Fernwood.

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Agroecology in the belly of the beast: Reflections and contradictions from the U.S. Agroecology Summit 2023

Catherine E. Horner,^{a*} Martha Caswell,^b Colin R. Anderson,^c and V. Ernesto Méndez^d
University of Vermont

Janica Anderzén^e
University of Maine and University of Vermont

Submitted March 6, 2024 / Published online May 28, 2024 / Format updated June 4, 2024

Citation: Horner, C. E., Caswell, M., Anderson, C. R., Méndez, V. E., & Anderzén, J. (2024). Agroecology in the belly of the beast: Reflections and contradictions from the U.S. Agroecology Summit 2023 [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3) 39–44.
<https://doi.org/10.5304/jafscd.2024.133.012>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Introduction

In February 2023, the Institute for Agroecology (IFA) was formally recognized by the University of Vermont. We are a group of scholars who aim to leverage our privileges and positions within the academy to support farmers, activists, and movements in the struggle for agroecology and food sovereignty. International collaborators have often asked us to consider how we can do more to build

out agroecology in the United States—the so-called “belly of the beast” of industrial agriculture and racialized capitalism (Robinson, 2021)—and how we can act, from the U.S., to support the growth of agroecology in other places.

As a newly formed institute, we are keen to engage with others working to advance agroecology in the U.S. This motivated us to accept an

^{a*} *Corresponding author*: Catherine E. Horner, Institute for Agroecology, University of Vermont; Jeffords Hall, 63 Carrigan Drive; Burlington, Vermont 05405 USA; +1-646-734-2823;  <https://orcid.org/0000-0002-9938-3376>; chorner@uvm.edu

^b Martha Caswell, Co-Director, Institute for Agroecology at the University of Vermont;
 <https://orcid.org/0000-0002-9238-996X>

^c Colin R. Anderson, Co-Director, Institute for Agroecology at the University of Vermont;
 <https://orcid.org/0000-0001-5447-3012>

^d V. Ernesto Méndez, Co-Director, Institute for Agroecology at the University of Vermont;
 <https://orcid.org/0000-0001-7394-5679>

^e Janica Anderzén, Postdoctoral Fellow, Agroecology Lab at the University of Maine, and Institute for Agroecology at the University of Vermont;
 <https://orcid.org/0000-0003-4759-5729>

Author Note

This commentary is written by members of the Institute for Agroecology following participation in the U.S. Agroecology Summit in Kansas City, Missouri, in May 2023, which is the focus of a special section in this journal.

invitation to join a committee organizing a national convening on agroecology in May 2023. We viewed it as an opportunity to collectively identify research that would support people, communities, organizations, and movements aligning with agroecology in the U.S. The organizing committee named creation of a “roadmap” for agroecological research in the U.S. as the convening’s purpose. The plan was to create a space for listening to the needs of those working on the ground and to identify ways to support their work via research and resources.

While the summit opened space to grapple with tensions and strengthen existing relationships, the meeting did not ultimately produce a roadmap for agroecology research. From our perspective, however, the dynamics that drove the pivot away from the roadmap constitute important outcomes. Our commentary attempts to reflect, identify lessons to take forward into future efforts, and model the kind of reflexivity that we feel is essential for researchers who seek to collaborate with and support social movements in the struggle toward agroecology and food sovereignty. It is important to emphasize that this commentary is written by representatives of the Institute for Agroecology and not the committee that organized the summit, although some members of the IFA team also served as members of the organizing committee. As such, the reflection, analysis, and takeaways presented here are informed by the pillars that the IFA aims to center in our work: equity, transdisciplinarity and participatory action research, and just transitions.

Context Matters

Agroecology’s whole-system approach necessitates a contextualized analysis. Stuart Hall (1980) articulates the importance of carefully considering both the characteristics of the present moment and historical developments that have contributed to current conditions. We attempt to bring this analytical approach to our reflection on the summit.

Practitioner-, community-, and movement-led efforts in the U.S. to advance agroecology are undermined by disabling factors related to our national political economy and the continuing legacies of oppression associated with an agricultural

system built on stolen land with enslaved and exploited labor. Given that the summit was funded by a federal agency that has been complicit in systematically excluding access to resources to underrepresented groups (Orozco et al., 2018), doubts regarding the organizing process and goals of the summit were already high out of the gate (Wills & Tovar, 2023; Wills et al., 2024).

The event brought together roughly 100 people who live and work across the U.S. and Puerto Rico. While the organizing committee aimed to convene a diverse group that represented the breadth of those who engage with agroecology, there was nonetheless an imbalance in the type of knowledge and experience represented in the room. Nearly 70% of attendees were academics or professional researchers. Although many were invited, far fewer people from civil society organizations, social movements, or whose primary job is farming, were in attendance. This imbalance highlights the challenges of convening a diversity of constituencies in these types of events: it is a lot harder for some groups to participate (e.g., farmers) and easier for others (e.g., academics, government employees). While imbalanced participation in the summit reflects both structural challenges and the differing realities of diverse types of work, that it also connects to the politics of knowledge. Below, we reflect on why attending to the politics of knowledge must be central to any effort to advance agroecology. We then propose processes for doing so in future efforts.

The Politics of Knowledge

The politics of knowledge encompass how different types of knowledge are valued and legitimized (Montenegro & Iles, 2016; Pimbert, 2009). In agroecology, centering the politics of knowledge can help deconstruct dominant narratives that frame industrial agriculture as the only way to “feed the world” and Western scientific knowledge as the only valid analytical approach for understanding current reality and proposing viable paths forward. Deconstructing these narratives requires dismantling hierarchies that position some types of knowledge as more legitimate than others; this, in turn, requires that many voices and ways of knowing are valued and have seats at the proverbial table.

As the summit was organized by researchers and emphasized agroecological research rather than multiple agroecological epistemologies and experiences, the event reinforced the academic and Western status quo that separates different types of knowledge, a separation at odds with a political and transformative agroecology. We know that “silos” are part and parcel of knowledge hierarchies: in portraying forms of knowledge as isolated and distinct, it becomes easy to identify some as more important than others. These divisions also obscure the complexity and inherent interconnectedness of all life on earth—there are social, political, and economic factors tangled up with seed selection, on-farm management practices, and distribution chains, for example. Isolating these factors from one another is incompatible with our understanding of agroecology and prevents (eco)systems-level work. Despite the best of intentions, the summit’s narrow focus on a certain type of research missed an opportunity to integrate more diverse perspectives that could have contributed more meaningfully to advancing agroecology and food sovereignty.

When we situate the emphasis on research amidst broader historical contexts, it becomes clear why some attendees voiced concerns that their knowledge and experiences would be extracted to advance the interests and careers of researchers (for a deeper discussion of these concerns, see “A Declaration of Commitments Toward Agroecological Pluralities,” in this issue). While universities have historically marginalized non-Western forms of knowledge, there is simultaneously a long history of researchers appropriating peasant and Indigenous knowledge to their own ends. This dynamic underlies conversations regarding the possible co-optation of agroecology by the academy and other institutions (Giraldo & Rosset, 2018). While this dynamic can be enacted consciously or unconsciously, the impact remains the same: hierarchies of knowledge are inextricably bound up with multiple systems and structures of oppression.

Grappling with the fraught histories and politics of knowledge production and extraction highlights the need to identify alternative approaches to collaborating and organizing gatherings that will

(1) direct resources to the full spectrum of knowledge types, actors, and collective learning processes that will be required for agroecology to gain traction and legitimacy in the U.S.; and (2) enable collaboration, solidarity, and complementarity amongst that full diversity of knowledge, actors, and learning processes. If we are to take the politics of knowledge seriously, it is vital that a diversity of actors, who hold a wide range of identities, experiences, and positionalities, be at the center of processes for identifying collective goals and priorities. While the committee made an effort to *invite* and raise funds to support the *attendance* of farmers, Indigenous People, activists and organizers, it is the agency of these perspectives in the *conceptualization* and *design* of such gatherings that is foundational to an approach that more fully attends to the politics of knowledge. In other words, invitations to attend are not enough; truly just and equitable approaches require that diverse voices and knowledges are involved at every stage of collaborations and convenings, from inception, planning, and attendance through to evaluation and ensuing actions. This, in turn, requires appropriate commitment of resources for supporting the co-leadership of growers and representatives from civil society organizations and social movements in the organization of agroecology-related gatherings.

Advancing agroecology, in the full political meaning of the term (De Molina et al., 2019), requires collective action, which can only materialize out of established, trusting, and equitable relationships. To move toward this end, we conclude our commentary by identifying lessons and commitments that we, as the Institute for Agroecology, can carry forward from the U.S. Agroecology Summit 2023.

What Are We Taking Forward?

Our reflection on the importance of attending to the politics of knowledge is not intended to disparage the effort put into making the summit happen; indeed, the event provided a space to surface tensions, exchange ideas, build new relationships, and deepen old ones. In reflecting on the politics of knowledge, we see the chasm between what is needed and where we are now. We believe that

there *is* a role to be filled by research, but responsibly filling this role requires mechanisms of communication and accountability that attend to the complex reality of working to dismantle existing systems and structures while simultaneously being embedded within them. Any effort to strengthen agroecology must be collaborative at every stage of the process, including the identification of strategies and pathways toward more just and resilient futures. This cannot just be what we *say*—we must figure out how to make it what we *do*.

From our view, conversations about the changes needed within research institutions are critically important for transgressing the boundaries that often lock in static thinking, justify ineffective sectoral approaches, and reproduce systems of oppression. If researchers aim to support agroecology in its most transformative form, it will be vital to cultivate the capacity to engage in these conversations as part of an intentional process of unlearning. This process, in turn, should feed a commitment to collaborative, equitable, and action-oriented research that engages communities, farmers, and social movements as co-researchers with deep place-based knowledge (Montenegro de Wit et al., 2021). All of this constitutes a re-orienting of research from a place of “leadership” to a place of co-creation and accompaniment. Inviting plural perspectives, making space for emergent ideas, and implementing participatory design processes constitute the groundwork for relationship- and trust-building, co-learning, and co-producing knowledge across difference.

Although as an institute we are embedded within the academy, we aspire to engage multiple ways of knowing, recognizing both the practical and political complexity of this approach. Participating in the summit highlighted areas in which we must grow, learn and unlearn to put our aspirations—and our values—into action. Specifically, we identified the need to cultivate practices and processes for: (1) effectively communicating to others within the academy our orientation to the politics of knowledge, (2) attending to the politics of knowledge at every stage of collaborative efforts, and (3) integrating diverse types of knowledge and ways of knowing and convening. Without established norms that speak to these needs, it is

likely that people and institutes located within the academy, regardless of intentions, will reproduce the power dynamics and knowledge hierarchies that we at the IFA aim to deconstruct.

In a similar vein, the summit highlighted deep tensions around what it means to engage with agroecology from within institutions that are often seen as an enemy, not an ally. This is slow work. Relational work. Place-based work. Work that requires moving at the speed of trust. Anathema in spaces that reward speed and glorify the individual, this is collective work—work that requires much more listening than talking, more observing than suggesting. We believe it is possible to hold the contradictions implied by engaging with agroecology from within academic institutions, but we recognize that doing so requires ongoing commitments to reflexivity, humility, and accountability. Our position at the UVM Institute for Agroecology is that scaling agroecology requires transforming the wider political, economic, and cultural domains that undermine the food sovereignty of peoples and communities. This includes how research is often conducted and how research institutions, particularly universities, marginalize the narratives and knowledge of people outside the academy.

Conclusions

We know that there remain pressing needs to study, hone, and implement farming practices that improve soil health and support agrobiodiversity. While these technical and scientific issues are important, they are insufficient for realizing socially just and resilient agri-food systems. As social movements highlight, any effort to advance agroecology needs to foreground food sovereignty, a concept that has been developed and fought for by peasant- and BIPOC-led movements around the world (Nyeleni Movement for Food Sovereignty, 2007). A precondition for agroecology is that people have the right to define and defend their own food and agriculture systems. Among other things, this means sovereign determination of seed systems, foodways, and land, each being a critical component of food sovereignty. That is to say, collective efforts to advance agroecology must center issues of power and agency. We are committed to

approaching our work with humility and care, taking these learnings forward in our efforts to support agroecology in the places and communities where we work.

We conclude by acknowledging that we have focused this commentary on our growth edges—on processes and practices that force us to continually learn and unlearn. As such, there is little reflection here on what went well. This event was organized by people committed to cultivating more hopeful futures and attended by people willing to show up despite misgivings, voice hard truths in generative ways, and participate in meaningful dialogue across difference. The focus of this commentary is not intended to diminish the efforts of the

organizers nor the contributions of attendees. We do not intend to reinforce divisions that reproduce practices of othering. Rather, we aim to honor the difficulty of collaborating. We aim to sit with hurt and repair harm. We firmly contest unjust systems and institutions while aiming to show compassion to the people within them. In short, this piece intends to support future efforts that will build on the important connections and lessons gleaned from the summit. We look forward to continuing to lean into learning and unlearning alongside others who aim to be co-conspirators, advancing agroecology from both outside and within the academy.



References

- De Molina, M. G., Petersen, P. F., Peña, F. G., & Caporal, F. R. (2019). *Political agroecology: Advancing the transition to sustainable food systems*. CRC Press. <https://doi.org/10.1201/9780429428821>
- Giraldo, O. F., & Rosset, P. M. (2018). Agroecology as a territory in dispute: Between institutionality and social movements. *The Journal of Peasant Studies*, 45(3), 545–564. <https://doi.org/10.1080/03066150.2017.1353496>
- Hall, S. (1980). Cultural studies: Two paradigms. *Media, Culture & Society*, 2(1), 57–72. <https://doi.org/10.1177/016344378000200106>
- Montenegro de Wit, M., & Iles, A. (2016). Toward thick legitimacy: Creating a web of legitimacy for agroecology. *Elementa: Science of the Anthropocene*, 4, Article 000115. <https://doi.org/10.12952/journal.elementa.000115>
- Montenegro de Wit, M., Shattuck, A., Iles, A., Graddy-Lovelace, G., Roman-Alcalá, A., & Chappell, M. J. (2021). Operating principles for collective scholar-activism: Early insights from the Agroecology Research-Action Collective. *Journal of Agriculture, Food Systems, and Community Development*, 10(2), 319–337. <https://doi.org/10.5304/jafscd.2021.102.022>
- Nyeléni Movement for Food Sovereignty. (2007). *Declaration of Nyéléni*. <https://nyeleni.org/IMG/pdf/DeclNyeleni-en.pdf>
- Orozco, A. A., Ward, A., & Graddy-Lovelace, G. (2018). Documenting USDA discrimination: Community-partnered research on farm policy for land justice. *ACME: An International Journal for Critical Geographies*, 17(4), 999–1023. <https://acme-journal.org/index.php/acme/article/view/1514>
- Pimbert, M. P. (2009). Transforming knowledge and ways of knowing for food sovereignty. In M. P. Pimbert (Ed.), *Towards food sovereignty. Reclaiming autonomous food systems* (chap. 7). IIED. <http://www.environmentandsociety.org/mml/book-chapter-pimbert-michel-transforming-knowledge-and-ways-knowing>
- Robinson, C. J. (2021). *Black Marxism: The making of the Black radical tradition* (rev. 3rd ed.). University of North Carolina Press.
- Wills, M., & Tovar, A. (2023). Pronunciation of The Seeds, Agroecology, and Biodiversity Collective of La Via Campesina-North American Region. In D. A. Neher, C. R. Anderson, A. D. Basche, C. Costello, M. K. Hendrickson, B. D. Maxwell, A. M. Roman-Alcalá, A. Streit Krug, W. F. Tracy, E. Méndez, C. Horner, & J. M. Anderzén (Eds.), *Proceedings—U.S.A Agroecology Summit 2023* (pp. 74–75). University of Vermont College of Agriculture and Life Sciences Faculty Publications. Retrieved from UVM ScholarWorks repository: <https://scholarworks.uvm.edu/calsfac/204>

Wills, M., Tovar-Aguilar, J. A., & Naylor, P. (2024). Grassroots agroecology advocates challenge funding objectives focused on U.S. Department of Agriculture. *Journal of Agriculture, Food Systems, and Community Development*. Advance online publication. <https://doi.org/10.5304/jafscd.2024.133.015>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Blending knowledge systems for agroecological nutrient management and climate resilience

Jennifer Blesh^{a*}

University of Michigan

Meagan Schipanski^b

Colorado State University

Submitted February 1, 2024 / Published online April 16, 2024 / Format updated June 4, 2024

Citation: Blesh, J., & Schipanski, M. (2024). Blending knowledge systems for agroecological nutrient management and climate resilience [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 45–48. <https://doi.org/10.5304/jafscd.2024.133.004>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Agroecology links multiple ways of knowing in order to understand and manage farms as the ecosystems that they are—agroecosystems. Farmers often have deep, place-based knowledge of their agroecosystems that informs how to manage ecological interactions for multiple benefits. Many Indigenous practices sustained food production for generations without fossil fuel inputs, and traditional ecological knowledge is a valuable source of wisdom for adaptive management of agroecosystems. Other forms of ecological knowledge have been developed using Western scientific research approaches. Through the concept of the ecosystem, ecology applies systems thinking to understand complex relationships between organisms

(including humans) and their environment across spatio-temporal scales. In practice, blending these ways of knowing has a wide range of interpretations and manifestations, especially in the past several decades, as agroecology has developed into a science, practice, and social movement. Embracing all three of these aspects, we argue that agroecology could more fully integrate traditional ecological knowledge and farmer knowledge with ecological science—including valuing where they overlap and their unique contributions (Kimmerer, 2013)—in support of food system transformation. We focus on the example of agroecological nutrient management in the context of climate change.

Ecology is a field that is well positioned for epistemological pluralism because it is distinct from the reductionist techno-science that has been a major cause of today's environmental and social crises. The industrial agricultural paradigm neglects ecological knowledge, instead prioritizing technological fixes that maintain yields in simplified production systems, typically using nonrenewable

^{a*} *Corresponding author:* Jennifer Blesh, Associate Professor, School for Environment and Sustainability, University of Michigan; 440 Church Street; Ann Arbor, MI 48109 USA; jblesh@umich.edu

^b Meagan Schipanski, Associate Professor, Department of Soil and Crop Sciences, Colorado State University; Fort Collins, CO USA.

inputs such as chemical fertilizers. For instance, the singular focus on synthetic fertilizers for soil nutrient management has contributed to increased crop yields, but the synthesis and excess inputs of reactive nitrogen fertilizer are also major drivers of global change, most notably via greenhouse gas emissions and water pollution (Carpenter et al., 1998; Menegat et al., 2022). The reliance on concentrated and volatile markets for fertilizers and other chemical inputs also harms farmers. To move toward sustainable nutrient management, researchers must acknowledge that Western science offers one way of knowing among many knowledge systems and embrace collaborative approaches to practicing science with communities.

Ecological approaches to nutrient management harness ecological interactions to enhance internal nutrient cycling processes, thereby reducing inorganic nutrient inputs, soil degradation, and associated nutrient losses (Drinkwater & Snapp, 2023). This is a fundamental shift away from input-focused management toward management of crop and livestock diversity that enhances underlying nutrient reserves and biological communities in the soil. By reducing use of external inputs and increasing reliance on context-specific knowledge systems, this approach can increase both farmer agency and agroecosystem resilience, as well as yield stability. Understanding which management practices build up soil organic matter and nutrient reservoirs in different soil types and cropping systems is critical for informing transitions to ecologically-based nutrient management.

Indigenous and farmer knowledge have informed the development of diverse management systems that enhance soil fertility and nutrient cycling, as well as pest control, overall productivity, and many other demonstrated benefits (Carlisle, 2022; Kapayou et al., 2023). Ecological science can shed light on how these diverse types of crop rotations and intercropping systems provide specific functions, such as building soil organic matter and promoting nutrient release, linking these functions to distinct plants and plant traits (and their associated microbial communities) (Isaac et al., 2021). Although Western science is always a simplification of reality, ecology balances reductionism and holism to produce knowledge relevant to improving

local management while building the generalizable understanding needed to adapt innovations to new contexts, including a changing climate. Fully blending these perspectives into a unique **agroecological nutrient management** approach would therefore benefit research, policy, and practice.

For instance, given the alarming rate of climate change, there is a need to understand the potential for carbon sequestration and net greenhouse gas mitigation in highly diversified and traditional farms, in order to inform effective policies and investments. A key part of climate adaptation and resilience for farmers will also involve careful management of biodiversity to reduce external inputs and buffer against extreme weather events. However, agroecological practices are currently highly heterogeneous across farms. Farmers who participate in agroecological networks can have management systems that vary from use of chemical inputs and low levels of crop and livestock diversity to highly diversified polycultures with little to no external inputs (Stratton et al., 2021; Teixeira et al., 2018). Furthermore, the ways in which agroecological nutrient management practices are implemented drives distinct outcomes. For example, some urban farms use excess compost inputs that cause nutrient surpluses, hydrophobic conditions, increased pest pressure, and reduced productivity (Gregory et al., 2016; Witzling et al., 2011). Diversified farms often purchase organic inputs such as manure or compost that may ultimately be derived from fossil fuels, depending on their sources. In many contexts, then, soil nutrient management practices on farms that practice agroecology can be improved to provide a broader suite of social and ecological benefits.

We argue this can be achieved through an integrated and participatory approach to researching and understanding agroecosystems. Rather than subjugating Indigenous knowledge to Western science, a collaborative approach would recognize that traditional knowledge and the practices of Indigenous communities, in many cases forcibly displaced from their land, form the basis of many practices now being investigated using Western scientific methods. As a cautionary example, some scientists have recently become enamored with the potential of a specific trait identified in a traditional

maize variety to support free-living nitrogen fixing bacteria (Van Deynze et al., 2018). The reductionist approach is to study the nitrogen-fixing bacteria in isolation, aiming to identify methods that enable it to grow in association with hybrid maize varieties and other crops for possible commercialization. An agroecological approach would engage the communities who have been improving this land race for generations to better understand its ecology and history, including the broader agroecosystem context within which it was improved. For instance, this approach could inform how to adapt these systems to changing climates. An ecosystem approach would also carefully assess the benefits and trade-offs of enhancing maize (or non-legume) nitrogen fixation relative to integrating legume crops and cover crops into rotations or intercropped with maize. In some contexts, integration of legume crops not only provides more nitrogen fixation capacity than associative nitrogen fixing bacteria are likely to provide, but they simultaneously support other ecological functions and improve household nutrition (Bezner Kerr et al., 2007).

As many agroecologists have argued, to fully blend ecological and farmer knowledge, research questions and priorities should be developed in partnership with communities and consider the broader sociopolitical context. Scientists must be trained in the politics of knowledge production and serve as respectful partners who listen closely and approach participatory research with humility. La Vía Campesina sees agroecology as a form of political resistance to “an economic system that puts profit before life,” (La Vía Campesina, 2015, para. 6). Agroecological research must therefore also attend to political questions because improving agroecological practices requires supportive policy and market conditions, and access to knowledge and other resources such as land and seeds. A blended approach would allow scientists and communities to carry a more diverse set of tools and management strategies forward through joint discovery, while also considering who will benefit from or control these discoveries. Researchers can therefore help shift resources to marginalized communities while supporting broader, structural

changes to food systems.

To advance this collaborative vision for research, academic institutions need to develop new curriculum and training approaches. Scholars from disciplines such as political ecology and agroecology increasingly call for research to understand how the interplay between structure and agency can foster farming system transformation (Blesh et al., 2023). A related concept—critical ecology—explicitly identifies how historical legacies of oppression and injustice have been drivers of ecological change (Denzin et al., 2008; Patterson et al. 2023). We also realize that if we are white and highly educated, we should be extremely cautious about imposing models of change onto other groups (Roman-Alcalá, 2022). A key role for those of us who are white academics is therefore to help make this cultural change in our institutions—for instance, ensuring that conceptual frameworks such as political ecology are integrated into the curriculum. To this end, we also need better training for students to become scholar-activists who understand oppression and systems of injustice, take time to understand others’ worldviews, and use their positions to help make structural and political changes to redistribute resources.

It is important to recognize that the political struggles within agroecology are inextricably connected to material, biophysical conditions; that is, real relationships between organisms—including humans—and their environments. As a result, a more complete understanding of this biophysical complexity, and blending Western, traditional, and other farmer knowledge systems, will support better soil and agroecosystem stewardship. A participatory and pluralist research approach would thus combine the strengths that ecological science contributes to agroecology, such as mechanistic understanding, prediction, and systems thinking with farmers’ place-based knowledge of crop varieties, soils, and climate conditions. Realizing this goal would expand transitions to agroecological nutrient management that increase farmers’ resilience to climate change and support current and future generations.



References

- Bezner Kerr, R., Snapp, S., Chirwa, M., Shumba, L., & Msachi, R. (2007). Participatory research on legume diversification with Malawian smallholder farmers for improved human nutrition and soil fertility. *Experimental Agriculture*, 43(4), 437–453. <https://doi.org/10.1017/S0014479707005339>
- Blesh, J., Mehrabi, Z., Wittman, H., Bezner Kerr, R., James, D., Madsen, S., Smith, O. M., Snapp, S., Stratton, A. E., Bakarr, M., Bicksler, A. J., Galt, R., Garibaldi, L. A., Gemmil-Herren, B., Grass, I., Isaac, M. E., John, I., Jones, S. K., Kennedy, C. M., . . . Kremen, C. (2023). Against the odds: Network and institutional pathways enabling agricultural diversification. *One Earth*, 6(5), 479–491. <https://doi.org/10.1016/j.oneear.2023.03.004>
- Carlisle, L. (2022). *Healing grounds: Climate, justice, and the deep roots of regenerative farming*. Island Press.
- Carpenter, S. R., Caraco, N. F., Correll, D. L., Howarth, R. W., Sharpley, A. N., & Smith, V. H. (1998). Nonpoint pollution of surface waters with phosphorus and nitrogen. *Ecological Applications*, 8(3), 559–568. [https://doi.org/10.1890/1051-0761\(1998\)008\[0559:NPOSWW\]2.0.CO;2](https://doi.org/10.1890/1051-0761(1998)008[0559:NPOSWW]2.0.CO;2)
- Denzin, N. K., Lincoln, Y. S., & Smith, L. T. (2008). *Handbook of critical and indigenous methodologies*. Sage. <https://doi.org/10.4135/9781483385686>
- Drinkwater, L. E., & Snapp, S. S. (2023). Advancing the science and practice of ecological nutrient management for smallholder farmers. *Frontiers in Sustainable Food Systems*, 6, 170. <https://doi.org/10.3389/fsufs.2022.921216>
- Gregory, M. M., Leslie, T. W., & Drinkwater, L. E. (2016). Agroecological and social characteristics of New York city community gardens: Contributions to urban food security, ecosystem services, and environmental education. *Urban Ecosystems*, 19, 763–794. <https://doi.org/10.1007/s11252-015-0505-1>
- Isaac, M., Nimmo, V., Gaudin, A. C. M., Leptin, A., Schmidt, J. E., Kallenbach, C. M., Martin, A., Entz, M., Carkner, M., Rajcan, I., Boyle, T. D., & Lu, X. (2021). Crop domestication, root trait syndromes, and soil nutrient acquisition in organic agroecosystems: A systematic review. *Frontiers in Sustainable Food Systems*, 5, Article 716480. <https://doi.org/10.3389/fsufs.2021.716480>
- Kapayou, D. G., Herrighty, E. M., Gish Hill, C., Cano Camacho, V., Nair, A., Winham, D. M., & McDaniel, M. D. (2023). Reuniting the Three Sisters: Collaborative science with Native growers to improve soil and community health. *Agriculture and Human Values*, 40(1), 65–82. <https://doi.org/10.1007/s10460-022-10336-z>
- Kimmerer, R. W. (2013). *Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants*. Milkweed Editions.
- La Vía Campesina. (2015, March 4). *Declaration of the International Forum for Agroecology*. <https://viacampesina.org/en/declaration-of-the-international-forum-for-agroecology/>
- Menegat, S., Ledo, A., & Tirado, R. (2022). Greenhouse gas emissions from global production and use of nitrogen synthetic fertilisers in agriculture. *Scientific Reports*, 12(1), Article 14490. <https://doi.org/10.1038/s41598-022-18773-w>
- Patterson, A. E., Williams, T. M., Ramos, J., & Pierre, S. (2023). Building Authentic Connections to Science Through Mentorship, Activism, and Community, in Teaching and Practice. In *Transforming Education for Sustainability: Discourses on Justice, Inclusion, and Authenticity* (pp. 47-73). Springer International Publishing.
- Roman-Alcalá, A. (2022). Five practical strategies for those who work for food systems change. *Journal of Agriculture, Food Systems, and Community Development*, 12(1), 9–12. <https://doi.org/10.5304/jafscd.2022.121.001>
- Stratton, A. E., Wittman, H., & Blesh, J. (2021). Diversification supports farm income and improved working conditions during agroecological transitions in southern Brazil. *Agronomy for Sustainable Development*, 41(3), Article 35. <https://doi.org/10.1007/s13593-021-00688-x>
- Teixeira, H. M., Van den Berg, L., Cardoso, I. M., Vermue, A. J., Bianchi, F., Pena-Claros, M., & Tittone, P. (2018). Understanding farm diversity to promote agroecological transitions. *Sustainability*, 10(12), Article 4337. <https://doi.org/10.3390/su10124337>
- Van Deynze, A., Zamora, P., Delaux, P., Heitmann, C., Jayaraman, D., Rajasekar, S., Graham, D., Maeda, J., Gibson, D., Schwartz, K. D., Berry, A. M., Bhatnagar, S., Jospin, G., Darling, A., Jeannotte, R., Lopez, J., Weimer, B. C., Eisen, J. A., Shapiro, H., Ané, J., & Bennett, A. B. (2018). Nitrogen fixation in a landrace of maize is supported by a mucilage-associated diazotrophic microbiota. *PLoS Biology*, 16(8), Article e2006352. <https://doi.org/10.1371/journal.pbio.2006352>
- Witzling, L., Wander, M., & Phillips, E. (2011). Testing and educating on urban soil lead: A case of Chicago community gardens. *Journal of Agriculture, Food Systems, and Community Development*, 1(2), 167–185. <https://doi.org/10.5304/jafscd.2010.012.015>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Itadakimasu, ikigai, and wabi-sabi: Poems and reflections on trust after the U.S. Agroecology Summit 2023

Christopher D. Murakami *
Chatham University

Submitted February 5, 2024 / Published online April 16, 2024 / Format updated June 4, 2024

Citation: Murakami, C. D. (2024). Itadakimasu, ikigai, and wabi-sabi: Poems and reflections on trust after the U.S. Agroecology Summit 2023 [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 49–53. <https://doi.org/10.5304/jafscd.2024.133.003>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

“How can I trust you?”
Agroecology how?
A murmuration

Itadakimasu

The third panel of the U.S. Agroecology Summit 2023 centered scholars, activists and advocates who, from a variety of institutional positions, have built trusting relationships with farmers and social movements. During the Q and A session, I asked the panel how, in that moment, we might be able to continue to build trust to support relationship-building in the movement for agroecology in North America. The panelists deferred to the audience, and Jonny Bearcub Stiffarm, surrounded by several of her Indigenous sisters, questioned, “How can I trust you?” This question reverberates

in my memory of this event. Her response explained how there was a key spirituality dimension that was missing from the program and how that served as a barrier to trust. She explained that she offered silent prayer on behalf of all of us in attendance in recognition of the gifts presented to us in meals, but also in hope that we can all receive each other’s ideas with an open heart. Many others in the audience murmured about their own silent prayers, simultaneously acknowledging the poignancy in the remark, but also how many others hold this silent or silenced spiritual dimension. After sharing with a new colleague, Antonio Roman-Alcala, that I was half Japanese, we speculated about sharing the concept of *Itadakimasu* with the group. *Itadakimasu* is a Japanese way to say grace before a meal—a way to give thanks for the food and in acknowledgment of the work of farmers and cooks and all else in the universe that went into preparing a meal. The following morning, there was some intentional space opened up for the group to gather outside. There were several songs,

* Christopher D. Murakami, Assistant Professor of Agroecology, Chatham University; 107 Woodland Road; Pittsburgh, PA 15232 USA;  <https://orcid.org/0000-0003-4522-3200>; c.murakami@chatham.edu

stories, and poems that were shared by Debra Echo-Hawk and others. Inspired by this, I jotted down some haikus in my notebook (which I have, of course, now lost), but I hope to share a bit in this reflection about what ongoing trust-building may look like for agroecology on Turtle Island (North America).

I am deeply grateful for the conference organizers and the number of risks and hours of unrecognized labor that it took to convene a group of about a hundred researchers and practitioners of agroecology. Leading up to the conference, it was difficult for me to comprehend what it would feel like to be in a room with so many “heroes,” mentors, and sources of inspiration. I am further grateful to have gotten to know several farmers, organizers, movement builders, and early-career scholars who help me better understand the contours of agroecology at the current moment. I had spent so much time in graduate school trying to piece together the history of the science, practice, and social movements embedded in agroecology and then have had the pleasure of building a representation of what agroecology is through the courses I have taught for the past seven years in an interdisciplinary food studies program. Many scientific disciplines and academic arenas are actively hostile or harmful to those who hold marginalized identities. While it is perhaps naïve, I believe (hope) that agroecology can be a refuge for those who hold these traumas, pain, and fear toward science, academics, and research. For me, agroecology became a career pathway that unapologetically centers equity, justice, indigenous knowledge, and peasant farmer knowledge for its role in supporting more sustainable food systems. For this, I am incredibly thankful for those who came before me in working to understand more about how agroecology can be used to support personal and community-based self-determination through the responsible stewardship of natural resources. From experience working and participating in interdisciplinary and transdisciplinary teams and also convening groups of people who hold a range of different lived experiences based on race, class, gender, and diverse ability, I know this work can be exceedingly difficult and that it also only truly happens when trust is formed. adrienne maree brown (2017), in her

book *Emergent Strategy*, explains that the social change she has witnessed and wants to emulate happens at “the speed of trust.” She shared the example of the flight patterns of starlings and their murmuration. This network of trust creates a de-centered movement that starts with individual starlings learning to respond to the nearest movements of seven neighbors and creates awe-inspiring undulations. Building trust can sometimes start with some level of shared grieving and reflection on what Paulo Freire (2017) might call the nature of our collective oppression in the current dominant food system. Following suit for many others in the agroecology movement who have called out systemic oppression and structured violence, I am particularly struck by the contributions of Leah Penniman and her book *Farming While Black* and the food sovereignty work of Soul Fire Farm. In amplifying this important work of getting to the roots of sovereignty and regeneration, Liz Carlisle’s (2022) book *Healing Grounds* centers on the stories of Indigenous, Black, Latinx, LGBTQ+ farmers/researchers/climate activists.

Many of those in attendance at the Agroecology Summit were the very people who have dedicated their lives to understanding the nature of this layered and intersectional oppression in our food system. Through decades of scholarship, many in attendance shed light on and tell the stories of practitioners of agroecology who present a pathway forward in a context of global climate catastrophe. The different amalgamation of social identities held by summit attendees means that the weight of this interconnected, intergenerational trauma may be felt differently, and building trust in this environment is going to look different and will take time. Resmaa Menakem (2017), in his book, *My Grandmother’s Hands*, explains some strategies for healing and surfacing this racialized trauma and how this pain is often stored and inflicted upon our bodies. Understanding trauma responses such as defensiveness, guilt, rage, and annihilation, along with strategies for metabolizing this individual and collective pain, are critical to future trust building for agroecology in the U.S. and to help stakeholders continue to show up in these spaces.

To me, there were signs and signals that wherever we are going with agroecology in the U.S. and

North America, there is the hope to bring others outside the academy along, not as a symbolic gesture, but because agroecology does not work without those on the front lines of food sovereignty and food justice moments. Similarly, agroecology does not work to its full potential without a spiritual dimension in gratitude and recognition of the diverse ways of knowing and being in relationship with food systems and Earth. Building trusting relationships may mean venturing into spirituality and forms of knowledge representation that may hold the underlying wisdom and resources that make persistence, resilience, and resistance possible in light of the present local and global conditions. In thinking of a more inclusive form of agroecology, it seems of utmost importance that people be able to bring their full selves to relationships between researchers and social movements.

Ikigai

Ikigai is a Japanese word that refers to a life purpose, or meaning, and the notion that joy can come through the pursuit of this purpose. For me, a biracial, sometimes white-passing, *Yonsei* (fourth-generation Japanese American) man, I find the greatest joy in facilitating dialogue and learning experiences that help people build bridges across differences in pursuit of more sustainable food systems. When I attended the Agroecology Summit this past summer of 2023, it was through this lens that I participated and have since reflected on my role, position, and *gifts* that I may bring. My work as an agroecologist is perhaps a nontraditional one in that I tend to focus on the social dimensions of learning environments and lived experiences of those pursuing careers in sustainable food systems in the U.S. With a biracial identity, I have found that I have developed important entry points for empathy as I simultaneously have a family history of state-sanctioned internment of my grandmother and family during WWII (via Executive Order 9066: Resulting in Japanese American Incarceration, 1942), but also other ancestors who may have benefited from the theft of land of Indigenous peoples under the guise of the Homestead Act and narratives of manifest destiny. My Japanese ancestors lost their landscaping business in the Bay Area during internment in Topaz, Utah, and had to

rebuild without full citizenship due to the Chinese Exclusion Act. While I hold considerable unearned privilege, my family history and associated generational traumas make me want to continue to understand how to name, minimize, prevent, and repair harm. This is particularly true as it relates to inclusion in what I hope to be a broad-based movement for agroecological transformation in this country.

Currently, I am an assistant professor of agroecology and teach primarily in a graduate and undergraduate food studies program at a small, private, former women's college in western Pennsylvania. In this role and with the social identities I carry with me, I have had to learn the importance of facilitating true dialogue, wherein participants practice building mutual understanding and mutual affirmation. In cultivating spaces to scaffold dialogue for more sustainable food systems, this requires understanding ways to build trust. The preconditions for building trust may vary considerably across individuals with a variety of lived experiences, power, and privileges. In my personal work and across a network of agroecologists in the U.S., I hope to build deeper relationships that allow resources and investments to move in a direction that can help support the experts on the ground engaged in food sovereignty work.

Wabi-sabi

I understood that there was originally an overarching goal for the summit, to build “a roadmap” for agroecology research in the U.S., but there was considerable feedback that this term had an exploitative, colonial connotation. Without a “roadmap,” one might think that then things will be hard to control or coordinate, that there may be gaps that are not addressed or other missed opportunities. However, without trusting relationships established between the core stakeholders, it might be too early or too raw to develop this effort to make such a map that adequately encompasses priorities for all stakeholders. Further, such a map might flatten the holistic priorities and full range of motion that is needed to sustain and perpetuate movements, and instead hold them captive within hierarchical institutions and the associated trauma and trigger warranted distrust on the part of individuals on the ground in agroecological movements. This last

Japanese concept, *wabi sabi*, refers to a philosophy and associated art movement that acknowledges the beauty in the imperfections of life and nature. In building trusting relationships between researchers and social movements, mistakes will be made—potentially hurt feelings and missed opportunities. One necessary reorientation is to understand what can be learned from the missteps and how they can be surfaced and reflected upon in ways that offer deeper ways of understanding each other. In pursuit of building trust, future gatherings might more explicitly center trust and relationship-building ahead of any other programming or priority. In these spaces, trust will be further built as we continue to realize and reflect upon any imperfections or places where harm has been done, and also when we call in the collective power and potential in our connectedness.

This collective power starts with deeply knowing ourselves and our associated flaws and blind spots, which may take some time to uncover because of a natural tendency to fear vulnerability, especially in the academy. I shared my Japanese American heritage, but did not disclose, for example, that my family history also features adjacent white privilege, and that when I seek spirituality or richness in my culture, I am reminded about what has been lost to whiteness. Despite the Japanese subject headings, I cannot speak Japanese; I do not know the Shinto prayers my grandma would offer in the shrine in the back room of her Oakland, California, apartment. My prayers are not silent; they were silenced due to cultural assimilation during Japanese Internment and after WWII. In *Healing Grounds*, Liz Carlisle simultaneously centers the stories of Indigenous, Black, Latinx, and Asian contributions to the field of agroecology while also acknowledging and stitching together the trauma of the food system. After rereading her book, I realized many of the cast of climate activists and agroecologists she featured in the text were in the room with me. I realize there are others who are part of this same murmur of learning to deeply trust those around them because their lives and liveli-

hoods depend on this trust. I hope that I can emulate this in my personal sphere and that I can maintain ways to be in coordination and communication with others seeking strategies for food sovereignty on the land. As agroecology researchers look to build trust in the U.S. among social movements, movements for food justice and food sovereignty, it is important to seek strategies within individual spheres of influence in support of reparations for enslavement, giving stolen land back, and acknowledging that considerable work has already been done to understand the history and current needs of those most marginalized in the food system, but who also hold some the greatest promise for mitigating and adapting to climate change through agroecological practices rooted in indigenous farming and foodways.

Another striking reflection is the many intergenerational relationships in the room at the summit. Through this lens, I see how I am tied to the work on the margins at Midwestern land-grant universities that helped challenge corporate consolidation in U.S. agriculture and learn to form deeper relationships through regional food systems. While there may be understandable blind spots in my own awareness of the reality that while funding and academic clout may center around institutions such as my alma mater and other academic institutions, there is also historical land theft, institutionalized racism, sexism, homophobia, transphobia and all the other -isms and fears that serve as real barriers to building relationships with indigenous food sovereignty, food sovereignty, and food justice movements. From my position, perhaps it is my role to figure out how to have difficult but productive conversations to help others realize and acknowledge the historic and contemporary impact of these harms and explore more strategies for building trusting relationships and distributing assets in this murmur for agroecology.

A gift, ikigai
A misstep, wabi-sabi
Itadakimasu

References

- brown, a. m. (2017). *Emergent strategy*. AK Press.
 Carlisle, L. (2022). *Healing grounds: Climate, justice, and the deep roots of regenerative farming*. Island Press.

- Executive Order 9066: Resulting in Japanese-American Incarceration. (1942). https://www.archives.gov/milestone-documents/executive-order-9066?_ga=2.20735416.106461933.1701107876-1965037343.1701107876
- Freire, P. (2017). *Pedagogy of the oppressed*. Penguin Classics. (Originally published in 1970)
- Menakem, R. (2017). *My grandmother's hands: Racialized trauma and the pathway to mending our hearts and bodies*. Central Recovery Press.
- Penniman, L. (2018). *Farming while Black: Soul Fire Farm's practical guide to liberation on the land*. Chelsea Green Publishing.

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Grain agriculture and the end of the fossil fuel era

Timothy E. Crews *
The Land Institute

Submitted May 20, 2024 / Published online May 28, 2024 / Format updated June 4, 2024

Citation: Crews, T. E. (2024). Grain agriculture and the end of the fossil fuel era [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 55–60. <https://doi.org/10.5304/jafscd.2024.133.022>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

A great deal of attention is currently focused on how agriculture in highly industrialized countries contributes to greenhouse gas (GHG) emissions, and how certain farming innovations might curb the emissions of nitrous oxide and methane and draw down carbon dioxide from the atmosphere. What is not being discussed is how agriculture in general, and grain agriculture in particular, will need to change as society phases out its dependency on fossil fuels in order to achieve carbon (C) neutrality.

Over the last century in the U.S., the number of farmers on the land declined by about 66%, in close proportion to the increase in average farm size (U.S. Department of Agriculture Economic Research Service [USDA ERS], n.d.). Integral to

these trends has been the simplification of farming systems in which practices like fertility-generating rotations have been replaced with lower-diversity monocultures maintained by applications of fossil fuel-based fertilizers and pesticides (Crews & Peoples, 2004). Between fossil fuel-powered mechanization and fossil fuel-based input intensification, the energy used by farmers to grow maize in the state of Nebraska is 99.7% from fossil fuels and 0.3% human labor (Grassini & Cassman, 2012; Pimentel & Pimentel, 2008). Even organic farming systems often require prodigious fossil fuel inputs with intensive tractor tillage, manure hauling, and mechanical harvesting (Smith et al., 2015). In contrast to our modern grain-producing agroecosystems, ancestral agroecosystems and natural ecosystems of all types—forests, grasslands, deserts, tundra—have remained productive for millennia with no fossil fuel inputs. In this commentary I explore the dependency of grain agriculture on fossil fuel use in the U.S. set in a global context, and approaches for reducing this dependency,

* Timothy E. Crews, Chief Scientist and Director of the International Initiative at The Land Institute; 2440 East Water Well Road; Salina, Kansas 67401 USA;
 <https://orcid.org/0000-0003-4764-341X>;
crews@landinstitute.org

including a shift to perennial polycultures that rely on ecological intensification in place of energy-intensive inputs.

Before humans began harnessing fossil fuel energy, the muscles of farmers, and in some cases draft animals, supplied the power to prepare seed-beds, plant, cultivate, harvest, and process crops. Of course, for the farmers to carry out this work, they had to consume food calories, which in most cases were supplied by grains (cereals, pulses, and oilseeds) or tubers that they grew on their farms the previous year (Smil, 2017). Thus, in simple terms, to continue farming and avoid hunger, it was critical to grow at least as many food calories for next year as one consumes in the current year. But it was rarely that simple; for one, farmers have rarely been tasked with only feeding themselves. People in society who do not farm also need to eat. These include the elderly, infants, and toddlers, the sick, and in many societies there is a list of non-farmers who include religious leaders, soldiers, weavers, artists, merchants, and others. Farmers, therefore, are expected to not only grow enough food so that they can farm another year, but also to grow enough food to feed numerous nonfarmers.

The amount of food a farmer produces compared to the food they consume can be expressed as a ratio of food calories produced per food calorie consumed, or kcal output/kcal input (Hall & Klitgaard, 2012). This ratio is frequently called the energy return on investment, or EROI. The EROI attainable by a farmer depends on many factors, which I depict in a

simple conceptual model of the relationship between EROI and grain yields at four stages of agricultural evolution (Figure 1). Before society's reliance on fossil fuels, EROI was determined in part by the farming culture's accumulation of agro-ecological knowledge and experience as well as degrees of crop adaptation. When people moved to new places and began farming, EROI would be relatively low for years to decades as farmers gradually gained an understanding of what soil types were best suited for particular crops, which trees worked best to border fields, etc. Addition-

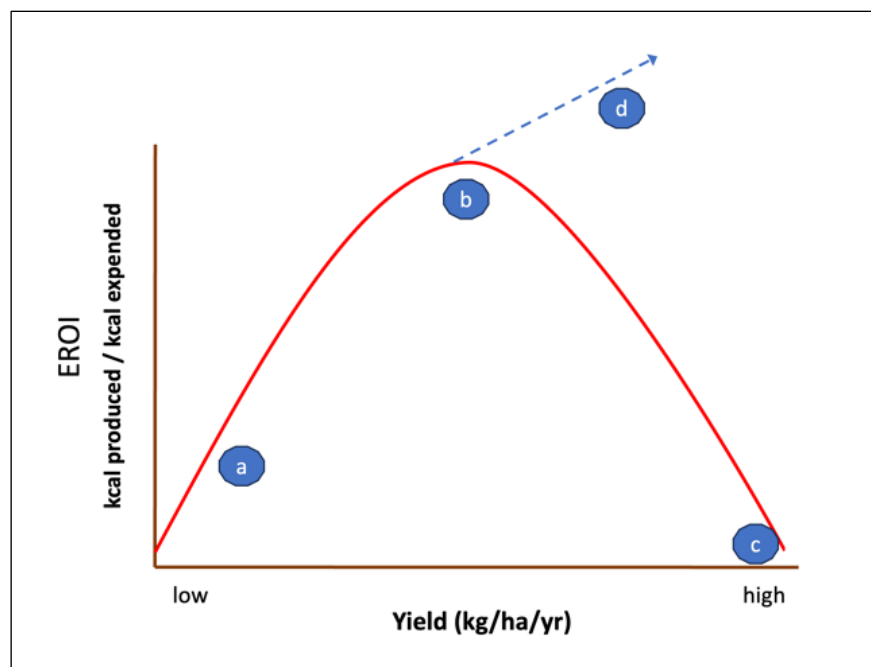


Figure 1. Conceptual Model of the Relationship Between EROI and Grain Yields at Four Stages of Agricultural Evolution

- (a) early in ancestral farming system development before germplasm and cropping systems are optimized to conform to local resource constraints;
- (b) highly developed ancestral farming systems in which germplasm has been adapted to local conditions and farmers have developed agroecological knowledge and practices that minimize the labor required to reduce limiting factors of crop growth; EROI for specific geographic conditions is near maximum and ultimately limited by site-specific limiting factors such as climate and soil characteristics;
- (c) the introduction of fossil fuels replaces metabolic energy and ecological intensification with input intensification, decoupling the energy in food with the energy required to farm;
- (d) the development of perennial polyculture agroecosystems in which high yields are supported by less metabolic or fossil energy inputs and more by ecological intensification.

Note: Figure inspired by Odum's maximum power principle (Odum, 1995).

ally, it took time to terrace slopes and dig irrigation ditches, and for crop germplasm to adapt to new environmental conditions through cycles of selection (a in Figure 1). With time, often remarkable agroecological innovations and crop adaptations resulted in large increases in yields and in EROI (b in Figure 1). These increases ultimately plateau, however, due to inherent and unique site characteristics such as rainfall amounts and distribution, soil texture and mineralogy, slope of the land, and seasonal temperatures, as well as the productivity limits of specific crops.

Starting in the nineteenth century and culminating in the twentieth, farmers in more industrialized nations underwent an unprecedented energetic transition in which “work” carried out by fossil fuel–powered machinery was substituted for human and animal labor (termed here “metabolic energy”) (Grassini & Cassman, 2012; Pimentel & Pimentel, 2008). This substitution effectively decoupled the caloric energy required to grow food from the caloric energy contained in the food grown. The industrialization of agriculture marks the first time that the EROI of food acquisition by humans (or arguably any other animal) could be one or below one for extended periods of time (c in Figure 1). In other words, it was now possible to expend more energy growing food than the food provided back in calories. For the first time, low EROI values did not translate into hunger, and the energy input into agriculture (the denominator of EROI) was largely derived from fossil fuel energy rather than the solar energy embodied in food.

Gasoline, diesel, and other fossil fuels have remarkably high energy densities relative to the metabolic energy of humans and animals. Pimentel and Pimentel (2008) calculated that one gallon of gasoline (3.79L) contains the work energy equivalent of 97 hours of human labor. The contrast in the cost of a gallon of gas compared to almost 100 hours of labor helps explain the rapid adoption of labor-reducing technologies powered by fossil fuel, as well as the challenge of voluntarily forgoing fossil fuel power in the future. In addition to fossil fuels substituting for labor, they have been used to manufacture inputs such as fertilizers, pesticides, and machinery as well as for irrigation, seed production, and grain drying (Grassini & Cassman,

2012). Nitrogen fertilizers remain the single greatest input of fossil fuel power into industrial agroecosystems (Smil, 2022).

Before the industrial revolution, metabolic power provided most of the power to grow wheat, maize, and other grains. Today, farms fall along an energy gradient. On one end is large-scale industrialized grain production like that which occurs in the U.S., where 90% to 99% of the power used to grow and harvest grains is derived from fossil fuels (Grassini & Cassman, 2012; Pimentel & Pimentel, 2008). On the other end of the gradient are the small farms (< 5 acres or 2 ha) in which metabolic energy remains a significant power source for farm operations. The differences in labor productivity (food produced per farmer per unit time) on the two ends of this gradient are sobering. For example, a Kenyan farmer’s labor productivity is 1.2 kg maize/hour, whereas the labor productivity of a U.S. farmer from Iowa is 1,470.6 kg/hour (Gollin, 2018, p. 21). These dramatically different statistics in labor productivity fail to account for the fossil fuels that provide over 99% of the “labor” to grow maize in Iowa; remove fossil fuels and the Iowa farmer’s productivity would fall close to the Kenyan farmer’s 1.2 kg maize/hour.

Of the more than 608 million farms in the world, 84% have land areas of 5 acres (2 hectares) or less (Lowder et al., 2021). These smallholdings make up only 12% of the world’s farmland, and they vary in terms of their reliance on fossil fuel–based mechanization and inputs. In contrast, less than 1% of the world’s farms are greater than 124 acres (50 hectares) in size, but they comprise 70% of the world’s croplands. Almost all U.S. grain production occurs on farms that fall within this 1%. The scale of these large farming operations necessitates the use of prodigious amounts of fossil fuels to power mechanization and manufacture inputs (Pimentel & Pimentel, 2008).

There is general agreement that nations of the world will need to achieve net zero GHGs by 2050 if the Earth’s temperatures are going to stabilize and the worst impacts of climate change be avoided (Huang & Zhai, 2021; United Nations, n.d.). The prospects for grain farmers to reduce or eliminate their dependence on fossil fuels will vary by farm size and economic context. Many small-

holder, subsistence farmers are already reliant on metabolic energy to provide much, if not most, of the work to prepare fields, plant, and harvest crops. These farmers also commonly manage ecological processes to maintain soil fertility and regulate pests rather than apply fossil fuel–based inputs.

In contrast to the smallholder grain farms of the world, large grain-producing farms such as those found across the central U.S. will face immense challenges in reducing what currently can only be described as extreme fossil fuel dependency. While to date there has been limited discussion focused on this topic, we can anticipate at least two perspectives being advanced by the agroecology or regenerative agricultural communities on how the 1% of farms that are over 50 ha can phase out fossil fuels. The first and by far most widely embraced mirrors the renewable energy optimism that permeates mainstream approaches to achieving C neutrality in the economy more broadly: that is, a transition to renewable energy sources that can replace diesel and gas with electricity for powering farm equipment and irrigation (Gielen et al., 2019; Nitta, 2023). If renewable sources were able to meet society's projected electricity demands, including those in agriculture, then around half of on-farm fossil fuel–based energy costs could be converted to renewables (Grassini & Cassman, 2012; Pimentel & Pimentel, 2008). There are, however, many skeptics who argue that renewables will not be able to replace the fossil fuels powering the current electricity grid plus the greatly increased demand following the shift to an electric vehicle fleet and electric heating in the built environment (Cox, 2023; Smil, 2022). Aside from the uncertainty around whether renewables will generate sufficient affordable electricity to supply industrial agriculture, half of on-farm fossil fuel dependency cannot be replaced in the foreseeable future by renewables, especially nitrogen (N) fertilizer (Pimentel & Pimentel, 2008; Smil, 2022).

Another less common but increasingly voiced approach to achieving C neutrality by 2050 involves a rapid shift toward smaller farm sizes, much greater metabolic energy input from human and animal labor, and increased reliance on ecological intensification such as biological N fixation (Fink, 2022; Pahnke & Goodman, 2022). When

applied to grain agriculture, this approach would greatly reduce labor productivity, as depicted in the contrast between Kenya and Iowa maize farmers, above. Without economic interventions, less food produced per hour of farmer labor would result either in higher food prices or lower farmer incomes. If the greatest challenge to the renewable energy path to C neutrality is technological, the greatest challenge to the smallholder path is social. Land redistribution, rural repopulation, new farmer education, and policy revisions are processes that are notoriously slow and would have to accelerate dramatically to have any impact on fossil fuel dependency by 2050.

The renewable and smallholder transitions are essentially substituting fossil fuel–derived energy with non–fossil carbon energy sources. Highly complementary to these, and possibly essential for either to be successful, are farming systems that require fewer energy inputs, meaning reduced need for sources of renewable or metabolic energy without decreasing food production. The development of perennial grain crops grown in ecologically functional polycultures is an emerging model of agriculture that could elevate EROI values well above what is possible in agroecosystems based on annuals (d in Figure 1).

Diversity and perenniality are increasingly recognized as key attributes of virtually all plant communities that comprise the Earth's major ecosystems, including grasslands, savannahs, temperate and tropical forests, shrublands, tundra, and deserts (Crews et al., 2018; Poppenwimer et al., 2023). Water infiltration and uptake, nutrient retention, erosion prevention and formation, pathogen regulation, soil organic matter accumulation, and net primary production are all ecosystem attributes tied to perenniality and diversity, and undergird the sustainability of natural ecosystems (Crews et al., 2018). By introducing greater perenniality and diversity into grain agroecosystems, these beneficial ecosystem functions occur as a byproduct of farming. Energy savings are predicted in perennial polycultures because crop planting only happens periodically, opportunities for weed establishment are reduced, nitrate losses through leaching are reduced, and inputs of N from biological fixation increase. In addition, perennial polycultures show

promise for drawing down atmospheric carbon dioxide (CO₂) in soil organic matter, and for reducing nitrous oxide (N₂O) emissions, especially in legume intercrops (Crews et al., 2022; Siddique et al., 2023).

If society as a whole manages to eliminate its dependence on fossil fuels in upcoming decades to reduce GHG emissions, agriculture is unlikely to be given a pass. Reducing fossil fuel dependence in grain agriculture, especially in industrialized countries, remains a formidable challenge, both in organic and conventional systems. This is true even

if the most optimistic scenarios of renewable electricity substitution for fossil fuels are realized, and even if rapid changes in land tenure are achieved, making reliance on metabolic energy more feasible. The development of diverse perennial grains presents a third path to reducing reliance on fossil energy—not through substitution for fossil fuels but by replacing low-functioning annual monocultures with highly functional perennial agroecosystems that require far less human management and inputs to capture sunlight and produce food. 

References

- Cox, S. (2023, June 14). Needed: Either degrowth or two earths. *In Real Time*.
<https://citylights.com/needed-either-degrowth-or-two-earths/>
- Crews, T. E., Carton, W., & Olsson, L. (2018). Is the future of agriculture perennial? Imperatives and opportunities to reinvent agriculture by shifting from annual monocultures to perennial polycultures. *Global Sustainability*, 1, Article e11. <https://doi.org/10.1017/sus.2018.11>
- Crews, T. E., Kemp, L., Bowden, J. H., & Murrell, E. G. (2022). How the nitrogen economy of a perennial cereal-legume intercrop affects productivity: Can synchrony be achieved? *Frontiers in Sustainable Development*, 6, Article 755548. <https://doi.org/10.3389/fsufs.2022.755548>
- Crews, T. E., & Peoples, M. B. (2004). Legume versus fertilizer sources of nitrogen: Ecological tradeoffs and human needs. *Agriculture, Ecosystems & Environment*, 102(3), 279–297. <https://doi.org/10.1016/j.agee.2003.09.018>
- Fink, H. P. (2022, May 19). *American peasant: Towards a “small farm future” in the United States*.
<https://coda.io/@hpeterfink/american-peasant>
- Gielen, D., Boshell, F., Saygin, D., Bazilian, M. D., Wagner, N., & Gorini, R. (2019). The role of renewable energy in the global energy transformation. *Energy Strategy Reviews*, 24, 38–50. <https://doi.org/10.1016/j.esr.2019.01.006>
- Gollin, D. (2018). *Farm size and productivity: Lessons from recent literature* (IFAD Research Series No. 34). International Fund for Agricultural Development (IFAD). Retrieved from SSRN website: <https://ssrn.com/abstract=3321659>
- Grassini, P., & Cassman, K. G. (2012). High-yield maize with large net energy yield and small global warming intensity. *PNAS*, 109(4), 1074–1079. <https://doi.org/10.1073/pnas.1116364109>
- Huang, M.-T., & Zhai, P.-M. (2021). Achieving Paris Agreement temperature goals requires carbon neutrality by middle century with far-reaching transitions in the whole society. *Advances in Climate Change Research*, 12(2), 281–286. <https://doi.org/10.1016/j.accres.2021.03.004>
- Hall, C. A. S., & Klitgaard, K. A. (2012). *Energy and the wealth of nations*. Springer.
<https://doi.org/10.1007/978-1-4419-9398-4>
- Lowder, S. K., Sánchez, M. V., & Bertini, R. (2021). Which farms feed the world and has farmland become more concentrated? *World Development*, 142, Article 105455. <https://doi.org/10.1016/j.worlddev.2021.105455>
- Nitta, N. (2023, April 19). Could electric tractors revolutionize farming? *Smithsonian Magazine*.
<https://www.smithsonianmag.com/innovation/could-electric-tractors-revolutionize-farming-180982012/>
- Odum, H. T. (1995). Self-organization and maximum empower. In C. A. S. Hall (Ed.), *Maximum power: The ideas and applications of H.T. Odum* (pp. 311–330). University Press of Colorado.
- Pahnke, A., & Goodman, J. (2022, August 4). We should all aspire to be peasants: Time for a food revolution. *Wisconsin Examiner*. <https://wisconsinexaminer.com/2022/08/04/we-should-all-aspire-to-be-peasants/>
- Pimentel, D., & Pimentel, M. H. (2008). *Food, energy, and society* (3rd ed.). CRC Press.
<https://doi.org/10.1201/9781420046687>

- Poppenwimer, T., Mayrose, I., & DeMalach, N. (2023). Revising the global biogeography of annual and perennial plants. *Nature*, 624, 109–114. <https://doi.org/10.1038/s41586-023-06644-x>
- Siddique, I. A., Grados, D., Chen, J., Lærke, P. E., & Jørgensen, U. (2023). Soil organic carbon stock change following perennialization: A meta-analysis. *Agronomy for Sustainable Development*, 43, Article 58. <https://doi.org/10.1007/s13593-023-00912-w>
- Smil, V. (2017). *Energy and civilization*. The MIT Press. <https://doi.org/10.7551/mitpress/9780262035774.001.0001>
- Smil, V. (2022). *How the world really works: The science behind how we got here and where we're going*. Viking.
- Smith, L. G., Williams, A. G., & Pearce, B. D. (2015). The energy efficiency of organic agriculture: A review. *Renewable Agriculture and Food Systems*, 30(3), 280–301. <https://doi.org/10.1017/S1742170513000471>
- U.S. Department of Agriculture, Economic Research Service [USDA ERS]. (n.d.). *The number of U.S. farms continues slow decline. Farms, land in farms, and average acres per farm, 1850–2023*. Retrieved January 14, 2024, from <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=58268>
- United Nations. (n.d.). *Net zero: #ItsPossible*. Retrieved January 14, 2024, from <https://www.un.org/en/climatechange/net-zero-coalition>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Broadscale diversification of Midwestern agriculture requires an agroecological approach

Nicholas R. Jordan ^{a *}
University of Minnesota

Matt Liebman ^b
Iowa State University

Mitch Hunter ^c and Colin Cureton ^d
University of Minnesota

Submitted February 17, 2024 / Published online April 24, 2024 / Format updated June 4, 2024

Citation: Jordan, N. R., Liebman, M., Hunter, M., & Cureton, C. (2024). Broadscale diversification of Midwestern agriculture requires an agroecological approach [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 61–66. <https://doi.org/10.5304/jafscd.2024.133.007>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

We write to highlight the potential for academic agroecology to address the crucial challenge facing agriculture in the Upper Midwest region of the U.S.: diversification. Integrative forms of agroecology—often framed as “science, practice, and movement” (Wezel et al., 2018)—can

make important and unique contributions to expanding the scale at which diversified farming systems are adopted in the region. After outlining the current situation in the Upper Midwest region, we identify particular roles—currently not robustly practiced—that academic agroecologists can play to advance diversification.

^{a *} *Corresponding author:* Nicholas R. Jordan, Professor, Department of Agronomy and Plant Genetics, University of Minnesota; 1991 Upper Buford Circle; St. Paul MN 55108 USA;  <https://orcid.org/0000-0002-9977-051X>; jorda020@umn.edu

^b Matt Liebman, Professor Emeritus, Dept. of Agronomy, Iowa State University; 716 Farm House Lane; Ames, IA 50011 USA;  <https://orcid.org/0000-0001-6193-3849>; mliebman@iastate.edu

^c Mitch Hunter, Associate Director, Forever Green Initiative, Dept. of Agronomy and Plant Genetics, University of Minnesota; 1991 Upper Buford Circle; St. Paul MN 55108 USA;  <https://orcid.org/0000-0002-4562-7806>; mhunter@umn.edu

^d Colin Cureton, Director of Commercialization, Adoption, and Scaling, Dept. of Agronomy and Plant Genetics, University of Minnesota; 1991 Upper Buford Circle; St. Paul MN 55108 USA; cure0012@umn.edu

Author Disclosure

Alongside his work at the University of Minnesota, Cureton is a member in Midwest Hazelnuts, LLC, which seeks to scale the regional hybrid hazelnut industry in partnership with the University of Wisconsin, University of Minnesota, and many other entities. He is also a shareholder in Overstory Ventures, a Venture Studio focused on taking new regenerative crops to market.

The Current Status of Agriculture in the Upper Midwest, in Social-Ecological Context

The U.S. Upper Midwest region, covering the states of Illinois, Indiana, Iowa, Michigan, Minnesota, and Wisconsin, comprises one of the largest and most productive agricultural regions in the world. The region's deep, fertile soils and generally favorable precipitation patterns combine with a massive supporting infrastructure to produce vast amounts of food, feed, and bioenergy. This production is accomplished by a consolidating agricultural industry, with fewer and larger farms, in a region that is losing rural population while also becoming more culturally diverse (Iowa Small Towns Project, 2023). The loss of smaller farm operations affects rural communities by diminishing their economies and the population base supporting public infrastructure, such as schools, hospitals, and other civic institutions. New immigrants are highly important to the economic and social vitality of many rural communities, but rural immigrants also face major challenges, including low-wage employment, cultural and racial discrimination, and limited availability of health care, education, and social services (Ajilore & Williamson, 2019).

These agricultural and social trends in the Upper Midwest have been accompanied by marked degradation of the local environment (Gilliom et al., 2006; Givens et al., 2016; Heathcote et al., 2013; U.S. Environmental Protection Agency, 2023), as well as extraregionally, as exemplified by nutrient discharges that have created the hypoxic zone in the Gulf of Mexico (Alexander et al., 2008). This degradation derives, in large part, from the profound loss of biological diversity in regional landscapes and croplands (Brown & Schulte, 2011; Samson & Knopf, 1994), which has been linked to increases in greenhouse gas emissions, soil erosion, and water pollution (Lark et al., 2022). Agroecologists interested in the Upper Midwest are confronted by these agricultural, social, and ecological dynamics.

There is mounting evidence that diversification of regional agroecosystems can provide economically viable solutions to these environmental problems. For example, results of a long-term experiment conducted in Iowa (Davis et al., 2012)

indicate that diverse crop rotations integrated with cattle production matched the profitability of a conventional corn-soybean system, while improving many environmental outcomes related to soil, water, biodiversity, air quality, and climate (Baldwin-Kordick et al., 2022; Hunt et al., 2017, 2019, 2020; O'Rourke et al., 2008). Diversified farming systems that incorporate practices such as cover crops, patches of perennial grasslands, and agroforestry can address challenges posed by climate change in the upper Midwest (Basche & DeLonge, 2017; Schilling et al., 2013), particularly the anticipated increases in rainfall variability (Angel et al., 2018).

Advancing Regional Diversification: Vital Roles for Integrative Agroecology

Our premise is that diversification of current agroecosystems is key to stewardship of soil, water, and biodiversity, and to the economic viability of agricultural production systems. There are many regionally relevant forms of diversified farming systems, including extended crop rotation, cover cropping, edge-of-field conservation practices, managed grazing, agroforestry, and silvopasture. However, broadscale adoption of such systems faces a wide range of barriers (Meynard et al., 2018), most of which arise from the large-scale, industrialized character of Midwest agriculture and the interlocking complex of technical, economic, political, and cultural factors that support it (Geels, 2019). The development of diversified farming systems depends on broad societal support (Bacon et al., 2012). Building and maintaining sufficiently broad support will certainly require attention to social and economic inequities and injustices in current agricultural systems. We propose that Midwest academic agroecologists can play pivotal roles in collaborative efforts to overcome these scaling barriers, including building broad societal support for diversified systems. We highlight three different roles that can be pursued; all are distinctively agroecological and not likely to be performed by other kinds of agricultural scientists.

The first role involves the civic engagement aspect of agroecology that is expressed in the "movement" element of the tripartite notion of "science, practice, and movement." We observe

that this element of agroecology is recognized by regional academic agroecologists (e.g., Nicklay et al., 2023), but not widely practiced by these actors. In our view, it is crucial for academic agroecologists to intensify their participation in civil society arenas relevant to diversification. Moreover, this participation will require engagement in the politics of cross-sector collaboration (Jordan et al., 2020) and sustainability transitions. Such politics are required because broadscale diversification demands transformative change in the complex of factors that impede it. To achieve change in this complex, broad-based coalitions must be organized and sustained. In support of these coalitions, academic agroecologists can provide technical analyses relevant to contrasting scenarios of broadscale diversification, strategic insights, and assistance in building bridges between agriculturalists and stakeholders in other sectors (e.g., environmental non-governmental organizations).

An example of a relevant political arena is the current project to develop a “hub” for regional scaling of sustainable aviation fuel (SAF; Greater MSP Partnership, n.d.). Scaling SAF could drive extensive diversification in the region if novel oil-seed crops that would provide much-needed winter ground cover (e.g., pennycress, camelina) were included and supported by necessary policies, breeding efforts, technical infrastructure, and other innovations and scaling factors. More broadly, development of a SAF industry in the Upper Midwest could drive equitable progress, providing positive social, economic, and environmental outcomes for both rural and urban communities. Conversely, SAF scaling might be undertaken without diversification of current agriculture and in a way that does not address—and may worsen—environmental and social challenges facing these communities. Therefore, responsible innovation and scaling around SAF development requires an inclusive and reflexive process (Stilgoe et al., 2017) attentive to the nature and outcomes of SAF development and the distribution of its costs and benefits. In particular, the environmental performance of cropping systems producing SAF feedstocks will be a key consideration in responsible development of SAF. The Forever Green Partnership, hosted by the

University of Minnesota, provides a platform for such engagement by academic agroecologists in regional SAF scaling, in collaboration with other parties, such as environmental non-governmental organizations. Through alliance with these organizations, academic agroecologists have been able to gain influence in the development of the regional “hub” for SAF scaling.

A second role involves the support of place-based diversification projects. Such projects strive to devise locally adapted and economically viable diversified farming systems, tailored to the biophysical and socio-cultural circumstances of particular places. Implicit in these efforts is the premise that increasing the adoption of diversified farming systems at a regional scale requires weaving together a multiplicity of different place-based projects. Doing so is likely to require organizing farmer networks and cross-sector community support (Asprooth et al., 2023).

Such a place-based project is underway in the Cloverbelt region of central Wisconsin, which has experienced major agriculture-related declines in water quality during recent decades. A robust coalition of agricultural and environmental interests has formed the Eau Pleine Partnership for Integrated Conservation (EPPIC) to address these water problems, and agroecologists participating in the Grassland 2.0 project have collaborated with that organization. Collaborative roles for agroecologists have included dialogues with EPPIC members and professionals to identify opportunities for expanding grassland agriculture in the Cloverbelt region, as a means of addressing shared community goals for the future. These deliberative efforts have identified a particular diversified farming system—custom dairy heifer grazing—as a promising option for increasing grassland agriculture in the region. Currently, EPPIC and Grassland 2.0 are organizing a collaborative network to pilot heifer grazing systems and link this network to market channels for the milk produced. Agroecologists have helped coordinate multiple organizations and individuals involved in the project, have linked farmers and other members of the agricultural and conservation communities to supportive resources at landgrant universities and interested markets,

and have provided informational and analytic support (e.g., model-based assessments of adoption of diversified systems at scale in the region).

Finally, agroecologists can play crucial roles in addressing the supply chain and value chain challenges that emerge from place-based pilot projects. To expand the scale at which novel diversified farming systems are adopted, supply chains must be built for the products they generate, and supportive ancillary policies, finance, and collaborative networks must be developed and cross-linked (Herrero et al., 2020). The resultant “support systems” built from these elements are crucial to the economic viability of novel diversified systems, which in turn is crucial to broadscale adoption. Much collaborative co-innovation will be required, spanning all links in supply chains, especially for producing, processing, and marketing novel crops (Meynard et al., 2017). Again, this co-innovation and scaling must be undertaken with attention to both the social and ecological outcomes of these developments (Wigboldus et al., 2020).

Scaling production and market distribution of hybrid hazelnut, a novel tree crop, provides a current example of such collaborative co-innovation. This work is being carried out by hazelnut growers, investors, entrepreneurs, and University of Minnesota and University of Wisconsin scientists and extension workers, along with a network of nongovernmental organizations, including the Savanna Institute. It spans innovation in crop propagation, harvesting equipment, post-harvest processing, land access, finance for hazelnut growers, and the development of multiple new commercial ventures. It also involves “steward ownership” of hazelnut germplasm and associated enterprises, as a means to ensure that these are used to achieve stated sustainability goals while commercial activities develop. Applied to agriculture, steward ownership is an innovative business structure which guarantees that profits will be reinvested to address some social-ecological goal (Sanders, 2023). Steward ownership of novel crop germplasm and associated enterprises is a notable example of responsible

innovation. Academic agroecology can play a key collaborative role in organizing co-innovation and developing methods for responsible innovation and scaling.

Conclusion

Agricultural diversification in the Upper Midwest U.S. is a complex problem in urgent need of solution. Implementing diversified farming systems in the region requires concerted and persistent collaboration among multiple societal sectors across multiple scales (Geels, 2019). By practicing integrative agroecology—that is, supporting integration among science, practice, and civic engagement activities—academic agroecologists can help organize and sustain the cross-sector and cross-scale collaborations necessary for responsible innovation. They can also support viable farming systems that provide positive social, economic, and environmental outcomes for both rural and urban communities. These efforts may involve collaboration with currently dominant agricultural firms, institutions, and organizations. If conducted with attention to reducing social and economic inequities and inequalities and to the limits of compromise, we believe such collaborations can be useful.

Many agricultural science disciplines carry out research on diversification, but most have a narrow focus and fail to address the integrative and collaborative challenges crucial to responsible scaling of diversified farming systems. Agroecology has philosophical and intellectual roots in classical ecology, which studies transformative changes and heterogeneity at multiple scales, from genotypes to populations, communities, and ecosystems. Within academic institutions, academic agroecologists bring a unique perspective on multi-faceted impediments and socio-ecological strategies that can be employed to diversify Midwestern agriculture. If Midwestern academic institutions are going to effectively contribute to the development and widescale regional adoption of diversified systems that benefit the regional environment and both rural and urban communities, agroecologists within those institutions must step forward into practical and leadership roles.



References

- Alexander, R. B., Smith, R. A., Schwarz, G. E., Boyer, E. W., Nolan, J. V. & Brakebill, J. W. (2008). Differences in phosphorus and nitrogen delivery to the Gulf of Mexico from the Mississippi River Basin. *Environmental Science and Technology*, 42(3), 822–830. <https://doi.org/10.1021/es0716103>
- Ajilore, O. & Willingham, Z. (2019). *Redefining rural America*. Center for American Progress. <https://www.americanprogress.org/issues/economy/reports/2019/07/17/471877/redefining-rural-america/>
- Angel, J., Mayes Boustead, B., Conlon, K. C., Hall, K. R., Jorns, J. L., Kunkel, K. E., Lemos, M. C., Lofgren, B., Ontl, T. A., Posey, J., Stone, K., Takle, E., & Todey, D. (2018). Midwest. In D. R. Reidmiller, C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. M. Lewis, T. K. Maycock, & B.C. Stewart (Eds.), *Impacts, risks, and adaptation in the United States: Fourth National Climate Assessment* (pp. 872–940). U.S. Global Change Research Program. <https://doi.org/10.7930/NCA4.2018.CH21>
- Asprooth, L., Norton, M. & Galt, R. (2023). The adoption of conservation practices in the Corn Belt: The role of one formal farmer network, Practical Farmers of Iowa. *Agriculture and Human Values*, 40, 1559–1580. <https://doi.org/10.1007/s10460-023-10451-5>
- Bacon, C. M., Getz, C., Kraus, S., Montenegro, M., & Holland, K. (2012). The social dimensions of sustainability and change in diversified farming systems. *Ecology and Society* 17(4), 41. <https://doi.org/10.5751/ES-05226-170441>
- Baldwin-Kordick, R., De, M., Lopez, M. D., Liebman, M., Lauter, N. Marino, J., & McDaniel, M. D. (2022). Comprehensive impacts of diversified cropping on soil health and sustainability. *Agroecology and Sustainable Food Systems*, 46(3), 331–363. <https://doi.org/10.1080/21683565.2021.2019167>
- Basche, A., & DeLonge, M. (2017). The impact of continuous living cover on soil hydrologic properties: A meta-analysis. *Soil Science Society of America Journal*, 81(5), 1179–1190. <https://doi.org/10.2136/sssaj2017.03.0077>
- Brown, P. W., & Schulte, L. A. (2011). Agricultural landscape change (1937–2002) in three townships in Iowa, USA. *Landscape and Urban Planning* 100(3), 202–212. <https://doi.org/10.1016/j.landurbplan.2010.12.007>
- Davis, A. S., Hill J. D., Chase C. A., Johanns A. M., & Liebman M. (2012). Increasing cropping system diversity balances productivity, profitability and environmental health. *PLoS ONE*, 7(10), Article e47149. <https://doi.org/10.1371/journal.pone.0047149>
- Geels, F. W. (2019). Socio-technical transitions to sustainability: A review of criticisms and elaborations of the multi-level perspective. *Current Opinion Environmental. Sustainability*, 39, 187–201. <https://doi.org/10.1016/j.cosust.2019.06.009>
- Gilliom, R. J., Barbash, J. E., Crawford, C. G., Hamilton, P. A., Martin, J. D., Nakagaki, N., Nowell, L. H., Scott, J. C., Stackelberg, P. E., Thelin, G. P., & Wolock, D. M. (2006). *The quality of our nation's waters: Pesticides in the nation's streams and ground water, 1992-2001*. U.S. Geological Survey. <https://pubs.er.usgs.gov/publication/cir1291>
- Givens, C. E., Kolpin, D. W., Borchardt, M. A., Duris, J. W., Moorman, T. B., & Spencer, S. K. (2016). Detection of hepatitis E virus and other livestock-related pathogens in Iowa streams. *The Science of the Total Environment*, 566–567, 1042–1051. <https://doi.org/10.1016/j.scitotenv.2016.05.123>
- Greater MSP Partnership. (n.d.). *Minnesota Sustainable Aviation Fuel Hub*. Retrieved March 1, 2024, from <https://www.greatermsp.org/pages/saf/>
- Heathcote, A. J., Filstrup, C. T., & Downing, J. A. (2013). Watershed sediment losses to lakes accelerating despite agricultural soil conservation efforts. *PLoS One*, 8(1), Article e53554. <https://doi.org/10.1371/journal.pone.0053554>
- Herrero, M., Thornton, P. K., Mason-D'Croz, D. et al. (2020). Innovation can accelerate the transition towards a sustainable food system. *Nature Food*, 1, 266–272. <https://doi.org/10.1038/s43016-020-0074-1>
- Hunt, N. D., Hill, J. D., & Liebman, M. (2017). Reducing freshwater toxicity while maintaining weed control, profits, and productivity: Effects of increased crop rotation diversity and reduced herbicide usage. *Environmental Science and Technology*, 51(3), 1707–1717. <https://doi.org/10.1021/acs.est.6b04086>
- Hunt, N., Hill, J. D., & Liebman, M. (2019). Cropping system diversity effects on nutrient discharge, soil erosion, and agronomic performance. *Environmental Science and Technology*, 53(3), 1344–1352. <https://doi.org/10.1021/acs.est.8b02193>

- Hunt, N. D., Liebman, M., Thakrar, S. K., & Hill, J. D. (2020). Fossil energy use, climate change impacts, and air quality-related human health damages of conventional and diversified cropping systems in Iowa, USA. *Environmental Science and Technology*, 54(18), 11002–11014. <https://doi.org/10.1021/acs.est.9b06929>
- Iowa Small Towns Project. (2023). *Rural Iowa at a glance 2023*.
<https://smalltowns.soc.iastate.edu/2023/12/27/rural-iowa-at-a-glance-2023/>
- Jordan, N., Gutknecht, J., Bybee-Finley, K. A., Hunter, M., Krupnik, T. J., Pittelkow, C. M., Prasad, P. V. V., & Snapp, S. (2020). To meet grand challenges, agricultural scientists must engage in the politics of constructive collective action. *Crop Science*, 61(1), 24–31. <https://doi.org/10.1002/csc2.20318>
- Lark, T. J., Hendricks, N. P., Smith, A., Pates, N., Spawn-Lee, S. A., Bougie, M., Booth, E. G., Kucharik, C. J., & Gibbs, H. K. (2022). Environmental outcomes of the U.S. renewable fuel standard. *Proceedings of the National Academy of Sciences*, 119(9), Article e2101084119, <https://doi.org/10.1073/pnas.2101084119>
- Meynard, J. M., Charrier, F., Fares, M., Le Bail, M., Magrini, M. B., Charlier, A., & Messéan. A. (2018). Socio-technical lock-in hinders crop diversification in France. *Agronomy for Sustainable Development*, 38, Article 54. <https://doi.org/10.1007/s13593-018-0535-1>
- Meynard, J. M., Jeuffroy, M. H., Le Bail, M., Lefèvre, A., Magrini, M. B., & Michon, C. (2017). Designing coupled innovations for the sustainability transition of agrifood systems. *Agricultural Systems*, 157, 330–339. <https://doi.org/10.1016/j.agsy.2016.08.002>
- Nicklay, J. A., Perrone, S. V., & Wauters, V. M. (2023). Becoming agroecologists: A pedagogical model to support graduate student learning and practice. *Frontiers in Sustainable Food Systems*, 7, Article 770862. <https://doi.org/10.3389/fsufs.2023.770862>
- O'Rourke, M. E., Liebman, M., & Rice, M. E. (2008). Ground beetle (Coleoptera: Carabidae) assemblages in conventional and diversified crop rotation systems. *Environmental Entomology*, 37, 121–130. [https://doi.org/10.1603/0046225X\(2008\)37\[121:GBCCAI\]2.0.CO;2](https://doi.org/10.1603/0046225X(2008)37[121:GBCCAI]2.0.CO;2)
- Samson, F., & Knopf, F. (1994). Prairie conservation in North America. *BioScience*, 44(6), 418–421. <http://www.jstor.org/stable/1312365>
- Sanders, A. (2023). Binding capital to free purpose: Steward ownership in Germany. *European Company and Financial Law Review*, 19(4), 622–653. <https://doi.org/10.1515/ecfr-2022-0020>
- Schilling, K. E., Gassman, P. W., Kling, C. L., Campbell, T., Jha, M. K., Wolter, C. F., & Arnold, J. G. (2013). The potential for agricultural land use change to reduce flood risk in a large watershed. *Hydrological Processes*, 28(8), 3314–3325. <https://doi.org/10.1002/hyp.v28.8>
- Stilgoe, J., Owen, R. & Macnaghten, P. (2017). Developing a framework for responsible innovation. In A. Maynard & J. Stilgoe (Eds.), *The ethics of nanotechnology, geoengineering, and clean energy* (1st ed., pp. 347–359). Routledge. <https://doi.org/10.4324/9781003075028-22>
- U.S. Environmental Protection Agency. (2023). *Clean Water Act Section 303(d): Impaired Waters and Total Maximum Daily Loads (TMDLs)*. <https://www.epa.gov/tmdl>
- Wezel, A., Goette, J., Lagneaux, E., Passuello, G., Reisman, E., Rodier, C., & Turpin, G. (2018). Agroecology in Europe: Research, education, collective action networks, and alternative food systems. *Sustainability*, 10(4), Article 1214. <https://doi.org/10.3390/su10041214>
- Wigboldus, S., Klerkx, L., & Leeuwis, C. (2020). Making scale work for sustainable development: A framework for responsible scaling of agricultural innovations. In A. A. Adenle, M. R. Chertow, E. H. M. Moors, & D. J. Pannell (Eds.), *Science, technology, and innovation for sustainable development goals: Insights from agriculture, health, environment, and energy* (pp. 518–543). Oxford University Press. <https://doi.org/10.1093/oso/9780190949501.003.0025>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Increasing the scope and scale of agroecology in the Northern Great Plains

Bruce D. Maxwell ^{a*} and Hannah Duff ^b
Montana State University

Submitted February 15, 2024 / Published online April 16, 2024 / Format updated June 4, 2024

Citation: Maxwell, B. D., & Duff, H. (2024). Increasing the scope and scale of agroecology in the Northern Great Plains [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 67–72. <https://doi.org/10.5304/jafscd.2024.133.005>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Large-Scale Agroecology

Agroecology is a science, practice, and movement that is gaining momentum worldwide. It aims to provide local, stable, and diverse diets through diversified, resilient, and sustainable agricultural practices (Ewert et al., 2023). However, agroecology seeks to address food systems issues by replacing large-scale commodity-based agriculture with something very different. Agroecology is typically discussed within the scope and scale of smallholder farming while failing to address the issues embedded in large-scale commodity-based agriculture. While we do not take issue with an ideal system where food is produced on small farms, it does not need to exclude agroecology applied to current scales of agriculture in regions like the Northern Great Plains (NGP), where

agriculture consists of spatially extensive crop and livestock farms. NGP farms have internal sustainability problems and harmful social, racial, and environmental externalities that can be addressed with agroecological principles. Despite the problems, the large scale of NGP agriculture is not likely to change much in coming decades, and so there is an imperative to apply agroecological principles at larger scales to address immediate issues. We emphasize that applying agroecological principles to large-scale farming could increase crop and forage diversity, conserve biodiversity, strengthen cross-boundary and multi-objective ecosystem management, address regional food security, and encourage co-innovation with crop and livestock producers in the NGP (Tittonell, 2020). If agroecologists do not address the immediate issues of NGP such as climate change adaptation and mitigation, livestock-based protein production, unequal access to nutritious food, agriautomation, and pandemic food system disruption, then we may only expect industrialized agriculture to provide short-sighted, profit-motivated solutions repeating a pattern of the past.

^{a*} *Corresponding author:* Bruce D. Maxwell, Professor, Montana State University; 3300 East Graf Street, Unit 35; Bozeman, MT 59715 USA;  <https://orcid.org/0000-0001-7775-9419>; bmax@montana.edu

^b Hannah Duff, Postdoctoral Research Associate, Montana State University; hannahduff8@gmail.com

Northern Great Plains Context and Issues

The NGP covers an area of about 1,940,000 km² and crosses five U.S. states (Nebraska, South Dakota, North Dakota, Wyoming, and Montana) and two Canadian provinces (Alberta and Saskatchewan) (Wang et al., 2016). The historical climate is semi-arid to subhumid with long, cold winters and short, warm summers (Wang & Fang, 2009). Recent summers have become increasingly dry and hot, challenging annual small grain production in the northwestern portions of the region (Whitlock et al., 2017). European settlement beginning in the 1880s saw the beginning of natural land cultivation and livestock introduction. Currently, about 50% of the NGP remains natural grassland, and nearly 100% of the uncultivated area is grazed by large mammals, principally cattle (Hooper et al., 2005). The average farm size in 2021 in the NGP states was 1,699 acres, versus 322 acres in five adjacent states to the east of the NGP and 195 acres in five Eastern Seaboard states (U.S. Department of Agriculture National Agricultural Statistics Service [USDA NASS], 2022), providing a sense of the scale difference in agriculture between regions. Since 2012, 32 million acres of previously undisturbed land, mostly along the eastern edge of the NGP, has been plowed up primarily for corn and soybean production (World Wildlife Fund, 2023). This land conversion contributes directly and indirectly to greenhouse gas (GHG) emissions, with these crops targeted for ethanol and livestock feedlots, and certainly not for local food production.

Approximately 4.2% of the population in the U.S. portion of the NGP is Native American and 22% of the land is within the boundaries of Reservations, where health and food security are major issues. The NGP Indigenous Peoples have a high frequency of diet-related health issues including diabetes, heart disease, and chronic inflammation. The grassland ecology, agricultural context, rural demographics, and health of Indigenous Peoples of the NGP creates a stage for agroecology to be applied, albeit at a much larger scale than what agroecology tends to be focused on. We believe agroecology can offer solutions to the large agricultural issues that are often avoided by traditional agricultural research

institutions (e.g., land-grant universities, USDA Agricultural Research Service, etc.) in the NGP.

Agroecology research can lead to solutions by drawing attention to the issues of current agriculture, quantifying the ecological and socioeconomic impacts, and offering alternative transdisciplinary approaches to commodity agriculture. In many cases the agroecological approaches may represent bridges from the industrial focus to a more ecologically driven food system. This food system would be dedicated to food production at large scales that equally emphasizes crop and livestock nutrient density, equal access to healthy food, economic equality, minimization of pollution, and conservation of biodiversity.

Alternative Agricultural Research

Questions for the NGP in the Future

Traditional agricultural research in the NGP has primarily addressed the changing climate issue by focusing on breeding crops for tolerance to increased aridity: crop diversification (mostly in the form of rotational cover crops) and reduced tillage systems to improve soil moisture retention and increase resilience to drought. Livestock production research has narrowly focused on developing current popular cattle breeds to be more tolerant to heat and water shortages, but still finishing cattle in feedlots. Research has also focused on increased infrastructure to deliver water to animals and on forage crops. Agricultural research in the NGP has largely been aimed at the production of small grains (e.g., spring and winter wheat and barley) rotated with cover crops (often legumes that will fix nitrogen). These yield-centric approaches do not consider major issues in current NGP agriculture, such as limited precipitation during the growing season, extreme heat interrupting crop and livestock growth cycles, changes to the hydrology of the region affecting livestock water and crop irrigation, and food security and human health issues for the region. Thus, more appropriate research questions that could put the NGP on a more agroecological trajectory without a major change of agricultural scale might be:

1. How will the NGP most efficiently and sustainably contribute to feeding an increased,

mostly urban, global population, while simultaneously addressing local food availability and quality?

2. Given end-of-century climate projections for the NGP, will crop production remain a viable option, or will new forms of agricultural land use need to be considered on cultivated lands? If climate drives a shift to even greater portions of land dedicated to livestock production without finishing in distant feedlots, how will agroecology be employed to best accommodate this transition?
3. Can the healthcare crisis of the region be solved by focusing on food as medicine? What role can Indigenous Peoples of the NGP play in developing an indigenous knowledge-informed agriculture focused on nutrition, medicine, and food security? How can the NGP food system deliver equitable access to nutritious food and honor the food sovereignty of NGP Indigenous Peoples?
4. How can NGP agriculture contribute to the conservation of biodiversity in the grassland and savanna ecosystems?
5. Can agroecology as a discipline provide research to appropriately scale food production and food chain structure to be sustainable and resilient to climate, market, and pandemic extreme events?

Examples of Potential Agroecological Solutions in the NGP

NGP agriculture needs to prepare for climate change that will constrain annual crop production and force increased livestock production onto the NGP landscape (Conant et al., 2018; Whitlock et al., 2017). The energy inefficiency of finishing (fattening on corn and soybeans) NGP-raised livestock in Midwest feedlots, coupled with the need to produce crops for direct human consumption in the Midwest, will result in livestock remaining on the range in the NGP. Vegetable-based protein for direct human consumption will be needed to determine crop choices in the North Central region. Protein from meat will likely be forced onto rangelands like those in the NGP as meat production in feedlots and confinement facilities decreases with cheap feed shortages and the threat of disease spillover from livestock.

Global and climate-related issues will challenge the current institutional assumptions about irrigation and current crop and livestock species breeding for heat and drought-tolerance solutions for the NGP (Shamon et al., 2022). A long history of bison on the NGP has selected for an animal much better suited for projected climates than currently exploited livestock species. Bison adapted to the NGP and coevolved with soil microbe, plant, insect, and animal communities may play an important role in NGP conservation of biodiversity (Shamon et al., 2022). Bison physiology, behavior, and efficiencies relative to water limitations, heat tolerance, resilience to extreme weather events, and general management as well as the nutritional quality of the meat produced indicate that bison should be the focus of future livestock agriculture in the NGP (Martin et al., 2021). In addition, and consistent with the place-based concept central to agroecology albeit applied at a large spatial scale, bison-based food sovereignty for native peoples (mostly engaged in livestock production) has become a logical solution to an otherwise grim future for the region (Shamon et al., 2022). The movement of agroecology in the NGP is largely centered on efforts by Indigenous People to re-establish bison in the NGP and create local meat processing facilities. Agroecology as an academic discipline can engage partnership with the native efforts to co-lead the region into a sustainable future with a new vision for agriculture. Perhaps fenced land ownership boundaries including native and non-native private and government land can be combined to create the large spaces required by bison to follow behaviors that will result in many of the goals of agroecology at NGP appropriate scales.

Much of the recent cultivation (sod-busting) that has occurred in the NGP is to grow corn and soybeans for livestock in confinement facilities and to produce ethanol. The agricultural system results in rural depopulation, an overemphasis on economic rather than ecological drivers of agriculture, increasing farm size (economies of scale), non-nutritious foods, degraded soils, pollution of air and water and loss of biodiversity. NGP research on any one of these impacts has not been addressed by traditional agriculture research

institutions, and has certainly not addressed the interactions among the factors detracting from some optimum agriculture driven by agroecological principles. Agroecology-based solutions and opportunities for research may include:

1. Diversifying the crops grown in the NGP to refocus on the direct production of human food with high nutrient density and on soil quality characteristics.
2. Growing crops with the intention to increase the nutrient density of livestock forage and decrease the reliance on medicinal inputs (antibiotics, growth supplements, etc.) (Provenza, 2018).
3. Partnering with Native American tribes to switch from cattle to bison as a more viable, culturally important livestock animal for the projected climates on the NGP.

Local Reservation-based meat processing could be a major step toward food sovereignty, allowing for increased tribal control of the local food system. Bison production of protein without reliance on GHG-emitting feedlots and production of crops for the feedlots has significant potential for solving several major issues without entirely removing meat from the human diet.

NGP farms will continue to produce small grains (spring and winter wheat, barley, and the rotational cover crops, which are primarily legumes, as well as oil seeds like safflower, sunflower and canola) for the next few decades. The corn and soybean extension onto the NGP is driven by contemporary economics but is shortsighted. Thus, agroecological research must prioritize creating alternative sustainable cropping systems at scale. The economies of scale will demand that current crops be produced on large scales. However, there are opportunities for the discipline of agroecology to contribute in significant ways to envisioning new approaches (Tiftonell, 2020) and draw on modern technologies to reduce the scale within fields to ecologically and economically driven optima (Duff et al., 2022). Further diversification of these systems to remove summer fallow and decrease fertilizer and pesticide (including herbicide) inputs will be within the

purview of agroecology research with the crucial addition of response variables, such as nutritional density, diversification and localization of markets, value-added products, contributions to regional food security, and conservation of biodiversity. Scalable complexity capturing and optimizing for ecosystem services with the goals of production and conservation of biodiversity will be an important challenge for agroecology research (Duff et al., 2024). Agroecology research can help to reverse the trend of crop and livestock production requiring the hydrologic altering water delivery infrastructure needed to ameliorate increased drought and precipitation pattern changes (Laugherburger et al., 2022). Ultimately, the agroecology discipline comprising science, practice, and movement has significant relevance at the scales at which agriculture is currently conducted.

Rationale for Increasing the Scope and Scale for Agroecology

At present, it seems that agroecology is not strategically engaged in addressing the regional realities, dynamics, challenges, and potential of large-scale NGP agriculture. While agroecology has gained a toehold through the popularization of organic and regenerative crop and livestock production, the science of agroecology to support agroecological practice and movement in the NGP is sorely lacking. The movement of agroecology in the NGP is largely centered on efforts by Indigenous People to bring bison back to the plains. If the science of agroecology does not use its privileged positionality to engage in these issues, we speculate that instead of addressing the root of these agricultural issues, agribusiness and other private tech companies will find ways to perpetuate and continue profiting from large-scale, high-input, industrial agriculture. Thus, these current challenges present a pivotal opportunity for the discipline of agroecology to transform large-scale agricultural issues into large-scale agroecology. An ideal future may target farm size reduction and may be able, in part, to accomplish that goal with modern monitoring and precision technologies. However, regions like the NGP are not likely to shift to smaller scales of agriculture on a time scale that will solve major issues. To totally commit agroecology research to small-scale

farms that produce local food would ignore vast landscapes around the world. Scaling up agroecology to address large-scale agricultural issues like those on the NGP will require transdisciplinary engagement at multiple scales and a commitment to co-production of participatory knowledge. In

addition, agroecology must lead with the admission that, in regions like the NGP, research into agroecosystems that form bridges to ideal systems will be required to avoid marginalization of the agroecology discipline.



References

- Conant, R. T., Kluck, D., Anderson, M. T., Badger, A., Boustead, B. M., Derner, J. D., Farris, L., Hayes, M., Livneh, B., McNeeley, S., & Peck, D. (2018). Northern Great Plains. In D. Reidmiller, C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. M. Lewis, T. K. Maycock, & B. C. Stewart (Eds.), *Impacts, risks, and adaptation in the United States: Fourth national climate assessment* (pp. 941–986). U.S. Global Change Research Program.
<https://doi.org/10.7930/NCA4.2018.CH22>
- Duff, H., Hegedus, P., Loewen, S., Bass, T., & Maxwell, B. D. (2022). Precision agroecology. *Sustainability*, 14(1), Article 106. <https://doi.org/10.3390/su14010106>
- Duff, H., Debinski, D., & Maxwell, B. D. (2024). Ecological refugia enhance biodiversity and crop production in dryland grain production systems. *Agriculture, Ecosystems & Environment*, 359, Article 108751.
<https://doi.org/10.1016/j.agee.2023.108751>
- Ewert, F., Baatz, R., & Finger, R. (2023). Agroecology for a sustainable agriculture and food system: From local solutions to large-scale adoption. *Annual Review of Resource Economics*, 15, 351–381.
<https://doi.org/10.1146/annurev-resource-102422-090105>
- Hooper, D. U., Chapin III, F. S., Ewel, J. J., Hector, A., Inchausti, P., Lavorel, S., Lawton, J. H., Lodge, D. M., Loreau, M., Naeem, S., & Schmid, B. (2005). Effects of biodiversity on ecosystem functioning: A consensus of current knowledge. *Ecological Monographs*, 75(1), 3–35. <https://doi.org/10.1890/04-0922>
- Lauffenburger, Z. H., Maneta, M. P., Cobourn, K., Jencso, K., Chaffin, B., Crockett, A., Maxwell, B., & Kimball, J. (2022). A hydro-economic analysis of end-of-century climate projections on agricultural land and water use, production, and revenues in the US Northern Rockies and Great Plains. *Journal of Hydrology: Regional Studies*, 42, Article 101127. <https://doi.org/10.1016/j.ejrh.2022.101127>
- Martin, J. M., Zarestky, J., Briske, D. D., & Barboza, P. S. (2021). Vulnerability assessment of the multi-sector North American bison *Bison bison* management system to climate change. *People and Nature*, 3(3), 711–722.
<https://doi.org/10.1002/pan3.10209>
- Provenza, F. (2018). *Nourishment: What animals can teach us about rediscovering our nutritional wisdom*. Chelsea Green Publishing.
- Shamon, H., Cosby, O. G., Andersen, C. L., Augare, H., BearCub Stiffarm, J., Bresnan, C. E., Brock, B. L., Carlson, E., Deichmann, J. L., Epps, A., & Guernsey, N. (2022). The potential of bison restoration as an ecological approach to future tribal food sovereignty on the Northern Great Plains. *Frontiers in Ecology and Evolution*, 10, Article 17.
<https://doi.org/10.3389/fevo.2022.826282>
- Tittonell, P., Piñeiro, G., Garibaldi, L. A., Dogliotti, S., Olf, H., & Jobbagy, E. G. (2020). Agroecology in large scale farming—A research agenda. *Frontiers in Sustainable Food Systems*, 4, Article 584605.
<https://doi.org/10.3389/fsufs.2020.584605>
- U.S. Department of Agriculture National Agricultural Statistics Service (USDA NASS). (2022). *Farms and land in farms 2021 summary*. https://www.nass.usda.gov/Publications/Todays_Reports/reports/fnlo0222.pdf
- Wang, X., McConkey, B. G., VandenBygaart, A. J., Fan, J., Iwaasa, A., & Schellenberg, M. (2016). Grazing improves C and N cycling in the Northern Great Plains: A meta-analysis. *Scientific Reports*, 6, Article 33190.
<https://doi.org/10.1038/srep33190>
- Wang, W., & Fang, J. Y. (2009). Soil respiration and human effects on global grasslands. *Global and Planetary Change*, 67, 20–28. <https://doi.org/10.1016/j.gloplacha.2008.12.011>

Whitlock, C., Cross, W., Maxwell, B., Silverman, N., & Wade, A. A. (2017). *Montana climate assessment: Stakeholder driven, science informed*. Montana State University and University of Montana, Montana Institute on Ecosystems.

<https://doi.org/10.15788/M2WW8W>

World Wildlife Fund. (2023). *2023 Plowprint Report*. <https://www.worldwildlife.org/publications/2023-plowprint-report>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Growing change at the intersection of art and agroecology

Ana Fochesatto ^{a *}

University of Wisconsin, Madison

Karen Crespo Triveño ^b

University of California, Santa Cruz

Ryan Tenney ^c

Sankara Farm

Jesús Nazario ^d

University of California, Berkeley

Garrett Graddy-Lovelace ^e

American University

Mariel Gardner ^f

West End Women's Collaborative

Submitted February 22, 2024 / Published online April 24, 2024 / Format updated June 4, 2024

Citation: Fochesatto, A., Crespo Triveño, K., Tenney, R., Nazario, J., Graddy-Lovelace, G., & Gardner, M. (2024). Growing change at the intersection of art and agroecology [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 73–84. <https://doi.org/10.5304/jafscd.2024.133.011>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Agroecology in the U.S., as commonly institutionalized, remains firmly rooted in its techno-scientific approaches centered on quantitative biophysical data and natural science research methodologies that flatten the richness of its relationality, land-based practices, and social movements. The crucial role of art and popular forms of artistic expression are often undervalued within the walls of academia and higher-education institutions, while elsewhere, it embodies the steady pulse

of anti-colonial resistance and the daily pursuit of life-affirming practices.

Art has the power to be deeply critical, emotional, transgressive, provocative, and revolutionary. Poetry, digital media, protest art, chants and songs, dance, photography, and a plethora of media tap into the essence of human and more-than-human relations in ways that are powerful and integral to the agroecology movement. Power is exercised through narrative and semiotic battles,

^{a *} Ana Fochesatto, PhD Candidate, Nelson Institute for Environmental Studies, University of Wisconsin, Madison;  <https://orcid.org/0000-0002-0564-2024>; fochesatto@wisc.edu

^b Karen Crespo Triveño, PhD Student, Environmental Studies Department, University of California, Santa Cruz; krespot@ucsc.edu

^c Ryan Tenney, Farmer/Artist, Sankara Farm; ryan@sankarafarm.com

^d Jesús Nazario, PhD Student, The Department of Ethnic Studies, University of California, Berkeley.

^e Garrett Graddy-Lovelace, Provost Associate Professor, American University School of International Service; 4400 Massachusetts Avenue NW; Washington, DC, 20016 USA;  <https://orcid.org/0000-0002-6006-3498>; graddy@american.edu

^f Mariel Gardner, Board Chair, West End Women's Collaborative; wlc4art@gmail.com

where racial capitalism and white supremacy seek to perpetuate dehumanization and disinformation. Despite being labeled as controversial and being shadowbanned by social media companies who level baseless claims against anti-colonial activists, political art, such as Artists Against Apartheid,¹ persists as resistance against oppressive forces. In this current political moment, activists at COP28 raised watermelon symbols, standing in place of the banned Palestinian flag, with its vibrant black, white, red, and green colors and land-based (agri)cultural connotations. Renderings of olive tree are being preserved, even as the olive tree groves are replanted as agroecological strategies against settler colonial domination and erasure. Palestinian traditional *tatreez* cross-stitching persists as a dynamic craft filled with agroecological motifs of regional flora and fauna of the region, and has also gained new life as a visual reference for cultural survival.

Art grounds agroecology, and vice versa.

During the U.S. Agroecology Summit in May 2023, agroecologists from intergenerational and diverse backgrounds and lineages—practitioners, activists, researchers, and educators—gathered together in what became, for many, a frustratingly academic and institutional space. Reflecting on the constraints set by these spaces and modes of communication, we felt the palpable absence of artistic expression. Triggered by this void, we ask a set of vital questions about the role of art: How does art support, expand, and transform agroecology? How does it help articulate its ancient and future libera-

tory potential? How does art fundamentally change our research processes, teaching, and community-building? How does it transgress power structures? How can we support each other in art-based teaching, research, and community work that catalyzes liberation?

In this commentary, we call to recognize and value the crucial role of art in agroecology movements and to center the power of artistic expression in our teaching, community organizing, and research. We invite you to take a seat with us on that sunny day near Kansas City, on the back porch of the Elms Hotel, as we each share a short insight from our unique perspectives into how art shapes agroecology, engaging in a thoughtful exploration of the aforementioned questions.

Firstly, we offer a regrounding in forward-facing retrospect, to situate that back porch among the original peoples of the Osage, Kaw, Pawnee, and Ioway nations. What is now known as Kansas comprises the current home to four federally recognized Native nations: The Prairie Band Potawatomie,² the Kickapoo Tribe of Kansas,³ the Iowa Tribe of Kansas and Nebraska,⁴ and Sac and Fox Nation of Missouri in Kansas and Nebraska,⁵ as taught to us by summit co-attendee Brett Ramey. Secondly, we unpack the very words ‘art’ and ‘agroecology,’ to extricate them from disciplinary constraints and sector connotations. These vast intertwining realms precede—and proceed from—current colonialist contradictions, offering escape routes from despair toward (agri)cultural memory and repair.

¹ <https://againstapartheid.art/toolkits>

² <https://www.pbpindiantribe.com/about/>

³ <https://www.ktik-nsn.gov/history/>

⁴ <https://iowatribeofkansassandnebraska.com/about-us/>

⁵ <http://www.sacandfoxks.com/>

Garrett Graddy-Lovelace: *Those who love and keep seeds know beauty contains and carries knowledge. The artistry of agrobiodiversity in action begets artistic orientation and commitment; how could it not? It delights the eyes and mouth. It nourishes the body and heart, of children on through to elders. Agrobiodiversity artisans craft their agrarian and culinary art to cultivate beauty, meaning, and flavors for shared pleasure, and thereafter cherished (agri) cultural memory. Of course, it's creative. Colors in their multiplicity—in maize, beans, okra pods, cabbages, apples, melons—convey and confer life at its fullest. Varieties of variety, to be admired and respected, discerned and selected, and saved for the next planting. Those with agrarian skill inherit, cultivate, and adapt agrarian artistry; how could they not? Those who don't know this don't know agricultural biodiversity.*

Rendering agrobiodiversity merely science erases its artistry, paving the way for (agri)cultural appropriation. Not only is this a colonial move, it helps explain coloniality: reductive science hierarchized above objectified aesthetic. As if scientific experimentation does not involve affinities and intuition, ethics and valuations. Rendering agrobiodiversity into plant genetic resources for food and agriculture further erases the Indigenous and African Diaspora, mostly women who stewarded these all along, whose labor, agrarian skill, and artistry have co-developed these agrobiodiverse matrices and modes for millennia. To all of our benefit. Call it art. Not to demean it as nonscientific, but to honor it as a monumental intellectual creative and aesthetic co-endeavor. ●

Karen Crespo Triveño: *Curating arts-based agroecology requires a reflexive methodological approach that entangles the co-struggle toward transformative futures, marrying the interpersonal with agroecological inquiries, theoretical underpinnings, practice, and movement work. In pursuing a collective agroecological and food sovereignty future, autoethnography, a feminist methodology that has interpretive meanings and practices (Denzin, 2014), can center one's consciousness of a specific phenomenon through retelling events by documenting observations, narratives, and recalled memories with analytic reflexivity. McIvor (2010) illuminates that the self and collective can be centralized through the praxis of art, such as photography, videography, mural curation, storytelling, and recalling oral traditions. Autoethnographers like Levkoe et al. (2023) have practiced collective autoethnography (Chang et al., 2016; Levkoe et al., 2019) through participatory film to enhance relationality, critical reflection, and dialogue for Indigenous food sovereignty, addressing power dynamics, interconnected identities, and differing positionalities. Some have also called for a*

decolonial autoethnography (Datta & Chapola, 2023; McIvor, 2010), which interrogates what it means to know, emerging from an Indigenous research paradigm that centers on ceremony, spirit, prayer, and the wisdom of elders.

As a reconnecting Quechua warmi (woman) with lineages from Qullasuyu living in Andean diaspora, I ground scholarly and creative practice with autoethnography as a pathway toward reconnection to foodways, seeds, agricultural biodiversity, and Land.⁶ In pursuit of repairing cultural and epistemological ruptures that have fragmented ways of knowing and being within my lineage, I draw on autoethnography and the instruments of photography, videography, and recipe development as reclamation, returning, and I practice relationality (minka) and reciprocity (ayni) with human and more-than-human beings. While reflecting on recipes and videos, I write autoethnographic reflections to recall memories, telling stories of diasporic experiences. The images in Figures 1–3 are stills from my recipe videos as I continue to learn and prepare ancestral foods to reconnect my body with the spirit of my ancestors.



Figure 1. Tojori is a hot beverage made from ground-up maíz willkaparu.



Figure 2. Maíz willkaparu is an Indigenous maize (sara) variety of gray color from the Andean altiplano.



Figure 3. Api Morado is a hot beverage made from purple maize, cloves, cinnamon, and citrus.

⁶ I capitalize “Land” to highlight that many First Nations Peoples understand Land as a living relative, or as an autonomous being (Mvskoke, 2022).

Ana Fochesatto: *Cultivating an agroecological future and fostering a healing tapestry of relations with each other, humans, and more-than-humans beckon us to sow seeds of imagination in fields of possibility and liberation. Our collective imaginaries of the future have been monopolized for far too long by scientific modeling and bureaucratic language depicting ecological doom that only offer weak narratives on mitigation and Band-Aid solutions. They stifle hope and true justice, reproducing cynicism and division.*

In my research on the future of agriculture, it is not uncommon for the people I interview to categorize their views as “very radical,” only to articulate aspirations that echo the desires and paint similar visions of the future as those expressed by most other interviewees. Breaking through the constraints of self-censorship and disconnection within communities is a crucial part of our work as agroecologists. Hope and imagination are fundamental to crafting collective visions that propel our work of transformation every day. Art is essential to this process because it communicates the future where institutionalized forms of expression fail. My colleague, Erin Lowe, and I interviewed nearly 130 people

across the Midwest about the future of agriculture (Lowe & Fochesatto, 2023). We turned the many stories of the future we collected to the artistic hand of our colleague Liz Anna Kozik in the four evocative drawings (Figure 4). The drawings bring to life four core themes that rang through the people’s manifestations of a just transition in agriculture.

Our transdisciplinary and artistic collaboration with Liz faced hurdles in funding, which were remedied by my advisor, Adena Rissman’s, support and discretionary funding. In academic institutions that continue to embody and reproduce Western positivism, many would characterize this part of our research as “less rigorous” or “nice to have, but not necessary.” Yet these drawings move people in ways that our peer-reviewed publications do not.

Art is a strong actor in lifting up the stories of our communities—reflecting and fertilizing the robust hope, resistance, and interconnections that tie together our vibrant visions for a just food and farm system. It follows, then, that to further agroecology, we must center art in our methods, pedagogies, budgets, and priorities, allowing artistic expressions to reshape and nourish our perspectives of what is possible. ●



Figure 4. What Could a Just Food System Look Like? How Do We Get There?

These illustrations are a collaboration with scholar and artist Liz Anna Kozik (<https://liz.kozik.net>) that reflect themes from interviews with 128 Midwest community members conducted by Ana Fochesatto and Erin Lowe on creating a just transition in animal agriculture.

See https://grasslandag.org/wp-content/uploads/sites/391/2023/02/Just-Transitions-Report_final.pdf#page=15

Ryan Tenney: *Cultural Producers and artists engaged in the practice of social transformation keep seeds in their arsenal. Our methodologies include (dis)integrating via the sample/ break/ remix of ecocidal imaginaries of modernity by utilizing ART (Advanced Rhythmic Technologies, and Agrarian Rhizomatic Temporalities) that remain connected to a maternal ecological source of rebirth. Amílcar Cabral, the revolutionary agronomist, pinpointed the importance of culture to liberation struggles. Just as happens with the flowering of a plant, in culture there lies the capacity (or the responsibility) for forming and fertilizing the seedling, which will assure the continuity of history and assure the prospects for evolution and progress. (See excerpts from the Sankara Farm zines in Figure 5.)*

Seeds offer access to genetic algorithms of planetary inhabitation. Ancestral memory contained in seeds is an (epi)genetic archive that can be activated, edited, or experienced. The traditional practice of placing a seed in one's mouth in a ritual of planting is the present moment of activation, generations in the making, collapsing or containing ascending and descending temporalities of ecological knowledge.

When I started our seed collection several years ago, I soon realized the potential of these living beings. Both seeds and rootstock are technologies of time travel that embody the historical legacy and the future potential. Perhaps they serve as a concrete example of a future remnant as they carry the potential of both past and future. In the case of the rootstock, as a clone. And in

the case of a seed, as a child. In the same way that the prairie plants and so many other histories and cultures and peoples lie waiting around us here.

—From “Remnant Agro-ecology: Notes from the Fertile Crescent” by Omar Tesdell ([@omarecolo](#)), from this year's Prairie Festival 2022. Tesdell is an associate professor in the Department of Geography at Birzeit University in Palestine and is the director of the Makaaneyyat research group.

The embodied knowledge contained in seeds is shaped by the actions of land stewards through the epistemological braid that Robin Wall Kimmerer (2015) speaks of, traditional ecological knowledge (TEK), scientific inquiry, and plant knowledge. Our growth in this manner is not uninhibited. The historical legacy and future potential of Palestinian native plants have been subjected to the temporality and the brutal imagination of the settler. Settler temporalities actively erase, co-opt, and/or outright ban the practices and epistemologies of survival. The settler viewpoint renders the braid of knowledge (TEK and plant knowledge) as an obscure exterior waiting to be conquered. The settler must turn his gaze to the culture of the occupied and even destroy the memory in the seeds. The plantation is the production model of the settler, building forts on other people's land and then claiming self-defense; he introduces the cultivation of the strange fruit tree that Billie Holiday sang about as a perennial crop of colonial violence, ensuring the extraction of labor. ●



Figure 5. Sankara Farm Zines by Ryan Tenney

Seven Seeds of Sankofa Zine (<https://issuu.com/agroart22/docs/sevenseedszine>)

Sankara Farm Agroecology Zine (<https://issuu.com/sankarafarm/docs/agroecologyzine>)

Jesús Nazario: *The inclusion of art within agroecology necessitates an adoption of critical praxis. In the realm of photography, scholars and artists have to engage with imperial pasts and ongoing colonial violence as part of their photo-making process. I specifically would disinvite further adventures-with-indigeneity and the fetishization of racialized subjects, whose photograph(s) might lose important context and meaning in the digital world. Such aforementioned practices are still common in many academic disciplines and art spaces.*

Therefore, to use photographs as an artistic medium in academic and public works requires careful and critical consideration as to where the image(s) can land and live. This is one of the reasons why I selectively publish my digital photographs taken throughout my academic research. As an Indigenous self-taught photographer, I intend to disseminate

future photographs of Nahua maize farmers with captions that include Nahuatl, in research presentations, and to the farmers themselves. My decision is an academic and artistic choice fueled by an ethic of reciprocity, a recognition that extractive research never materially benefits photographed subjects, and a commitment to honoring place-based contexts as a form of Nahua relationality.

After all, photographic images are more than just visual markers or evidence. They are powerful ways to represent cultures. When seeking to show what arts-based agroecology is, critically using photography can be a litmus test that shows how scholars and artists are actively centering their subjects in ways that are liberating and accountable. Images produced by scholars and artists will always sit within visual economies that dictate the dissemination and interpretation of images. This opportunity is not one we should take lightly. ●



Figure 6. Cintli mopixca. The Land of Fresh Water, Mexico. 2018.

Cintli is the Nahuatl word for Indigenous maize varieties, specifically referring to dry kernels. *Cintli* is different than corn, in that the former is an Indigenous word for maize and the latter is a settler colonial term for the grain; when European colonists arrived to what is now known as the United States, they conflated Native American maize as “Indian corn” (Dean, 2013; Enfield, 1886; Weatherwax, 1918). Today, corn is a stand-in for all maize in the United States. But in *The Land of Fresh Water*, a small town in rural Guerrero, Mexico, where Nahuas view *Cintli* as a gift of life by their ancestors and the Creator, *Cintli* is cultivated (*mopixca*). This is one reason why Nahua farmers from *The Land of Fresh Water* have remained food sovereign through *Cintli* farming for hundreds of years. It is because *Cintli mopixca*.

Marriel Gardner: *The West End Women's Collaborative (WEWC)⁷ stands as a force dedicated to a singular mission: creating and sustaining artistic, peaceful spaces in the West End in Louisville, Kentucky. Rooted in the healing power of art and nature, we have embodied our mission through unwavering dedication to the corner of 40th and Hale Avenue. Our inaugural Peace Labyrinth installation transformed a vacant lot into a meditative walking path lined with 450 pavers painted by community members with inspirational messages nestled within a pollinator garden. A year later we converted the abandoned home next door into community gathering space shared with folks from across the city free of charge. ELAhouse (Energy, Light, Art) also serves as a gallery highlighting the work of women artists. WEWC envisions our spaces as sanctuaries where neighbors can find solace through the support of a loving community. The inherent sense of belonging that has always existed in Black communities is a catalyst for change addressing deeper societal issues like Black land loss and alienation. Art*

serves as the tangible expression of one's inner thoughts, yet expressing these thoughts can feel daunting amid the pressures imposed by capitalism and white supremacy (Gardner, 2023). WEWC believes everyone is an artist and each space we curate makes folks feel genuinely welcomed and at ease so that they find the courage to share experiences more openly.

A reluctance to be vulnerable and share deep personal experiences is hindering the agroecology movement in the United States, as witnessed in my experiences at the U.S. Agroecology Summit 2023 in Kansas City.

Art breaks those barriers. This movement will not progress forward without it.

As a 2022-2023 National Young Farmers Coalition Land Advocacy Fellow and a 2023 Filson Community History Fellow (Filson Historical Society, 2023), Gardner believes "wellness lies at the juncture of art and nature and the spaces we curate foster their healing properties" (Filson Historical Society, 2023). ●

⁷ <https://www.wlwc4art.com/peace-labyrinth>

In gathering many agroecologists, the U.S. Agroecology Summit 2023 also brought together many community-based artists—with great potential to center the intersection of arts, agrarian artistry, and agroecology. This fertile nexus merits more attention. We close our intervention by featuring two esteemed agroecological artists, whose visual creativity centers land-based life, agrarian resurgence, and (agri)cultural survival against ecocidal agro-corporate dominance and settler colonial oppression.

For years, the original paintings of renowned Filipino artist and musician Frederico Domínguez, also known as BoyD, have graced, grounded, and enhanced the leading international *Journal of Peasant Studies*. BoyD's intricate, mural-like paintings communicate the beloved landscape of his homeland, under attack by land grabs, agrochemical sprays, monocultural encroachment, and state violence. Meanwhile, the paintings center the resistance and persistence of Indigenous Filipino peasants, agrarian life, and natural forces. BoyD's paintings give dimension, relevance, translational capacity, beauty, and visual common ground to critical agrarian scholarship and help transcend the textual limitations of English language hegemony. Alastair Iles interviewed BoyD, who reiterated the central importance of his identity as a Mandaya Indigenous person originating from Davao, located in eastern Mindanao, Philippines. In this dialogue, BoyD explains that he draws from folklore and stories from his Mandaya lineage. He takes inspiration from other Indigenous peoples to identify a concept to narrate imagery for his paintings. BoyD's folklore utilizes "a repertory of heavenly and environmental spirits, mortals and immortals, and narratives of struggles between malevolent and benevolent protagonists" (Iles, 2022, p. 1349). In this way, BoyD's paintings contain layers of agroecological meaning: "He not only conveys the experiences of rural life, dispossession, and ecocide to people living in urban centres, but makes the presence of peasant communities and Indigenous peoples impossible to ignore" (Iles, 2022, p. 1348). Additionally, BoyD's use of multilayered symbolism and imagery-based narration can be a pathway toward inclusion and accessibility for deaf com-

munities or those who may hold alternative ways of knowing, being, viewing, reading, and understanding the world as a generative actualization of design justice.

Finally, we honor the seedkeeper and artist Vivan Sansour, who founded the Palestinian Heirloom Seed Library, and who deliberately left academic and scientized modes of agricultural biodiversity conservation to actually practice seed-keeping as (agri)cultural survival and to do so through art and art-making (Meneley, 2021). She uses "installations, images, sketches, film, soil, seeds, and plants to enliven old cultural tales in contemporary presentations and to advocate for seed conservation and the protection of agrobiodiversity as a cultural/political act" (Common Ground, 2023, para. 1). She has shown her multimedia, agroecological creations at biennales and major museum exhibits across the world. These can involve preparing, cooking, serving, savoring, and contextualizing a Palestinian meal, as an actualization of the artistic expression (entitled "Eating Our Histories") or engagements with seed, food, and land sovereignty as 'AUTONOMIA,' or planting terraces of Mloukheyeh, "one of Palestine's staple meals that represents comfort and warmth" (Dar Yusuf Nasri Jacir for Art and Research, 2018, para. 2) for an installation in the West Bank called "Home" and for her "Travelling Kitchen" project. She attributes her work "to the generosity of farmers across the globe" because they have "inspired my imagination as an artist and my ability to love science as a practice of observation that can change the world" (Sansour, n.d., para. 6).

Concluding Reflections and Next Steps

As we reflect on the role of art in agroecology, we find ourselves at a critical juncture where the profound essence of art conveys and embodies agroecology's relationality, reciprocity, land-based practices, and social movements in ways that are pivotal to anti-colonial resistance, feminist praxis, and social transformation. Recognizing this, we urge the growing call for active integration of art within agroecology, collectively valorizing its emancipatory potential to support social transformation (Cohen & Subramaniam, 2012; Heiss et

al., 2020). The absence of art in the U.S. Agroecology Summit 2023 channeled provocation, prompting us to plant seeds of critical reflection on how artistic expressions and approaches can permeate teaching, community organizing, and research in agroecology, especially as agroecology becomes institutionalized in the U.S. In this commentary, we brought you into our intervention and continue to invite you into our open dialogue, urging you to join us in the following actions to grow this artistic agroecological community of practice:

- Acknowledge and valorize artists who have contributed to agroecology movements.
- Allocate funding and institutional support for transdisciplinary collaborations among farmers, researchers, artists, and community members, fostering hope and dialogue in ways that traditional academic publications do not.
- Advocate for a paradigm shift in research funding and approaches, challenging the perception that artistic components are ancillary. Art needs to be understood as essential to agroecological processes, research, and social movement work because of its

transformative impact on hope, resistance, and community-building.

- Join and collaborate through the Agroecology Research-Action Collective (ARC) to continue to build a community of practice that supports art-based approaches and methodologies in research, teaching, and community organizing.
- Utilize feminist methodologies such as autoethnography to engage in an active documentation process such as journaling or writing *testimonios* (Reyes & Curry Rodriguez, 2012) of a particular phenomenon, such as navigating histories, power dynamics, memories, sensories, place, and encounters with humans and/or the more-than-human world.
- Connect interpersonal reflections with social theory and pursue life-affirming artistic mediums such as drawing, videography, graphic design, and photography.
- Support and learn from Indigenous artisans trained in traditional textiles, which are more than mere crafts, but invaluable texts of agroecological and cosmological significance for (agri)cultural survival and resurgence. 

References

- Chang, H., Ngunjiri, F., & Hernandez, K.-A. C. (2016). *Collaborative autoethnography*. Routledge.
<https://doi.org/10.4324/9781315432137>
- Cohen, N., & Subramaniam, R. (2012). Living Concrete/Carrot City: An exhibition platform as a growing medium. *Journal of Agriculture, Food Systems, and Community Development*, 2(3), 91–102.
<https://doi.org/10.5304/jafscd.2012.023.012>
- Common Ground. (2023). Vivien Sansour. Retrieved from <https://blogs.bard.edu/commonground/vivien-sansour/>
- Dar Yusuf Nasri Jacir for Art and Research. (2018). *Home/Vivien Sansour*. <https://darjacir.com/Home>
- Datta, R., & Chapola, J. (2023). Decolonizing autoethnography. In *Varieties of qualitative research methods: Selected contextual perspectives* (pp. 121–126). Springer. https://doi.org/10.1007/978-3-031-04394-9_20
- Dean, S. (2013, July 11). The etymology of the word ‘corn.’ *Bon Appetit*. <https://www.bonappetit.com/test-kitchen/ingredients/article/the-etymology-of-the-word-corn>
- Denzin, N. K. (2014). *Interpretive autoethnography*. SAGE. <https://doi.org/10.4135/9781506374697>
- Enfield, E. (1866). Indian corn; its value, culture, and uses. D. Appleton and Company.
<https://doi.org/10.5962/bhl.title.20375>
- Filson Historical Society. (2023). *Community History Fellows Program: Mariel Gardner*. <https://filsonhistorical.org/get-involved/chfp/mariel-gardner/>
- Gardner, M. (2023, September 17). Solutions to violence [Audio podcast episode]. In *WFMP Forward Radio*.
<https://soundcloud.com/wfmp-forward-radio/solutions-to-violence-mariel-gardner-9-17-23>

- Heiss, S. N., Daigle, K., & Kolodinsky, J. (2020). Poetic expressions of transdisciplinary food systems collaborations. *Journal of Agriculture, Food Systems, and Community Development*, 9(4), 15–28. <https://doi.org/10.5304/jafscd.2020.094.028>
- Iles, A. (2022). Sustaining agrarian struggles through painting invasion and resistance: The work of BoyD. *The Journal of Peasant Studies*, 49(6), 1348–1354. <https://doi.org/10.1080/03066150.2022.2092695>
- Kimmerer, R. W. (2015). *Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants*. Milkweed Editions.
- Levkoe, C. Z., Brem-Wilson, J., & Anderson, C. R. (2019). People, power, change: Three pillars of a food sovereignty research praxis. *The Journal of Peasant Studies*, 46(7), 1389–1412. <https://doi.org/10.1080/03066150.2018.1512488>
- Levkoe, C. Z., Lowitt, K., Furlotte, S., & Sayers, D. (2023). Advancing radical food geographies praxis through participatory film: Reflections from an Indigenous-settler food sovereignty collaboration. *ACME*, 22(1), 762–790. <https://doi.org/10.7202/1098035ar>
- Lowe, E., & Fochesatto, A. (2023). *Just transitions to managed livestock grazing: Needs and opportunities for change in the Midwestern United States*. Grassland 2.0. <https://grasslandag.org/justtransitions/>
- McIvor, O. (2010). I am my subject: Blending Indigenous research methodology and autoethnography through integrity-based, spirit-based research. *Canadian Journal of Native Education*, 33(1), 137–155. <http://hdl.handle.net/1828/10706>
- Meneley, A. (2021). Hope in the ruins: Seeds, plants, and possibilities of regeneration. *Environment and Planning E: Nature and Space*, 4(1), 158–172. <https://doi.org/10.1177/2514848620917516>
- Mvskoke, M. [@MelaninMvskoke]. (2022, November 2). *I think we should capitalize the “L” when speaking of the Land because it's our living relative!* [Tweet]. X [the platform previously known as Twitter]. <https://twitter.com/MelaninMvskoke/status/1588054112108974080>
- Reyes, K. B., & Curry Rodríguez, J. E. (2012). *Testimonio*: Origins, terms, and resources. *Equity & Excellence in Education*, 45(3), 525–538. <https://doi.org/10.1080/10665684.2012.698571>
- Sansour, V. (n.d.). About. Retrieved December 18, 2023, from <https://viviensansour.com/About>
- Weatherwax, P. (1918). The evolution of maize. *Bulletin of the Torrey Botanical Club*, 45(8), 309–342. <https://doi.org/10.2307/2479873>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

A declaration of commitments toward agroecology pluralities: A critical gaze on the U.S. Agroecology Summit 2023

Agroecology Summit ‘Outside Empire’ Subgroup

Submitted March 11, 2024 / Published online May 17, 2024 / Format updated June 4, 2024

Citation: Agroecology Summit ‘Outside Empire’ Subgroup. (2024). A declaration of commitments toward agroecology pluralities: A critical gaze on the U.S. Agroecology Summit 2023. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 85–98. <https://doi.org/10.5304/jafscd.2024.133.013>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Introduction

The U.S. Agroecology Summit was held May 22–25, 2023, at the Elms Hotel in Excelsior Springs, Missouri. One of the first agroecology convenings of its kind, the summit was funded by the U.S. Department of Agriculture (USDA) and organized by researchers across prominent U.S. universities. The gathering brought together scholars, researchers, farmers, activists, and movement leaders to create a “roadmap for agroecological research in the U.S.” This declaration, written, edited, and affirmed by us, the undersigned subgroup of summit participants, aims to archive and communicate the challenges we grappled with during and after this gathering while also advocating for an unwavering commitment toward agroecological pluralities.

Like all lands commonly known as the United States, the location for the convening, the Elms Hotel, is on stolen Indigenous land. The rolling hills of Northwest Missouri where the convening took place are the historical hunting, foraging, and fishing grounds, and farming areas of the region’s original peoples, which include the Ioway, Missouriia, Osage, Otoe, and Sac and Fox nations. Through a series of treaties in the 1800s, all tribes were forcibly and systematically removed from what became Missouri to make way for white European settlers. None of the aforementioned tribes currently have a land base in Missouri, nor are there any federally or state-recognized tribes remaining in the state. Approximately 50 miles to the west and across the Missouri River, the state of

Kansas is now home to the nearest federally recognized Tribal Nations: the Iowa Tribe of Kansas and Nebraska, Kickapoo Tribe of Kansas, Prairie Band Potawatomie, and Sac and Fox Nation of Missouri in Kansas and Nebraska. There was no representation from these tribes or any other local or regional Black, Indigenous, or communities of color in the summit's organizing committee. Subsequently, the summit's conceptual framings, design, and decision-making lacked grounding in the histories, ethics, and practices of local Indigenous and other regionally based frontline communities.

Early conference planning documents state, "A special focus is being given to ensuring and supporting the *participation* of leaders in the Black, Indigenous, and People of Color (BIPOC) agroecology community [*sic*]. Diverse perspectives would be gathered into dialogue to debate, articulate, and prioritize needs and opportunities for research that can advance agroecology." Inviting "participation" from BIPOC, or frontline, communities after the fact, versus having representation in planning and co-designing from the onset, set the foundation in presumed normativities of the institutional culture of the all-academic, dominantly white planning team. Further, the lack of representation from local and regional frontline communities missed an opportunity for the summit to be representative of, and otherwise emerge from, the uniqueness of place, rather than creating the sensation of being dropped down on top of it. We acknowledge this type of placelessness as the default practice in many national convenings of all disciplines, and yet following the guidance of and adhering to protocols of local communities is presumed practice in many communities. This should become normalized in any discipline engaging in land-based work. Examples of this type of being situated in place already exist in our respective frontline communities, and they provide ways forward for the broader agroecology community to learn from.

Attunement and deference to histories of local/regional people and place from the inception of the summit design may have permitted grounding the research agenda objective of the summit in priorities of land-based communities, and in political reflections on the resistance and resilience of such communities' stewardship and practice. This entails acknowledging their resilience amidst the violent legacies of colonialism, genocide, U.S. Jim Crow segregation, and imperialism. It also requires transcending often-evoked anthropocentric notions such as "agri-food systems" to embrace the holistic ecosystem view of Indigenous bioregions that respect and protect more-than-human beings. Such considerations could have not only presented the unique teachings of place, but also carefully alerted participants to the realities that Excelsior Springs is a "sundown community" that may have been, and indeed became, an unsafe space for participants of color—where threats through acts of vehicular aggression were experienced by several of the summit's participants of color. Situating all agroecological convenings amidst these stories of place facilitates necessary dialogue on the political ecological contexts in which communities in the global North face and resist oppression. It also enables a more sincere delineation of the challenges to working toward a multiplicity of thriving systems, a critical political economy on community sovereignty work that may not rely on industrial institutions or state actors for its reproduction.

Devoid of this spirit of place and people, the summit presented an epistemological dilemma for many participants who were not attuned to the white, settler-dominated academic frame shaping the convergence. And so this dilemma became more and more amplified with the reversions to an established status quo of academic conference engagement ingrained in dominant models of Western science—which reproduce a culture of dissociation from time and space, conforming to the affirmation of a Western worldview, a culture of whiteness, individuation, and established hierar-

chies. The latter reverberated most vividly by the centering of positivist modalities and its *modus operandi*. One clear example was the constant redirecting of focus back to the quest for developing research agendas and a roadmap for the USDA. Nonetheless, divergent epistemological perspectives at the Summit galvanized dissenting voices, who thereafter began to find each other and implement interventions toward other ways of knowing and other imaginaries.

Each intervention decentralized conversations by speaking with (and “standing with” as taught and conceptualized by Indigenous scholar Kim Tallbear) the praxes rooted in agrarian histories of diasporic land-based peoples, *campesinos*, Black and Indigenous communities, and their knowledge systems. The galvanized dissenting voices centered the experiences of community and Indigenous scholarship and inquiry, political mobilization, ceremony, anti-racist and anti-capitalism, feminist, worker movements, and anti-imperialist thought. Indeed, the summit became a microcosm of the tensions that represent the ongoing struggle in occupied Turtle Island “U.S.” and around the world in the pursuit of agroecology.

While the U.S. Agroecology Summit had important intentions of convening and advancing agroecological knowledge, in telling ways it persisted in reproducing dominant epistemologies that are themselves enablers of U.S. hegemony and neoliberal capitalism. Beginning with the almost full exclusion of BIPOC and local/regional land-based community members from its organizing committee, there were some key missed opportunities to address these issues early on.

A day into the meeting, a major reflective and nervous silence was ignited. In response to the panel on trust-building in participatory research, the spontaneous candor of Jonny BearCub Stiffarm’s questions echoed through the dome of the building: “How can we trust you!? How can we trust you!?, when you don’t have spirit?” Her questions, largely left unanswered, hung in the air amidst what felt like hours of silence, directing focus to the sanitized proceedings of the summit, devoid of prayer and protocol, which, for many people, are integral ways of relating to each other and Mother Earth. This question and other interventions are often not considered—or even known—by (white) academic agroecologists. The summit, though well-intended, began as a microcosm of this dangerous omission, this colonialist default. Amidst this, the interventions and reminders we engaged served as crucial contributions to re-seed different possibilities for the future of agroecology movements, praxis, history, and community research emanating from historically discriminated peoples, particularly BIPOC communities and Native communities in the North.

It should be acknowledged that the Summit organizers made some pivots during the convening in response to provocations brought forward by many of the attendees undersigned in this declaration. The recalcitrant verticality in the participatory frame that organizers worked from made these pivots possible only through consistent pushback from participants who firmly reject the idea that Western scientific epistemologies should be universal starting points. These moments offered an occasional glimpse into what is possible when practices and ethics of place and peoples are followed, foregrounded, and engaged. And yet, without them being purposefully and carefully woven into the fabric of the convening design, they were largely felt as one-off moments rather than the assumed manifestations of a pluralistic agroecology movement in formation and contestation to the capitalist patriarchal order.

The horizon of food and agricultural movements led by Black, Indigenous, and people of color, and alongside broad agrarian histories, however, are largely in synergy, intentionally embedded

in historic processes of liberatory and regenerative work that re-mends the social and cultural fabrics of community. This re-embedding is emerging in balance with natural landscapes and waterways through our relation to our foods, medicines, sacred sites, place-based and cultural collective action institutions, and care-based economies. The synergies we refer to stem from cultures of these commons and relationships we recuperate from and strengthen while confronting the ongoing impacts of colonial legacies and industrial projects that harm lands, waterways, communities, bodies, and minds. It was inherent then that a spontaneous braiding of dissenters would emerge, at first from BIPOC communities and later integrating allies, spanning various positionalities, with the intent to bring forth different narratives of agroecology than those lauded by dominant forms of academia. This called on the collective of participants to transform the summit, just as the broader system itself needs to be transformed.

This declaration serves as a critical gaze on the U.S. Agroecology Summit, an archive of these events as experienced by many, and an invitation for new formations of agroecological pluralities and contestations. It forwards an opportunity to root agroecology's commitments in sync with and learn from the ongoing work of local communities, BIPOC and frontline farmers, tribal efforts, other ways of knowing, and the multiple agroecologies here in the North already building towards food autonomy, global movements for food sovereignty, LandBack, seed rematriation efforts, reparations, solidarity economies, and community self-determination and autonomy—without instrumentalizing. In what follows, we provide further context on the status of agroecology in the North, share details that highlight the relevant and important interventions that we undertook during the Summit, and offer values, principles, and practices, along with commitments for an agroecological present and future.

Recognition of Context

In North America, agroecology is often situated and cited as a Western scientific term, a scientific discipline that skews to a culture of whiteness and Western thought. Agroecology is often a discipline that imposes to convene, speak for, and direct agendas in its name, even when the scientific thinking leading to the emergence of agroecology in the West is less than 100 years old, while agrarian knowledge-based systems span more than 10,000 years, as evidenced in ancient agroecosystems and their cultural institutions: acequias, milpa, chakras, ayllus, chinampa, lo'i irrigated pond fields, oases, agroforestry, cultural burning, and rice in West Africa and the Asian continent, among other global agricultural heritage systems. These ancient systems and their stewards have been and continue to be violently interrupted through settler colonialism over the last 500 years, ongoing U.S. expansionism and imperialism over the last 250 years, genocide, slavery, segregation, and racism, as well as heightened extractive capitalist industrialization in all sectors, including food and agriculture over the last 70 years.

As a field, agroecology in the U.S. context has centered on dominant Western positivist knowledge systems to study and learn from campesino, Indigenous, Afro-indigenous, communities of color, and values-aligned small-scale and subsistence farmers. In this context, agroecology's principles and vision systematized local and Indigenous knowledge systems by an "objective narrator, a scientist." The foodways and land-based knowledge, ways of Indigenous, Black, campesinos, communities of color, and other land-based communities reflect inherent holistic, integrated, and traditional sustainable practices in their ancestral land stewardship ethics. These ethics continue to be the foundation for the technologies, knowledges, cultural and place-based institutions, and movements

that are already arising from these practices. The failure to acknowledge this, along with the ongoing dismissal that research itself can and is practiced by non-academic knowledge seekers, keepers, and scholars not only reifies white supremacy and elitism but also renders ineffective the vision of otherwise promising mobilizing forces against the imposed capitalist agri-food systems. Similarly, agroecology—rendered as an academic discipline—has not effectively engaged the discrepancies that can exist between “researchers” and researched peoples, or clearly articulated the range of epistemological diversity (and resulting sciences) that exist among the multitude of BIPOC community foodways. Positioning oneself among a multiplicity of experiences and roles is paramount to achieving the movement’s aims.

While globally many agroecology efforts affirm a commitment to a political movement toward food sovereignty that centers epistemological diversity through “dialogues of knowledges,” historically in the U.S., agroecological research focused on agronomic practices merging ecological principles to research methods as a technological approach. This approach to research neglects community needs, knowledge, and relationships while supporting mainly white male or Western researchers who then become the de facto narrators in systematizing practices and knowledge of rural peasant, campesino, Afro-Indigenous, small-scale ecological farmers, and Indigenous communities globally. In this way, the depoliticization of agroecology from the intersectionality of political and economic social contexts has left only technical evidence to address the impacts of the green revolution, the growth of mega agriculture, and declining ecosystem wellbeing. This invisibilizes—to the scientist and public—the more comprehensively critical work of agroecological praxis, relationality, and movement in the U.S. itself.

As an organizing term, however, agroecology has been politically integrated by BIPOC, working-class communities, youth, and land stewards, who often embed their communities’ ethics alongside other emancipatory praxis in agroecology. Much of this work connects explicitly to traditional foodways of BIPOC and diasporic communities, rematriation, the food/farm and labor justice movement, and nonbinary decolonial life projects. It centers praxes that regenerate traditional knowledge-based systems of land stewardship and propels them toward community food autonomy, sovereignty, and for, white small-scale farmers and allies, toward active solidarity, alignment, self-examination, repair, and redistribution as we all work toward broader food-sovereignty movement goals and agroecology pluralities. Agroecology takes root and expands, often without state or institutionally affiliated goals as its impetus, while simultaneously recuperating the importance of understanding and finding the cultural and spiritual meaning of the holistic biophysical. This is part of the multitude and plural bioregional, agri-food movement and scholarship that is often not self-identified as agroecology—but is nonetheless living beyond its principles—that many of us are a part of today.

Archiving from the Margins: Summary of the Summit Proceedings

At the outset, the U.S. Agroecology Summit convened selected participants to “co-create a research roadmap for the USA that would be used to inform priorities for the United States Department of Agriculture’s (USDA) future of agroecology research in the USA.” The summit sought “to elevate agroecology in the USDA National Institute of Food and Agriculture (NIFA) portfolio and increase the quality and quantity of public funding available for agroecology research.”

The proposal for dialogue and the defining of the future of research through a roadmap, however, draws on multiple presumptions and unidirectionality, imposing a unilinear temporality.

Amidst the timely attention to agroecology's momentum and the admirable intention of co-creating, the metaphor of the roadmap, however, drew concern—as indicative of a modernist, linear vision of 'progress.' Agroecology entails extricating from ongoing colonial experiences of land and territory that are mediated and dominated by asphalt, automobiles, and guardrails. The roadmap metaphor precludes the agroecological multiplicity of interweaving, multispecies pathways. Instead, agroecology's flourishing entails recovering precolonial, anticolonial, and decolonial movements of thought and action, not merely progressing 'forward.'

A different consensus emerged from BIPOC and ally communities at the summit: that the labor of visioning, dreaming, actualizing, and cultivating agroecological transformations toward food sovereignty in occupied Turtle Island is, will be, and has always been Indigenous, Black female, femme-led, cosmologically informed, spiritually grounded, epistemologically and ontologically diverse, authentically collaborative, movement-oriented, and accountable and committed to and with frontline communities. In short, agroecological transformations are necessarily outside the concept of the U.S., outside the tools and institutions of empire, while also acknowledging that these institutions hold massive resources that need to be rerouted for reparative support to Black, Indigenous, Latinx, immigrant, global majority, worker, and agroecological movements. This reparative process requires deep acknowledgment of historical oppression and the will for justice. Coming to terms with this past and present for the state necessitates an unequivocal legislative mandate, such as within the farm bill or other legislation governing NIFA that valorizes and prioritizes the need for non-academic Indigenous scholars and their organizations and eliminates bureaucratic barriers that impede access for marginalized communities. The purpose of an agroecology convergence could be to share resources to grow such changes, address together systemic historical impacts and movements, recover and adapt, and multiply the practices of doing the everyday praxis of agroecology.

Dr. Ivette Perfecto laid out a key point that even as Indigenous and Black-led agroecological movements and margins need to be documented, celebrated, and expanded, so too does agroecology necessitate dismantling the enabling forces propping up the corporate-dominant agro-industrial mainstream, with its toxic neo-plantations of non-food—forcibly occupying 70% of agricultural land and even more in the U.S. What enables ecocidal industrial agriculture? empire. colonialism. racial capitalism. neoliberalism. extractivism. patriarchy. global food regimes. green-washing through ecological capitalism. whiteness and white supremacy—the racialized, gendered “feeding the world” lie that props up industry.

While the enabling forces that uphold systems of corporate consolidation and oppression must be dismantled and countered, the formations of new systems of reference from a plurality of visions, experiences, and epistemologies must also be created and supported, as Dr. Devon Peña, Rowen White, Deb Echo Hawk, and Jonny BearCub Stiffarm, among others, highlighted during the Summit.

Below, we include polemic interventions by BIPOC and allies, who claimed a necessary pause and diversion from the fast production train toward a research agenda. We have listed their interventions, reflections, and learnings. Whether organized or spontaneous throughout the gathering, they opened dialogue and helped break away from modes of supremacism and parochialism, recentring agroecological pluralities, much of which inspired the subsequent values, principles, practices, and commitments that ensue in this document and that ground ongoing dialogue and action.

Interventions and Interrogations; Key Learnings from Organized and Spontaneous Offerings Throughout the U.S. Agroecology Summit

- **Precipitating a crisis for capitalism.** “A cornerstone of science is peer review, one of the problems with capitalist and colonial sciences is who gets to know things, and who counts as peers? The idea of a better agroecology is a process of mobilizing more peers and ideally around a table on rematriated land, not just with Western scientists, workers, and more-than-human beings. If we have proper peer review, hopefully we get to ask a different question, what do we in the U.S. owe the world? As agroecologists, we may feel powerless, but we are in a country that is immensely wealthy through imperialism and colonialism, and we owe people stuff. Could this be the question? Whose labor goes into the land? How do we precipitate a crisis for capitalism?” —*Learnings from Raj Patel, introductory presentation*
- **Mutual respect, shared governance, and community wisdom.** “In a healthy and functioning community, there is a role for everyone. Once this is acknowledged, all actions should embody the mutual respect for different skills, strengths, and ways of knowing. We still have a way to go to productively engage the formal academic world, funders, and those who are advantaged within current social structures with communities that have more traditionally been viewed only as outliers and objects of study. The acknowledgment that these communities exist and have wisdom and knowledge of their own to share is a welcome development, but putting this into action is still an intention that needs improvement. For example, greater consultation and shared decision-making in advance will help these gatherings be more successful in the future.” —*Post-summit reflection offered by Ricardo Salvador*
- **Epistemic diversity.** “Diversity, equity, and inclusion is a neoliberal identity track. We don’t want a piece of the same carcinogenic pie. What is significant to our movement is the need for and protection of epistemic diversity. It is also vital to recognize how agroecology is happening right here, in the North, led by Indigenous communities, small farmers, urban farmers, and BIPOC communities.” —*Offered by Devon Peña, intervention*
- **On spirituality, ceremony, and respect.** “How can we trust you? How can we trust you, when you don’t have no spirituality, when you don’t pray before the meeting starts to ask that all be encouraged and comfortable to speak their minds and with their heart in place?” —*Offered by Jonny BearCub Stiffarm, intervention*
- “We must actively engage in dialogue across tensions in narratives and interpretations of the U.S. Agroecology Summit and agroecology in the North more broadly. Further, we center the question of what positions and solidarities will be shared and extended to each other as we form part of the global movement of agroecology?” — *Offered by the Declaration Writing Cluster of the ‘Outside Empire’ Subgroup, intervention*
- **Creative knowledge production.** Zines and other mediums of popular education are crucial methodologies of building community legitimacy through community knowledge. —*Learnings from Ryan Tenney, intervention*
- **Growing from liberation to hope.** Remembering Indigenous agriculture/agroecology farming pathways of our ancestors and their hope for our good future. George Washington Carver and our elders were revisited. As well as Lola Hampton and Frank Pinder’s legacies and the seeding of the first [Lola Hampton-Frank Pinder Center for Agroecology](#) at Florida Agricul-

tural and Mechanical University, an 1890 land-grant institution, a contestation to the plantation economy, and mindset to deliberate actions and pathways that enable wellbeing, change, resources, and empower our communities. —*Offered by Jennifer Taylor, presentation*

- **What about labor?** How will agroecology address agricultural labor issues in the U.S.? What is labor justice in agroecology? —*Learnings from Lorette Picciano, intervention*

Values, Principles, and Practices

We recognize:

1. **Agroecology as BIPOC relationality.** BIPOC communities come from land-based communities with long agrarian cultural histories that have knowledge seekers, keepers, and creators, who built entire societies and whose knowledge bases emerged from collective communalities and relationality. Agroecological research for us is community-based (relational) and aligns with place-based research priorities.
2. **Deep history. Indigenous/BIPOC agroecological knowledge.** We are coming into a long history of agroecological and food sovereignty movements that braid with the struggles of defending Mother Earth, resisting exploitation as workers transforming the labor system, and making subsistence livelihoods persist and thrive even outside of capital.
3. **Epistemic diversity through leadership of BIPOC communities.** Although there is an acknowledgment of agroecology as a science, movement, and practice, the field within the U.S. has primarily been dominated by scientists and the white, Anglo-heteropatriarchal processes of academia. When academic researchers do not engage actively in practice and movement, they constrain agroecology and perpetuate hierarchies of knowledge and their dominance. To systematize the knowledge and practice of Indigenous communities and movements cannot be enough to call agroecology a movement, as this is to reproduce a view of communities only as outliers and subjects of study.
4. **Epistemic diversity.** The recognition of traditional ecological knowledge, BIPOC wisdom, farmer practices, and non-academic scholarship is not sufficient if a sustained hierarchy in participation and decision-making persists, preventing a broad array of ways of knowing from sharing in decision-making.
5. **Pluralities.** In a plural system of complementing diverse knowledge, diversity is inherent and needed.
6. **Grounded theory.** Research is a tool rather than an end, and we recognize that theory also emerges from praxis.
7. **Interrupting domination and coloniality through community-based research.** The U.S. exerts dominance, arrogance, and supremacy over most of the rest of the world and over the 'territories' and tribal nations 'within' subjugated by settler colonial national border(s). Agroecological research must be wary of and actively work to interrupt this regime of domination and coloniality.
8. **Beyond positivism to critical realism.** Western scientific objectivity and positivism continue to be dominant as supported by U.S. hegemony and often set the agenda and the relationships

of power. Agroecology in the North then must go beyond academic research as molded by positivist values (e.g., the subject/object dichotomy) and embrace methods that are focused on a critical place-based and community-led collaborative research process that centers local, situated knowledge.

9. **Demilitarizing agri-food systems through community-based research.** We live in a moment in history of increased militarization, policing, and detention of our communities locally and globally. This is a time of vast warmongering and corporate weaponry profiteering, more recently wielded against Gaza in Palestine and on many other Indigenous, Pacific Islander, African, Asian, and Arab peoples with genocidal force. In this context, food and water are weaponized, and wars of starvation and lethal dehydration are waged. We, therefore, call for research practices that strengthen the capacity of BIPOC communities and allies to resist the weaponizing of food as a tool of empire through research that is designed to identify and challenge the dominant paradigm.
10. **Community-based asset-building research.** There is a tendency to default to creating relationships based on dependency (e.g., philanthrocapitalism). To conduct research, we abide by community-based asset-building strategies to build social wealth and assist our communities to move toward a relational or solidarity economy based on mutual aid and cooperative labor as central organizing principles of agroecological research.
11. **A movement vernacular.** The dominant sectors of academia and community-based facets of the movement speak different languages and are not entirely in alignment. Indigenous communities are reclaiming tribal names, place names, and other words. The same is true of our agroecological vernaculars, which are very place-specific and reflect deep histories of attachment to homelands. We embrace a language of agroecological research that respects and uses place-based vernaculars.
12. **Liberation in agroecology as a communal praxis.** The struggle toward food sovereignty, autonomy, and food justice are interconnected with other's struggles against oppression. The making of agroecology pluralities is possible when the struggle against oppression of others is understood as our own struggle.
13. **From individualized experts to collective discourse.** There is a system in academia that fixates on the individual to create sole founders and sole experts, a structural tendency from the white and capitalist gaze supported through citational hegemonies. It is in this way that intellectual extractivism and colonialism persist. Our vision for agroecological research insists on a collaborative, community-led practice that contributes to the resurgence of emic (as opposed to etic) truth claims grounded in our collective discourse as BIPOC communities and organizations.
14. **Cultural and ceremonial meaning and practice.** Cultural and spiritual meaning and practice are necessary as part of being a node within the web of life. Our vision for agroecological research recognizes, values, and integrates the cultural and ceremonial cosmologies of our communities as an ethical grounding for the research process and methods used to advance food sovereignty and autonomy.

In the spirit of going beyond recognition of the *values*, *principles*, and *practices* presented above, we offer a list of the following:

Commitments

We Commit To:

Relationality. The building of long-term relationships and mutual recognition of the commons and communities of practitioners. Going at the speed of trust and devoting time and space for relationship-building. Having careful consideration of social community relationships prior to involving ourselves as academic researchers. Having open and supportive ongoing dialogues with emergent responsiveness, reciprocally cultivating relationships, which includes building allyship, solidarity, and making the struggles of others our own. Looking and listening to allies through partaking and integrating exchanges, and through dialogues of knowledges (*diálogo de saberes*). We commit to bridging the isolation and individuation through continued learning and building with and by front-line communities so as to continue imagining new transformations that include being open to future examinations of agroecology. Support the intersectionality of coinciding movements to agrarian communities and farmers, for example Black Lives Matter (BLM), environmental justice movement, economic justice, abolition, Indigenous sovereignty, labor justice movement, LandBack, and rematriation.

Dialogue of knowledges. Convene diversity of knowledges, practices, and ways of living life through creative social innovation that reincorporate dialogues of knowledges and alternate expressions. Create spaces of insertion/dialogue/plurality in all our work and movement spaces as a way to strive for epistemic diversity and the decentering of academic research so that guiding frames for inquiry, and relationship building, are not monocultures of understanding the world.

Deprivatize knowledge. Redefine research to uphold traditional and local knowledges of seekers, keepers, and creators while recognizing their processes and resulting praxis as collective practice, not to accumulate them as a collection or to be made inaccessible. Work toward creating alternative and community-based review, publishing, and knowledge storage processes with mixed academic and practitioner communities. Decommodify knowledge through the centering of research on land and its stewards, often stewards as a collective, and do so without imposing our own limitations of funding, institutionality, or unilateral decision-making. Seeking and upholding accountable, non-extractive, and respectful research.

Building networks towards transformation. We commit to building mixed academic and practitioner networks as a way to build and leverage alternative metrics of success. Alternative metrics can be used within and outside academic institutions to protect and foster communities of practice. These co-designed and multifunctional metrics can provide researchers and frontline communities and practitioners the tools to work in solidarity with each other, collaborating horizontally, and amplifying independence, agency, and autonomy for practitioners, farmers, and frontline communities (for example, alternative peer review networks, changing requirements for tenure, supporting the creation of community-owned hubs of knowledge and data hubs that are community-governed).

BIPOC and Indigenous knowledge and data autonomy. Commit to upholding data autonomy principles of Indigenous, local BIPOC knowledge systems' stewards and scholars (oral traditions, practices, community scholarship, etc.). Work toward ending the dissociation of knowledge from communities in order to dismantle colonial naming of community knowledge or ideas through the citations or 'authorship' model. Commit to finding new forms of storytelling, knowledge documentation, and sharing as plural communities.

Horizontality, collective, and shared governance. Commit to horizontality and shared decision-making that involves co-authorship with community partners and shared governance over the long-term use of data, information, and publications. Similarly, we commit to convening collective and participatory spaces. Work toward mutual learning as mentorship through intergenerational dialogue, community member to community member, *campesino a campesino*, researcher to researcher, and mixed spaces of dialogue. Broader convenings and shared decision-making, not universalizing a single narrative or homogenizing perspectives and experiences across diverse communities.

Movement building. Build coalitions and alliances. Support and co-build a community organizing base to develop organizing infrastructure that can strengthen the agroecological and food autonomy/sovereignty political movement in the North (with the invitation of communities). Recuperate the social-political history of BIPOC and Indigenous narratives on the stewardship of lands as well as the political history of agroecological movements globally for food sovereignty and against the agro-industrial development/colonial schemes. Interrupting, disrupting, and ending agro-corporate and transnational agro-industry control in the North and globally. Identifying ways to respectfully complement autonomy and sovereignty efforts with research and projects.

Multispecies connections and regenerate the web of life. Learning with and from the teachings of multispecies entities to see beyond humancentricity.

Dismantling and healing. Creating spaces for intracommunal conversations by and among BIPOC and frontline communities. Study, interrogate, and challenge structures such as racial capitalism, settler colonialism, patriarchy, imperialism, borders, and their nation-states to (re)create and recuperate life-affirming alternative structures. Counter the racism, classism, and coloniality in academia at large, and the neoliberalization of research and higher education institutions.

Appropriate technologies. Ensuring technology fosters the autonomy and empowerment of farmers and communities instead of causing replacement, dispossession, or dependence, while supporting innovations and technologies arising from BIPOC farmers and interconnected communities.

Elder wisdom and intergenerational connections. Respect the guidance of Elders and in other ways intentionally co-create intergenerational spaces for the co-production of knowledge.

Divesting from death and resourcing life. Work toward the divesting and diverting of resources and reparations of institutional assets from industrial capitalism and militarism. Leverage and prioritize funding for movement and Indigenous communities through project research, grants, and other mobilized resources. Co-create careful and mutually agreed-upon remuneration payments to collab-

orators and research participants and contributors, and work to formally integrate these in budgets. Be attentive to the consideration of community relationships and collective governance within movements and communities for the disbursement of funds and collaboration.

Fund and support processes aimed at reaching mutual agreements, identifying shared governance over information and research design, and allowing time for creative solutions to meet academic research requirements. This approach minimizes the imposition of these requirements onto partners and allies. For example, funding to support the creation of memoranda of understanding (MOUs), establishing processes for co-creating meaningful evaluations and reflections, and budgeting time and space for grassroots and partner movements. Hold institutions accountable and work with BIPOC and working-class communities toward creating mechanisms and structures in institutions for reparation and loss and damage. Repair and Redistribute by supporting LandBack and Rematriation. Repair comes with a re-commoning or returning to relational lifeways, repairing social, material, and psychological separations, a common experience for those of us in the diaspora who may have been uprooted from our lands or customary agriculture.

Solidarity and care economies. Support and integrate analysis, knowledge, and practice on co-creating solidarity economies, alternative supply networks in agroecology efforts, and center care in agroecology and in solidarity economic initiatives that include the decommodification of the commons (such as seeds and knowledge).

Conclusions: Toward Agroecology Pluralities

Raj Patel's introductory presentation highlighted that changes needed in our food systems, as with society, will not solely come from the production of evidence, but rather through crisis. As we write this declaration, we are amid a moment of civilizational shift and of institutional crises arising from both the contradictions of the system itself and the active anti-capitalist, anti-racist, and liberatory efforts to dismantle it. This necessitates that our multifaceted agroecological efforts consistently address the legacies of colonial, capitalist, patriarchal rule, and occupation in the northern territories now called the U.S., and to begin embodying the other worlds that are possible beyond the ruins of those oppressive systems.

Agroecology pluralities are and have been in movement in the North and emerging from communities in struggle, BIPOC communities of farmers, campesinos, land stewards, and fisherfolks whose livelihoods continue to be impacted by industrialization, green revolutions, information technology, and more recently by artificial intelligence (AI) technocratic corporations enmeshed within the U.S. economy. As a subgroup of the U.S. Agroecology Summit, our interrogations and interventions intend to support the reorientation of our gazes away from organized academic science's universalization of knowledge, narratives, and ethics in agroecology. These are invitations to work beyond the veneer of equity and inclusion in agroecological projects, steering clear of creating new epistemic private properties, and instead to recommit to a search for building together pluralities, new tools that convene broadly among all knowledge systems and movements, centering shared governance, and supporting decolonial and anti-capitalist life projects already underway in the North and globally.

We observed the possibilities of this shift, albeit not without agroecology's own crisis here in the North. In the microcosm of the summit, a day into the gathering, the hegemonic default to

dominate academic modes was apparent, and a much-needed pivot away from the oppressive hierarchical framework of democratic verticality proceeded, in a semblance of U.S. participatory democracy. Western paradigms, however, are actively decomposing and, in their decay, making way for optimistic possibilities of other worlds and other modes of relating, knowing, practicing, and existing. Moving forward, changes in practice and action must continue beyond this moment and become integral to the struggle toward many agroecologies. This involves sustained change through analyses of the past and present, as well as adherence to theoretical principles agroecology already upholds, namely ‘dialogue of knowledges’ and a grounding in social movement.

Given that the tendency of hegemonic academic modalities and theory too often leads to agroecological conceptual spaces, it is important that convenings of and for agroecology in Turtle Island (“U.S.”) understand those practicing agroecology—for and with communities—as conveners themselves. The plurality of agroecology praxes and movements encompasses the spectrum of practice and theory of practitioners. Otherwise, academics risk conflation, appropriation, and expanding the culture of privatization. This is the case when we are erroneously trained to become agroecologists in the absence of seeds, land, or people. To keep praxis and practitioners centered is one exercise toward countering the academic tendency to say words but not do the work (to theorize with no practice); it is to resist being blinded from seeing the multitudes of ways of knowing and of understanding that science is not the only source of truth. Convergence in agroecology in the North cannot be without constant auto-examination.

We intend this document to contribute to the multiple conversations, convenings, and work in a myriad of spaces of knowledge and learning not exclusive to academics, to contribute to those efforts already working toward justice, mutual liberation, and the regeneration of foodways, lifeways, and community. It is a collection of experiences, ideas, and proposals of those undersigned and many others who contributed during the U.S. Agroecology Summit. Through a gathering at the summit, this collection was archived, and through virtual meetings after the summit and collective writing in an open and live document, they were edited, and through a subgroup of editors supporting as weavers they were integrated. Together we created an unfinished tapestry and are left with the questions: and you who is reading this? What do you say?

When we attend to the original injustices of the U.S. colonial project—confronting the desecration of life and its sacredness that results from white supremacy, patriarchy, genocide, and empire—and reckon with the impact of these mechanisms on each of us and our communities, what possibilities emerge for the expression and practice of agroecology pluralities in the North? How will we grow in communion and relation with the other branches of agroecologies within the tree of life and movements globally amid and beyond this civilizational crisis?

Signees:

Katia Aviles	kr.avivaz@gmail.com
Kenzo Esquivel	kesquivel@berkeley.edu
Aidee Guzman	aideeg@uci.edu
Hannah Duff	hannahduff8@gmail.com
Ana Fochesatto	fochesatto@wisc.edu
Karen Crespo Triveño	kcrespot@ucsc.edu
Brett Ramey	brett@regenerativeagriculturefoundation.org
Carmen Cortez	carmen@canunite.org

Ahna Kruzic	ahna@regenerativeagriculturefoundation.org
Samara Brock	samara.brock@yale.edu
Garrett Graddy-Lovelace	garrettgraddy@gmail.com
Héctor Calderón-Victoria	hcalderon17@gmail.com
Marisela Chávez	Marisela.chavez@umontana.edu
Stephanie Enloe	stephanie@wfan.org
Meagan Schipanski	Meagan.schipanski@colostate.edu
Angie Carter	ancarter@mtu.edu
Jesús Nazario	jn22955@berkeley.edu
Tara Conway	conwa304@umn.edu
Minkah Taharkah	minkah@farmerjustice.com
Christopher Murakami	cdmurakami@gmail.com
Devon G. Peña	dpena@acequiaiinstitute.org
Sarah Lloyd	sarahlloyd53965@gmail.com
Antonio Roman-Alcalá	antidogmatist@gmail.com
Candace “Kandeaux” Clark	cclark6473@tuskegee.edu
Ife Kilimanjaro	ifeafriye@medewnefer.com
Jennifer Taylor	Jennifer.Taylor@famu.edu

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Agroecology beyond the statist quo? Transforming U.S. imperial agricultural policy

Garrett Graddy-Lovelace ^a
American University

Antonio Roman-Alcalá ^{b *}
California State University East Bay

Submitted February 23, 2024 / Published online May 14, 2024 / Format updated June 4, 2024

Citation: Graddy-Lovelace, G., & Roman-Alcalá, A. (2024). Agroecology beyond the statist quo? Transforming U.S. imperial agricultural policy [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 99–105. <https://doi.org/10.5304/jafscd.2024.133.008>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Agroecology—with its diverse, multifaceted, and liberatory principles, methods, and commitments—seems incommensurate with the U.S. Department of Agriculture (USDA), with its settler colonial origins, imperial histories, racist legacies, neoliberal hegemonies, and contemporary reproduction of the unjust and ecocidal agricultural status quo. And yet, is it possible to make use of what the behemoth department has to offer, in its

attempts, albeit paltry, at reform and restitution? More pressingly, can we engage and demand more from the non-monolithic ministry—call for it to stave off further corporate capture of markets, land, germplasm, data, and water? Can we pressure the USDA to protect farmworkers from exploitation, animals from abuse, cooperatives from corporate co-optation, and small-scale farmers from farmgate price degradation? Is abandoning the USDA tantamount to ceding its resources to agro-industries intent on dispossessing Black, Indigenous, and other essential agricultures? Shouldn't we at least attempt to obstruct the USDA's obstructionist international stance, as it thwarts the right to food, climate justice, labor rights, and redistributive reforms globally?

In May 2023, the U.S. Agroecology Summit took place in Kansas City, Missouri, where the USDA, under the Trump administration and Purdue secretaryship a few years prior, had forcibly relocated both its research funding agency, the National Institute of Food and Agriculture (NIFA),

^a Garrett Graddy-Lovelace, Provost Associate Professor, American University School of International Service; 4400 Massachusetts Avenue NW; Washington, DC, 20016 USA; <https://orcid.org/0000-0002-6006-3498>; graddy@american.edu

^{b *} Corresponding author: Antonio Roman-Alcalá, Assistant Professor, Department of Anthropology, Geography, and Environmental Studies (AGES), California State University East Bay; 25800 Carlos Bee Boulevard; Hayward, CA 94542 USA; <https://orcid.org/0000-0001-9209-8786>; antonio.romanalcala@csueastbay.edu

Author Note

The authors have equal authorship of this commentary.

and its economists, the Economic Research Service (ERS). The relocation was announced just after NIFA had funded a batch of research projects on climate change (a taboo word at USDA under the Trump/Purdue rule), while ERS had published reports on the severity of food insecurity in the U.S. and how tax cuts enrich the largest landowners (Morris, 2021). Both agencies, in the retaliatory move, lost more than half of their staff. Although overall staff numbers rebounded following rehiring, racial diversity—already weak—has since plummeted. The federal Government Accountability Office (GAO) recorded that the proportion of Black staff decreased from 22% to 9% at ERS and from 47% to 19% at NIFA. The number of white staff doubled to over two-thirds at NIFA and rose to three-fourths at ERS in just three years (GAO, 2022). The racist intentions panned out, both proving the USDA's notoriety as "the last plantation," and also divulging an important counter-reality: employees on the inside of this massive bureaucracy struggle to serve (to at least some extent) diverse communities and suffer backlash for their breakthroughs.

The USDA warrants skepticism, particularly from critical anticolonial, anticapitalist, antiracist, and antipatriarchal perspectives. As many believe, inspired by the Audre Lorde (2015) phrase, the "master's tools" (in this case, the USDA and its programs and funding) are so steeped in harmful ideologies and structures that they seem highly unlikely to successfully dismantle the "master's house" (the capitalist-colonial agrifood system).

And yet many communities impacted by USDA's harms *do* continue to seek changes to policy, often as a defensive imperative required to avoid even worse and continued dispossession. Compromises compose the contradictory work of demanding changes from institutions built off of your community's back, including sometimes working with people whose politics are incompatible with your own. Many food and farm justice movements continue to feel that the need to engage outweighs the problems and harms entailed.

We see the twin tasks of social transformation as midwifing the new while hospicing the old: we must attend to building toward what Robin Kelley (2003) calls "freedom dreams"—a world without

capitalism, white supremacy, colonialism, and their state apparatuses—all the while dismantling and defensively engaging these oppressive institutions. As authors, not self-appointed movement representatives, we see this commentary as merely our dreaming together of what could be—not comprehensive, not a prescription, but simply our contribution to a longstanding dialogue about "the limits of a politics of recognition" (Wright et al., 2020, p. 228), about if and how the last plantation could ever play a role in building agroecology.

Inspired by what we have learned from working with frontline grassroots agrarian justice organizations, we have committed our research, teaching, and organizing to pragmatic questions of "what is to be done" in and through agricultural policy, while maintaining a strong affinity and heart for what lives way beyond "policy."

The U.S. Agroecology Summit 2023 aimed to develop a research roadmap for agroecology, in part, to inform the USDA's ostensible shifts from authoritarian suppression of topics like climate change, hunger, and wealth disparity toward food and environmental justice. Immediately upon gathering, however, participants in the summit chafed at the premises of (white) academics speaking on behalf of agroecology and subsuming its decolonial potential into U.S. governmental or academic frameworks. A Day 2 breakout session, slotted for the "Empire" Conference Room, literally broke out—outside, into a big impromptu circle of thirty-plus folks sitting on the ground, under trees and sunshine, ready to ask deeper questions about agricolonial legacies of power and knowledge: how do we support agroecological healing, "Outside Empire" (a play on words describing our escape from the conference room, and our desired escape from empire itself)? From this reckoning with the (Indigenous and Black) practitioner- and movement-based foundations of agroecology, came questions of accountability, expertise, and a declaration (see contribution in this issue).

Although agroecological movements in and beyond Turtle Island and Abya Yala necessarily transcend and even transgress nation-state scales of reference, we return to the question of how to engage ministries of agriculture at large, and the USDA in particular. Firstly, BIPOC agroecologist

elders, movement leaders, and coalitions should be the people to author and lead USDA transformations, and these transformations need to center Indigenous territorial sovereignty, from Anishinaabeg to Hopi lands, and across the neocolonies of Hawaii, Puerto Rico, Guam, Mariana Islands, the Virgin Islands, and Inuit Alaskan region.

From there, a whole array of big changes would need to happen, as laid out by frontline grassroots networks like the Federation of Southern Cooperatives/Land Assistance Fund, Rural Coalition, National Family Farm Coalition (NFFC), National Black Food & Justice Alliance, HEAL Food Alliance, Alianza Nacional de Campesinas, Latino Farmer Rancher International, National

Young Farmers Coalition, and many more. Changes should include farmworker protections, Black farmer debt cancellation, redistribution of vast corporate landholdings, proactive regulation of toxic pesticides, moratoria on concentrated animal feeding operations, among so much more. Internationally, the USDA for decades has pressured agricultures around the world into dependence upon U.S. commodity crop surplus exports, even while it has criminalized other countries, via World Trade Organization lawsuits, from protecting their food systems from agri-biotechnologies and grain “dumping.” As the Institute for Agriculture & Trade Policy has demonstrated (Wise, 2024), U.S. trade representatives’ and USDA’s pressure on Mexico to drop its ban on genetically modified

corn amounts to coercion; their promotion of agri-biotechnologies, ag-data surveillance, and toxic pesticides—in the same breath as “community benefits”—laces this inequity with hypocrisy. The USDA’s stated Science and Research Strategy 2023–2026 fails to recognize agroecological sciences and all their social, nutritional, agronomic, ecological, and cultural benefits and potential (USDA, 2023).

Within the U.S., “land access” appears on food movement organizations’ agendas, but the more radical “land reform” remains a less common demand (Roman-Alcalá, 2024). Indigenous “Land Back” movements and Black reparations efforts are gaining ground, but move uphill against massive obstacles. Truly transforming agrifood systems requires transforming the existing private-property basis for land allocation and management decisions. This means, yes, increased land access mechanisms for young and beginning farmers, but also deepened land back processes for Indigenous nations, and more substantive methods—outside of and against the neoliberal incentive-based policies that seem to dominate land access policy discussion—to liberate land from extractive and harmful industrial pro-



Participants sit in a circle outside (of the “Empire” conference room) to hold dialogue about moving Outside Empire altogether.

Photo by Antonio Roman-Alcalá, May 23, 2023.

duction. The prospect of land expropriation must be raised. Eminent domain has a problematic history,¹ but it would be essential to any government effort serious about shifting established land use patterns away from degrading for-profit uses.

Another angle, largely missing from demands of the USDA, concerns corporate capture of farm-gate prices. The issue of fair prices (coupled with coordinated supply management to prevent cycles of overproduction) serves as an overlooked linchpin for small-scale and cooperative agrarian livelihoods and land tenure, as the vast Indian Farmer Uprisings for Minimum Support Prices proved. The whole farm bill began exactly for this “parity” program. Although it was deployed for racist exclusions of Black tenant farmers, Black farmers were nevertheless able to make use of it to stave off racist price degradation and keep their land in the South (Pennick & Gray, 2006). In short, small or midsize farming in the 20th century U.S. existed only through such parity programs. After the erosion of these programs, farming ceased being a livelihood on its own terms: median farm income has been below zero since the 1996 farm bill and the establishment of the World Trade Organization in 1995; mass consolidation ensued; and now the fewer, richer farmers who remain garner their income off-farm, through subsidies and large land assets (Graddy-Lovelace et al., 2023). In 2019, Garrett worked with NFFC and other organizations on Disparity to Parity,² a community-based action-research project to pool knowledge on the powerful precedent of farmers as collective price-makers and corporate buyers as price-takers. The project asked (how) could supply management, price floors, grain reserves, nonrecourse loans,³ and cooperatives be updated for racial equity and for diversified production? Many Disparity to Parity

collaborators used the term agroecology (Naylor, 2021), and we grappled with the tension of resisting the longstanding commodification of food while securing dignified livelihoods for young, diverse agroecologist farmers. When “parity” or fair prices did not get included in any of the marker bills for the 2024 Farm Bill, NFFC decided to pause the website project to focus energy on the changes possible in existing marker bills.⁴

There are always important battles each farm bill season, including determining the very research agendas and funding availability debated at the U.S. Agroecology Summit 2023. Participants reflected on how funding agencies like USDA NIFA need to change what is considered “science,” who conducts it, how it is funded, *who* gets funded, how data is used, managed, and “owned,” and—perhaps most fundamentally—who is served by the research.

Advancing agroecology through policy means changing policies and institutions that actively thwart, appropriate, or even criminalize agroecological traditions, practices, movements, and exchanges. This entails a direct focus on the USDA, but also on a whole range of laws, agencies, departments, and governance paradigms across the U.S. government and beyond, to international organizations and policies—which must also be transformed to enable a global shift toward agroecology rooted in food sovereignty. This means, centrally, an end to governmental subsidization of fossil fuel and agribusiness capital and primary resource extraction, combustion, and destruction; it also would mean dismantling the behemoth transnational fossil fuel and agribusiness corporations themselves. Existing antitrust laws remain sorely inadequate to this governance task. Alongside this megaregulation must proceed a process of repayment of global ecological debt, from the imperial

¹ Like most government policies around land control!

² <https://disparitytoparity.org>

³ Loans where the farm is not considered collateral.

⁴ A related project, *Pointing the Farm Bill toward Racial Justice*, centered the Federation of Southern Cooperatives/Land Assistance Fund (FSC/LAF) Advocacy Institute’s two years of member listening sessions and culminated in a large summit, a farmer fly-in to Washington, D.C., and a congressional briefing in May 2023 and subsequent 2024 toolkit. The summit also catalyzed the Ujamaa Cooperative Farming Alliance’s new Seed & Farm Bill Policy Working Group, which aims to transform the U.S. National Plant Germplasm System and intellectual property regime to support Indigenous and Black-led agricultural biodiversity regeneration and seed sovereignty. The summit also led to the *Pointing the farm bill toward racial justice toolkit 2024*, authored by FSC/LAF, summit participants, and American University’s Antiracist Research & Policy Center (FSC/LAF & ARPC, 2024).

beneficiaries among global North elites and the international financial institutions themselves, to the sites of extraction, labor exploitation, and immiseration in the global South. Such repayment and reparation processes have long been called for by campesine or peasant and Indigenous communities in the Global South, whose struggles must continue to be learned from, amplified, and supported by food and farm justice movements in the Global North (see Ajl, 2021).

One step toward repair from over 500 years of colonial harm would be debt cancellation⁵ for countries faced with burdensome loan repayments to U.S.-dominated international finance institutions like the International Monetary Fund and World Bank (International Panel of Experts on Sustainable Food Systems [IPES-Food], 2023). Multiple forms of global reparations would support ecological and agroecological restoration in both the North and South by directing resources to support self-determination in frontline communities, agroecological transitions, and degrowth in the North, to counter dominating modernist models of “development.”

Crucially, this would, in turn, disempower the military-industrial complex, enabling a much-needed defunding of the Pentagon and demilitarization of U.S. society. And, of course, addressing militarism also addresses food and farm injustices. This long-simmering interdependence of war and the agro-economy erupts clearly in the U.S.’s recently authorized US\$14 billion in military aid to Israel (atop the US\$3.8 billion in yearly arms aid) while that allied settler state metes out the collective punishment of Palestinians, monumental bombardment, chemical warfare, and genocidal deprivation of food, water, medicine, fuel, internet, or egress from the “open air prison” of Gaza. This onslaught erupts atop decades of “slow violence” (Amira, 2021) of Israeli settler destruction of Indigenous Palestinian agricultures (Abdelnour et al., 2012) and systemic dispossession of their sea, fisheries, water, lands, orchards, olive groves (Asi, 2020, Sasa 2023), and seeds (Sansour, 2022). Beyond “security” apartheid walls rimmed with barbed wire, surveillance, and AI weaponry, what

food and health systems would be made possible were those billions of dollars invested otherwise?

Another related and critical aspect of the transformation of U.S. agricultural policy that goes beyond the farm bill (and its glaring omission of farm labor) is immigration. Dominant U.S. agriculture requires a cheap labor supply—and thus, lives and bodies are cheapened all along. An entire legal apparatus maintains this labor supply—rendered fungible through racism, class oppression, and state-sanctioned violence, and backed up by the coercive powers of imposed borders, bigger walls, homicidal Republican river barriers, and migrant detention centers. In short, agroecologists need to work on “undoing border imperialism” (Walia, 2013). Ending ICE deportations and dismantling the militarization of border “security” and widespread surveillance lay the groundwork for a truly agroecological future, where farming labor becomes respected and valued and the global working classes are not pitted against each other for paltry wages.

While some moves suggested here might seem unlikely and overly ambitious, others remain too minor; talk of “science” as a solution to such vast social and ecological problems feels inadequate. Yet, we need many tactics and avenues. Building movements must be prioritized over building careers, but sometimes the right person in the right position is key for concrete policy changes to take place. We advocate a kind and compassionate, yet structurally critical, approach to advancing a diversity of tactics and goals in, through, and beyond the USDA. And to that end, as called for repeatedly at the summit, we need diverse and grounded agroecologists—more practitioners than scholars of it—to focus energies on relationship building, intentional and spiritually rich processes of gathering and sharing, building of shared analysis, and learning to act collectively—and remain accountable—at various scales. Agroecology in practice upends the dichotomy of practitioner and scholar, yet a powerful insight from the summit was the limitation of conflating those of us who love, study, and write about agroecology (via academia) with those who actually wake up each morning to

⁵ https://www.ipes-food.org/_img/upload/files/DebtFoodCrisis.pdf

do it as their life, livelihood, and community survival. Agroecology beyond the statist quo entails the epistemic honesty that the former learns from the latter.

In closing, we want to recognize that focusing on state policy risks centering the state as a means toward change, which is intellectually, socially, and politically quite limiting. Embedded in the sociological system of state policy lies a hegemonic culture laden with supremacism,⁶ a value system suited to profit-making, and multiple modes of

domination justified by hegemonic conceptions of how power *should* operate. These hegemonic forces enroll willing participants in state reformism into often regressive roles, reinforcing white supremacism, coloniality, and other pernicious, ecocidal forces. Engaging the state requires extreme caution, community, coalitions, and vigilance, so as to stay grounded in the social forces outside it. This can advance policies that allow agroecology to extend and expand, flourish and nourish, well beyond the statist status quo.



References

- Abdelnour, S., Tartir, A., & Zurayk, R. (2012). *Farming Palestine for freedom* [Policy brief]. https://eprints.lse.ac.uk/50329/1/Tartir_Farming_Palestine_Freedom_2012_eng.pdf
- Ajl, M. (2021). *A People's Green New Deal*. Pluto Press. <https://doi.org/10.2307/j.ctv1p3xjwp>
- Amira, S. (2021). The slow violence of Israeli settler-colonialism and the political ecology of ethnic cleansing in the West Bank. *Settler Colonial Studies*, 11(4), 512–532. <https://doi.org/10.1080/2201473X.2021.2007747>
- Asi, Y. M. (2020). Achieving food security through localisation, not aid: “De-development” and food sovereignty in the Palestinian territories. *Journal of Peacebuilding & Development*, 15(2), 205–218. <https://doi.org/10.1177/1542316620918555>
- Federation of Southern Cooperatives/Land Assistance Fund (FSC/LAF) & Antiracist Research & Policy Center [ARPC]. (2024). *Pointing the farm bill toward racial justice 2024*. American University. <https://www.american.edu/centers/antiracism/upload/pointing-the-farm-bill-towards-racial-justice-toolkit-2024.pdf>
- Government Accountability Office [GAO]. (2022). *Agency relocations: Following leading practices will better position USDA to mitigate the ongoing impacts on its workforce* [Report No. GAO-23-104709]. <https://www.gao.gov/products/gao-23-104709>
- Graddy-Lovelace, G., Krikorian, J., Jewett, A., Vivekanandan, A., Stahl, K., Singh, I. S., Wilson, B., Naylor, P., Naylor, G., & Pennick, E. J. (2023). Parity as radical pragmatism: Centering farm justice and agrarian expertise in agricultural policy. *Frontiers in Sustainable Food Systems*, 7. <https://doi.org/10.3389/fsufs.2023.1066465>
- International Panel of Experts on Sustainable Food Systems [IPES-Food]. (2023). *Breaking the cycle of unsustainable food systems, hunger, and debt*. https://www.ipes-food.org/_img/upload/files/DebtFoodCrisis.pdf
- Kelley, R. D. G. (2003). *Freedom dreams: The Black radical imagination*. Beacon Press.
- Lorde, A. (2015). The master's tools will never dismantle the master's house. In C. Moraga & G. Anzaldúa (Eds.), *This bridge called my back: Writings of radical women of color* (4th ed.; pp. 94–102). State University of New York Press.
- Morris, F. (2021, February 2). *USDA research agencies 'decimated' by forced move: Undoing the damage won't be easy* [Radio broadcast]. National Public Radio. <https://www.npr.org/2021/02/02/963207129/usda-research-agencies-decimated-by-forced-move-undoing-the-damage-wont-be-easy>
- Roman-Alcalá, A. (2024). Land reform in the United States: Lost cause or simply a cause that has been lost? *Elementa, Science of the Anthropocene*, 12(1), Article 00087. <https://doi.org/10.1525/elementa.2023.00087>
- Sansour, V. (Host). (2022, January 20). Best of the Palestine heirloom seed library [Audio podcast episode]. In *Cultivating Place*. North State Public Radio. <https://www.cultivatingplace.com/post/the-palestine-heirloom-seed-library-vivien-sansour-best-of>

⁶ In her leadership of the Truth, Racial Healing & Transformation framework (<https://healourcommunities.org/>), her workshops and 2022 book *Rx: Racial Healing: A Guide to Reclaiming Our Humanity*, and in her keynote at the 2023 Pointing the Farm Bill toward Racial Justice Summit, Dr. Gail Christopher shows the power of language in racial healing. She counsels against using the term ‘white supremacy,’ which semantically re-entrenches racial hierarchy even though intending to expose it.

- Sasa, G. (2023). Oppressive pines: Uprooting Israeli green colonialism and implanting Palestinian A'wna. *Politics*, 43(2), 219–235. <https://doi.org/10.1177/02633957221122366>
- U.S. Department of Agriculture [USDA]. (2023). *Science and research strategy, 2023-2026: Cultivating scientific innovation*. <https://www.usda.gov/sites/default/files/documents/usda-science-research-strategy.pdf>
- Walia, H. (2013). *Undoing border imperialism*. AK Press.
- Wise, T. (2024, March 14). Mexico defends GM corn restrictions with science: An analysis of Mexico's response to the U.S. in the USMCA dispute. Institute for Agriculture & Trade Policy (IATP). <https://www.iatp.org/mexicos-science-based-defense-gm-corn-restrictions>
- Wright, W. J., McCreary, T., Williams, B., & Bledsoe, A. (2020). Race, land, and the law: Black farmers and the limits of a politics of recognition. In H. Garth & A. M. Reese (Eds.), *Black food matters: Racial justice in the wake of food justice* (pp. 228-250). University of Minnesota Press. <https://doi.org/10.5749/j.ctv182jtk0.12>

COMMENTARY FROM THE U.S. AGROECOLOGY SUMMIT 2023

Agroecology and corporate power in the U.S.

Sarah E. Lloyd^{a *}

University of Minnesota

Jordan Treacle^b

National Family Farm Coalition

Mary K. Hendrickson^c

University of Missouri

Submitted February 28, 2024 / Published online April 16, 2024 / Format updated June 4, 2024

Citation: Lloyd, S. E., Treacle, J., & Hendrickson, M. K. (2024). Agroecology and corporate power in the U.S. [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 107–111. <https://doi.org/10.5304/jafscd.2024.133.009>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Introduction

In reflecting on the U.S. Agroecology Summit 2023, we want to bring a key issue to the fore: corporate power and how agroecology can address it in the food system. Taking on existing power structures was an important theme running through the conference, from confronting legacies of colonization and slavery in the food system to

battling the marginalization of affected communities in agricultural and food sciences. The corporate dominance of agricultural markets and its corresponding influence in the political realm was certainly present throughout our discussions, but here we want to center the role of corporate power in future discussions of agroecology in the U.S.

The Biden-Harris administration has invested significant political capital in framing many of its agricultural and food systems priorities around two themes: addressing corporate concentration in some sectors of the food system, and investing in climate resilience and reducing greenhouse gas (GHG) emissions. Building sustainable food systems without a consideration of corporate power fails to acknowledge the realities of our inequitable food and farming systems. However, without a political framing around the principles of farmer-led agroecology, these policy efforts are siloed and fail to effectively counter corporate power in

^{a *} Corresponding author: Sarah E. Lloyd, Supply Chain Development Specialist, Grassland 2.0/Forever Green Initiative, University of Minnesota; 1991 Upper Buford Circle; St. Paul, MN 55108 USA;  <https://orcid.org/0009-0002-2405-9675>; slloyd@umn.edu

^b Jordan Treacle, National Programs and Policy Coordinator, National Family Farm Coalition;  <https://orcid.org/0000-0002-9544-2148>; jordan@nffc.net

^c Mary K. Hendrickson, Associate Professor of Rural Sociology, University of Missouri;  <https://orcid.org/0000-0003-2984-4082>; hendricksonm@missouri.edu

addressing the harms of the current system and in building resilient systems for the future. The failure to embed the administration's agricultural economic policy priorities within its agricultural climate agenda is both a depoliticization of these state climate actions and a reflection of mainstream civil society's depoliticized approach to combating the climate crisis in the agricultural sector.

Climate resilience has become increasingly centered in agricultural policy debates, and changes to agricultural practices and inputs advocated for by 'climate-smart,' 'regenerative,' and 'local food' frameworks offer some progress on reducing GHG emissions and strengthening ecological resilience. However, these efforts generally lack socio-political or economic principles. The clear risk of this approach is that climate action in the name of these frameworks may either exacerbate existing (racialized) socio-economic inequities or fail to uplift historically marginalized social groups (Indigenous, frontline, and working poor communities), undermining both the implementation and socio-political legitimacy of these efforts.

In contrast to these depoliticized agricultural-climate approaches, agroecology is a deeply political, social movement-driven, and transformative framework with clear principles linked to social equity, economic justice, and political governance, keenly attuned to the power dynamics in food systems. While less well-known in traditional U.S. agriculture and farming spaces, we argue that agroecology, because of its attention to people power, self-governance, co-creation of knowledge, and engagement with grassroots communities, provides an effective framework for both countering corporate agribusiness power and advancing a climate agenda oriented to social justice in the U.S. agriculture sector.

Political Underpinnings of Agroecology

Agroecology is commonly framed as a practice (of production), a science (of research and knowledge-sharing), and a social movement (of political action). The 2015 Declaration of Nyéléni of the International Forum for Agroecology unified the movement's voices representing small-scale food producers, including peasants, Indigenous peoples, hunters and gatherers, family farmers, rural work-

ers, herders and pastoralists, and fisherfolk, as well as their communities and consumers, encompassing both rural and urban people. The declaration illuminates the deeply political nature of agroecology, as defined by the global food sovereignty movement:

Agroecology is the answer to how to transform and repair our material reality in a food system and rural world that has been devastated by industrial food production. ... We see agroecology as a key form of resistance to an economic system that puts profit before life. ... The industrial food system is a key driver of the multiple crises of climate, food, environmental, public health and others. ... Agroecology within a food sovereignty framework offers us a collective path forward from these crises. (Declaration of Nyéléni, 2015, "Overcoming," para. 1)

The social movement and civil society representatives who drafted the 2015 Declaration of Nyéléni pointedly identify the social, economic, and ecological impacts of the extractive corporate agribusiness model, and also explicitly denounce efforts to co-opt the concept of agroecology as being anything other than counter-hegemonic:

Popular pressure has caused many multilateral institutions, governments, universities, ... corporations and others, to finally recognize "Agroecology". However, they have tried to redefine it as a narrow set of technologies, to offer some tools that appear to ease the sustainability crisis of industrial food production, while the existing structures of power remain unchallenged. ... We cannot allow Agroecology to be a tool of the industrial food production model: we see it as the essential *alternative* to that model, and as the means of *transforming* how we produce and consume food into something better for humanity and our Mother Earth. (Declaration of Nyéléni, 2015, "Crossroads," para. 1)

Finally, to further underline the political nature of agroecology, under the heading "Our Common Pillars and Principles of Agroecology," the Declaration states that "the autonomy of Agroecology

displaces the control of global markets and generates self-governance by communities,” and “Agroecology is political; it requires us to challenge and transform structures of power in society,” (Declaration of Nyéléni, 2015, “Common Pillar,” para. 1). With this clear political orientation articulated at Nyéléni, La Via Campesina and other social movements and civil-society organizations launched a multiyear advocacy effort at both regional and global levels to center agroecology as a framework recognized and institutionalized within the Food and Agriculture Organization of the United Nations (FAO) and the UN Committee on World Food Security (FAO, 2018, 2019; Treacle, 2018; Treacle & Kruzic, 2020).

Corporate Power in the Food System: Why it Matters for Agroecology

In the U.S., decisions about what food will be produced, where, by whom, and how have largely been wrested from the hands of producers and eaters and instead centered in global corporations responsible primarily to their shareholders. A handful of firms dominate meat processing, grain trading, and food processing, selling to a few increasingly powerful retailers (Howard, 2021). The choices of farmers, workers, and eaters in the U.S. are largely shaped by these firms—but not without resistance. Farmer cooperatives, direct marketing, alternative food and farming networks, and efforts to reject high-input and capital-intensive systems (e.g., organic, grass-fed, rGBH free) are just a few examples of attempts to rebuild socio-economic relationships and counter corporate power.

As these efforts flourish and mature, they are often undermined by the political and economic system in which they are embedded—particularly by corporations who see the threat to their power and ability to profit. A common tactic is for the powerful to standardize tools and methods that block efforts by smaller actors and any policy changes that could lead to market reform. For instance, organic certification and labeling were attempts to communicate production practices backed by ecological values to consumers while supporting farmers by providing a premium price and market access. The growth of organic sales threatened the profit potential of mainstream food

companies, and so firms extinguished the threat by buying up organic upstarts, while at the same time using their political power to weaken the organic standards behind the labels.

Similarly, small-scale and family farmers, particularly those linked to livestock production, have faced enormous challenges both in competing economically in a highly consolidated food system and in having their individual voices heard and represented in food governance spaces. Political pressure from well-financed corporations routinely shapes food safety regulations in favor of large-scale businesses; when small-scale producers succeed in producing with scale-appropriate regulations, they are often then economically undercut and acquired by corporate food firms to eliminate the market competition. The ecological and social principles embedded in these smaller-scale entities, when acquired, become subsumed into the bottom line of a global corporation. Thus, in current food system governance, challenges to the status quo are neutralized and stripped of their influence on democratic decision-making, at the expense of farmer livelihoods and diversified rural economies. For example, we see antitrust regulation moving from elected legislatures to adjudication in the non-elected judiciary, farmer-owned cooperatives turning management over to “experts,” and organic and alternative foods becoming labeled and standardized on grocery store shelves. The fact that almost every alternative has met a similar fate—where the power of decision-making moves from democratic processes to boardrooms—means that we *must* be vigilant in foregrounding change in the social and economic relationships surrounding the food system just as the Declaration of Nyéléni lays out. We must understand agroecology as explicitly political and democratic—prioritizing the interests of farmers, workers, ecologies, and Indigenous communities—in order to transform complex systems in the face of corporate power.

Mainstream, Depoliticized, Climate- Oriented Frameworks: What is Missing

Many farmers and growers practicing regenerative agriculture clearly recognize the ecological impacts of agricultural production practices that are failing to protect water quality and quantity, build soil

health, and reduce GHG emissions. They laudably work to find solutions through shifts in production practices, often without market compensation or government support. But for the most part, more mainstream climate-oriented frameworks such as ‘climate-smart’ and regenerative agriculture lack clear political principles. For example, current investments in climate-smart agriculture strip out explicit references to political and ethical issues by incentivizing change in particular practices, but not by changing agenda setting and decision-making nor business and production models. In some cases when farmers or organizations using these frameworks do express political orientations linked to these practices, too often they are through a more libertarian framework, which focuses on the politics of the individual—the choices and opportunities of individual farmers to produce for new markets that only some consumers as individuals can afford to “choose” and products that only certain consumers can afford to buy. In much regenerative agriculture in the U.S., collective action is not readily apparent. The efforts are atomized in dispersed and separate farmers changing their production practices. Products are then supposedly pulled through the supply chain by one individual consumer over here “choosing” to buy that regenerative product off the shelf in one grocery store and another individual consumer over there making their own “choice” somewhere else.

In the same way that the consolidated corporate power is used to lock farmers into high-capital and high-input production systems, it also locks consumers into a consolidated “choice” (which may show up with the illusion of different brands and labels) of what is available on the shelves of their increasingly consolidated grocery stores. It also does not address the aggregate movement for fair wages paid to workers, who as a class could use a higher income to participate in a value chain that affords them quality products, for which farmers are paid a fair price. This avoids the individualistic framing of farmer versus con-

sumer in a zero-sum game. Without recognizing and addressing the power in these relationships (or the fact that the relationships between farmer and processor and grocer and eater have been torn apart or at a minimum fragmented), we can not transform into a system that is resilient, equitable, and healthy for all.

The Way Forward

Every way of organizing food and agriculture has both ethical and political aspects. Ethics is about understanding and resolving competing interests, claims, or values, while politics is where and how those different interests and claims are contested. Thus, understanding and addressing corporate power is key to advancing agroecology as a science *and* as a practice, and will only be realized through political education, grassroots organizing, and collective action that both strengthens and holds accountable our public institutions and democratic system, which is fundamental to agroecology. As a first step, public investments in climate resilience must be explicitly linked to the antitrust policies necessary to weaken the power of agribusiness in our food system. Explicitly requiring climate-resilient initiatives to do both-and, *both* reduce GHG emissions through production systems change *and* address monopoly and monopsony power, would begin to address the asymmetries of power between corporate agriculture and the farmers and communities that feed their communities through agroecology.

Linking climate resilient policies to the curbing of corporate power is one piece of the transformation that agroecology can offer. Addressing corporate power in the food system requires the agroecological approach that combines science, practice, and movement. It is through agroecology, and its core social movement function, that we can build the political power to enact the fundamental democratic transformation required in the food system.



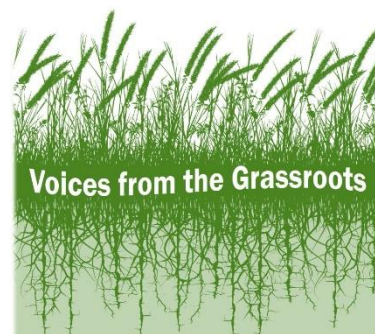
References

Declaration of Nyéléni. (2015, February 15). *Declaration of the International Forum for Agroecology*.
<https://www.foodsovereignty.org/forum-agroecology-nyeleni-2015-2/>

- Food and Agriculture Organization of the United Nations [FAO]. (2018, April 3-5). *Scaling up agroecology to achieve the Sustainable Development Goals*. Second International Symposium on Agroecology.
<https://www.fao.org/about/meetings/second-international-agroecology-symposium/en/>
- FAO. (2019). *HLPE Report 2019—Agroecological and other innovative approaches*.
<https://www.fao.org/family-farming/detail/en/c/1238860/>
- Howard, P. H. (2021). *Concentration and power in the food system: Who controls what we eat* (Revised ed.). Bloomsbury.
<https://doi.org/10.5040/9781350183100>
- Treacle, J. (2018, April 12). *Institutionalising agroecology in the “Cathedral of the Green Revolution.”* ARC2020.
<https://www.arc2020.eu/institutionalising-agroecology-in-the-cathedral-of-the-green-revolution/>
- Treacle, J., & Kruzic, A. (2020, October 1). USFSA Statement in Defense of Agroecology and the right to Food [Press Release]. U.S. Food Sovereignty Alliance. <https://usfoodsovereigntyalliance.org/press-release-usfsa-statement-in-defense-of-agroecology-and-the-right-to-food/>

VOICES FROM THE GRASSROOTS COMMENTARY

Reversing food-land relationships in the city: Insights from the Seeding East Buffalo Fellowship Program



Carol E. Ramos-Gerena ^{a *}

University at Buffalo, State University of New York

Allison DeHoney ^b

Urban Fruits & Veggies

Rachel Grandits, ^d Insha Akram, ^e and Samina Raja ^f

University at Buffalo, State University of New York

Shireen Guru ^c

University of Michigan

Submitted March 2, 2024 / Published online April 24, 2024

Citation: Ramos-Gerena, C. E., DeHoney, A., Guru, S., Grandits, R., Akram, I., & Raja, S. (2024). Reversing food-land relationships in the city: Insights from the Seeding East Buffalo Fellowship Program [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 113–116. <https://doi.org/10.5304/jafscd.2024.133.018>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

^{a *} *Corresponding author:* Carol E. Ramos-Gerena, PhD Candidate, Food Systems Planning and Healthy Communities Lab, University at Buffalo, State University of New York; 233 Hayes Hall; 3435 Main Street; Buffalo, NY 14214 USA;  <https://orcid.org/0000-0002-7624-3629>; carolram@buffalo.edu

^b Allison DeHoney, Executive Director, Urban Fruits & Veggies, Buffalo, NY, USA; adehonn@gmail.com

^c Shireen Guru, PhD Student, University of Michigan;  <https://orcid.org/0000-0003-1527-7937>; shireeng@umich.edu

^d Rachel Grandits, Graduate Student, Food Systems Planning and Healthy Communities Lab, University at Buffalo, State University of New York, Buffalo, New York, USA;  <https://orcid.org/0009-0000-7005-431X>; granditsra@gmail.com

^e Insha Akram, Graduate Student, Food Systems Planning and Healthy Communities Lab, University at Buffalo, State University of New York, Buffalo, New York, USA;  <https://orcid.org/0009-0003-6448-5713>; inshaakr@buffalo.edu

Abstract

The Seeding East Buffalo Fellowship (SEBF) program, co-founded by community and academic organizations from Buffalo, NY in 2022, supported residents in Buffalo's Black neighborhoods to grow their own food, emerge as urban agriculture (UA)

^f Samina Raja, Principal Investigator, Food Systems Planning and Healthy Communities Lab, University at Buffalo, State University of New York, Buffalo, New York, USA;  <https://orcid.org/0000-0002-6251-2736>; sraja@buffalo.edu

Note

People interested in reaching out to Urban Fruits & Veggies (UFV) can email Marilyn Rodgers at mrodders@buffalogogreen.org

Funding Disclosure

This work was supported by the Foundation of Food and Agriculture Research under grant # CA19-SS-0000000147.

Declaration of Interest Statement

No potential conflict of interest was reported by the authors.

leaders, and engage in and advocate for UA policy. This article reflects on the lessons learned from this pilot program. The authors, all of whom are either co-founders or team members of the SEBF program, drew from field notes and qualitative interviews with SEBF growers in this article. Key lessons for policy change are that programs must be rooted in the community's history, pedagogical strategies must be tailored to the local context, and long-term relationships must be fostered.

Keywords

urban agriculture, Black growers, adult education, Buffalo, experiential education and training

Introduction

Black and brown residents in the U.S. are growing food in cities to directly demand a dignified life and denounce the precarious conditions in their neighborhoods. They collectively learn and share knowledge about urban agriculture (UA) and food policy literacy (Ramos-Gerena, 2023) to resist and reverse historical disinvestment in their regions.

The Seeding East Buffalo Fellowship (SEBF) program, piloted in 2022, is one of the many initiatives led by local food actors intending to *reverse* historical disinvestment in eastern parts of Buffalo, NY, by helping residents grow healthy food, control their food system, and advocate for their communities. For years, numerous organizations in Buffalo have pointed out the limited access to healthy food in predominantly Black neighborhoods in eastern Buffalo (Frimpong-Boamah et al., 2022) and the untapped potential of UA on the 8,000 publicly owned vacant lots managed by the city government (Magavern, 2023).

The SEBF was launched by Growing Food Policy from the Ground Up (GFPGU¹), an action-research coalition composed of an urban farmer (Urban Fruits & Veggies,² or UFV), community

elders (Buffalo Freedom Gardens³), and researchers (UB Food Lab⁴ and other partners). The program was advertised in *The Challenger*,⁵ the city's oldest Black-owned newspaper. Eligible applicants had to be 18 years or older and residents from the neighborhoods east of Main Street in Buffalo. An important factor in their selection was the applicants' commitment to improving their neighborhoods. Fellows were selected by UFV. The 12 selected fellows ranged from 35 to 70 years of age, all were Black Americans, and eight were female.

The SEBF program provided didactic information (on sustainable agriculture and food policy), experiential learning opportunities (on a farm and in their homes), social networking opportunities (with peers and community elders), and material resources to fellows to begin or expand their own gardens.

Didactic. Fellows received information about sustainable UA practices, the national food system, and the 2023 farm bill. They also participated in UA policy workshops at the beginning (focusing on federal policy) and end of the program (focusing on municipal policy) delivered by the UB Food Lab and Food for the Spirit.⁶

Experiential. From May to June 2022, fellows met weekly at the UFV urban farm and were exposed to on-hand gardening from seed to cultivation. Fellows received hands-on training on seed saving, organic pesticide management, and harvesting. From July to August, fellows put their knowledge to use by launching or expanding their own gardens.

Social networking opportunities included membership in and engagement with the Buffalo Food Equity Network (BFEN)⁷ and the Agricultural Pavilion⁸ at the city's Juneteenth celebration to raise awareness about UA citywide. Some fellows also joined Buffalo Freedom Gardens to distribute raised garden beds through-

¹ <https://foodsystemsplanning.ap.buffalo.edu/project/growing-food-policy-from-the-ground-up-gfpgu/>

² <https://buffalogogreen.org/urban-fruits-veggies/>

³ <https://www.facebook.com/BuffaloFreedomGarden/>

⁴ <https://foodsystemsplanning.ap.buffalo.edu/>

⁵ <https://issuu.com/challengercommunitynews>

⁶ <https://foodforthespirit.org/>

⁷ <https://foodforthespirit.org/buffalo-food-equity-network/>

⁸ <https://www.buffalorising.com/2022/06/recognizing-the-buffalo-juneteenth-agricultural-pavilion/>

out Buffalo. In September 2022, fellows were honored at a SEBF graduation ceremony at the University at Buffalo, State University of New York (UB) attended by family and friends.

To support the initiation or expansion of existing food production activities, fellows received modest *material resources*, including a US\$250 gift card (for supplies) and soil and supplies delivered to their homes to build their own raised beds.

Lessons Learned

Our experience suggests that three areas were important for a meaningful implementation of the SEBF program: (a) the history and context of the community, (b) the pedagogical strategy of the course facilitators, and (c) the relational infrastructure of program leaders and participants.

Rooted in community history: The SEBF program was scheduled to begin on May 15, 2022. Tragically, the day before the launch, a white supremacist shot and killed 10 people at a supermarket located in the city's predominantly Black neighborhood, a few minutes' walk from the UFV farm site. However, community elders urged SEBF coordinators to move forward with the launch of

the program. One elder in the community shared with the SEBF program coordinators that "they [supremacists] are not going to take this away from us." Elders reaffirmed that reversing historical inequalities is not a one-time event, but a long-term struggle that has been spearheaded by generations before them.

Tailoring pedagogy to local context: The SEBF program made a conscious effort to welcome residents with little to no experience growing food. In fact, various fellows admitted they were growing food for the first time with the SEBF program. One participant shared that they applied to SEBF to "have a better relationship with the soil." Sharing knowledge across diverse levels of experience in gardening motivated the SEBF team to use a dialogic inquiry-based learning approach, particularly for the classes held at the farm. The UFV farmer-educator provided hands-on and varied farming practices at different stations on the farm; each class resembled a field trip rather than a lecture (see Figure 1). The UFV farmer-educator answered questions individually, and, when the occasion necessitated, responded to the whole group, illustrating a deft pedagogical style. Fellows

learned from and supported each other's learning journey, while being in a constant state of curiosity and reflection around the farm.

Fostering relationships: SEBF leaders shared that their main goal was to provide a "beautiful space to create networks." Indeed, the most frequently cited benefit by fellows was being able to connect with peers in the program and growers in the city. One fellow commented, "I didn't realize how many people are gardening in my community." Fellows not only met representatives of food-related organizations in Buffalo, but also visited each other's gardens. Simi-

Figure 1. Urban Fruits & Veggies (UFV) Farmer-Educator (Squatting) Answering Questions from Seeding East Buffalo Fellowship Participants Inside the UFV Greenhouse



larly, other fellows shared that they applied to SEBF to connect with like-minded people “to know how to reverse [particular] trends,” referring to the depletion of healthy soils and the persistence of racism in the city.

Rooted in the community’s history, using pedagogical strategies tailored to the local context, and fostering new relationships with the soil, food, and peers, the SEBF program supports the potential for community-led policy change. Stronger relationships among Black growers, combined with their heightened awareness of the linkages between municipal policy and UA practice, are important precursors for community advocacy and systemic change. In other words, and using a SEBF fellow’s phrase, only with these relationships will we see “community gardens [and sustainable urban agriculture as] normal,” especially in Black and brown neighborhoods. 

Acknowledgments

We thank the Seeding East Buffalo Fellowship (SEBF) fellows for their commitment to growing in the city of Buffalo. We thank Urban Fruits & Veggies and the Food System Planning and Healthy Communities Lab (UB Food Lab) teams, and all Growing Food Policy from the Ground Up (GFPGU) partners for their support for the SEBF program. We are especially grateful to Barbara Carlson, Rickey Fleming, Lorna Georges, Cameron Herman, Zachary Korosh, Nathaniel Mich, Marilyn Rodgers, William Stanton, and Rose Thomas for their contributions. Moreover, we acknowledge the support from Food for the Spirit (F4tS), Buffalo Freedom Gardens, Juneteenth Agricultural Pavilion, and Buffalo Food Equity Network (BFEN), who reverse Buffalo’s history one garden(er) at a time.

References

- Frimpong-Boamah, E., Hall, E., Headrick, G., Herman, C., Mui, Y., Ramos-Gerena, C., & Raja, S. (2022, May 24). East Buffalo needs community-driven structural investments, not fly-in, fly-out charity [Op-ed]. *Civil Eats*. <https://civileats.com/2022/05/24/op-ed-east-buffalo-needs-community-driven-structural-investments-not-fly-in-fly-out-charity/>
- Magavern, S. (2023, February 24). *Using publicly-owned vacant land to advance sustainability and equity in Buffalo, New York* [Report]. PPG. <https://ppgbuffalo.org/buffalo-commons/library/resource:using-publicly-owned-vacant-land-to-advance-sustainability-and-equity-in-buffalo-new-york/>
- Ramos-Gerena, C. (2023). Critical food policy literacy: Conceptualizing community municipal food policy engagement. *Journal of Agriculture, Food Systems, and Community Development*, 12(2), 321–337. <https://doi.org/10.5304/jafscd.2023.122.008>

COMMENTARY

Pakistan's path to sustainability: Advancements in cleaner production, a circular economy, and climate-smart solutions

Amanullah *

The University of Agriculture Peshawar

Submitted March 3, 2024 / Accepted March 3, 2024 / Published online May 24, 2024

Citation: Amanullah. (2024). Pakistan's path to sustainability: Advancements in cleaner production, a circular economy, and climate-smart solutions [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 117–126. <https://doi.org/10.5304/jafscd.2024.133.021>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Introduction

Pakistan is at a critical juncture in its sustainability journey, a moment characterized by diverse landscapes and resilient communities. This commentary explores the multifaceted approach necessary to tackle the nation's environmental, economic, and societal challenges within the framework of cleaner production, a circular economy, and climate-smart solutions. Environmental issues loom large, with rising air and water pollution, land degradation, and the increasing threat of climate change. To combat these challenges, adopting cleaner production technologies and circular economy practices across industries is imperative. Pakistan is embracing circular principles to mitigate pollution, reduce waste, and enhance resource efficiency, particularly in the agricultural sector, where circular agriculture practices are ensuring food security and sustainability.

The circular economy is an economic model that aims to minimize waste and make the most efficient use of resources by keeping products and materials in use for as long as possible through reuse, repair, remanufacturing, and recycling. It seeks to design out waste and pollution, regenerate natural systems, and transition toward renewable energy sources (Bourguignon, 2016). In Pakistan, the nation's broad aspirations and goals regarding the circular economy are centered around sustainable development and environmental stewardship. The government is committed to promoting principles of a circular economy to address environmental challenges, enhance resource efficiency, and promote economic growth.

Economic challenges, such as unemployment, inflation, and energy shortages, underscore the need for a transition to cleaner and more efficient energy production (United Nations Development Programme [UNDP], 2023). This shift, anchored in circular economy principles, emphasizes renewable energy sources such as solar and wind power.

* Amanullah, Department of Agronomy, The University of Agriculture, Peshawar, Pakistan;  <https://orcid.org/0000-0003-2289-7755>; amanullah@aup.edu.pk

Moreover, investments in circular economies can drive job creation and economic growth by optimizing resource utilization. Government-led economic reforms and private-sector engagement in circular and sustainable practices are pivotal in Pakistan's pursuit of sustainability.

Addressing social challenges, including education, healthcare, and poverty alleviation, is integral to Pakistan's sustainability efforts (Ahmad, 2018). Access to quality education and healthcare services remains critical, while poverty alleviation programs and social safety nets promote inclusivity and social equity, all within a circular resource allocation framework.

Central to Pakistan's sustainability journey are climate-smart solutions, integrated with circular principles, that include resilient urban planning, circular waste management, and sustainable transportation systems, all aimed at reducing vulnerability to climate hazards. In agriculture, climate-smart, circular practices such as crop diversification and efficient water management are pivotal for ensuring food security amid changing climate patterns.

Pakistan's pursuit of sustainability through cleaner production, a circular economy, and climate-smart solutions embodies a holistic approach to addressing environmental, economic, and societal challenges. The adoption of these practices, alongside a commitment to social equity, reflects the nation's determination to create a greener and more sustainable future. Pakistan's commitment to sustainability through cleaner production, a circular economy, and climate-smart solutions represents a comprehensive strategy to tackle environmental, economic, and societal challenges. This approach is not merely a set of policies but also reflects the deeply ingrained values and cultural ethos of the nation. By embracing these practices while prioritizing social equity, Pakistan demonstrates its resolve to forge a greener and more sustainable future for its citizens. Through proactive measures and inclusive policies, Pakistan is laying the groundwork for a transformative shift toward a more environmentally conscious and resilient society. Through innovation, collaboration, and a collective commitment to progress, Pakistan is poised to emerge as a global exemplar of resilience and sustainability (Amanullah, 2024a).

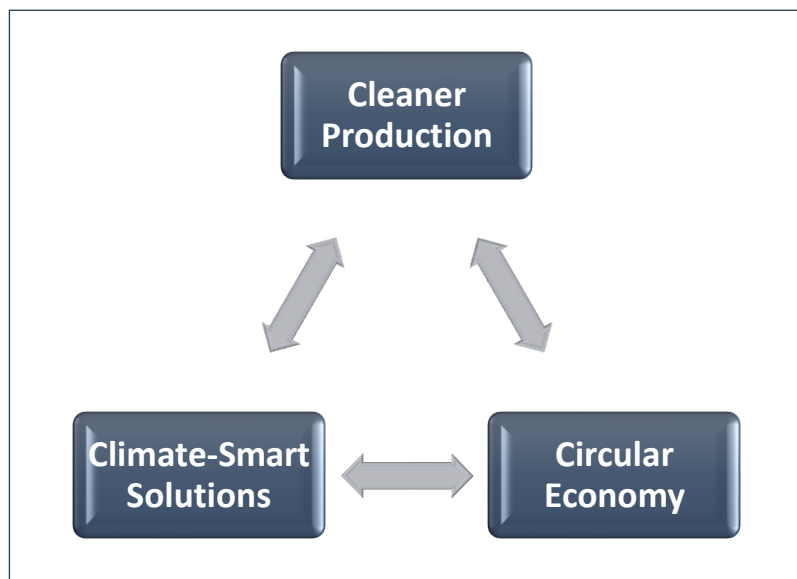
Major Issues Facing Pakistan

1. **Environmental Degradation:** Pakistan faces increasing air and water pollution, land degradation, and the adverse impacts of climate change. Glacial melt in the north threatens water resources, while erratic weather patterns jeopardize the livelihoods of millions dependent on agriculture.
2. **Economic Disparities:** Critical economic issues include unemployment, inflation, and energy shortages. The need for cleaner and more efficient energy production methods is paramount, emphasizing a shift toward renewable sources.
3. **Societal Well-being:** Challenges related to education, healthcare, and poverty alleviation persist. Quality education remains elusive for many, access to healthcare services is uneven, and poverty continues to be a pressing concern.

To address these challenges and secure a more sustainable future for Pakistan, three interrelated pillars of sustainability emerge as transformative solutions (Figure 1):

1. **Cleaner Production:** Cleaner production technologies are pivotal in reducing environmental pollution and resource wastage. By adopting eco-friendly manufacturing processes, industries can preserve Pakistan ecosystems and improve public health.
2. **Circular Economy:** Transitioning to a circular economy promotes resource efficiency, minimizes waste generation, and fosters responsible consumption. The shift toward circularity aligns with economic growth and environmental stewardship.
3. **Climate-Smart Solutions:** To mitigate the adverse effects of climate change, embracing renewable energy, climate-resilient infrastructure, and sustainable agriculture practices is crucial. These strategies enhance Pakistan's adaptive capacity and reduce vulnerability to climate hazards.

Figure 1. Three Interrelated Pillars of Sustainability: Transformative Solutions for Pakistan



Discussion

Why Does Sustainability Matter for Pakistan?

Sustainability in Pakistan is not just an aspiration; it's a necessity. It is a commitment to safeguarding the environment, promoting prosperity, ensuring societal well-being, and securing a brighter future for generations to come (Amanullah, 2024a). In this dynamic landscape, Pakistan's journey toward sustainability unfolds, driven by innovation, collaboration, and the shared vision of a cleaner, greener, and more resilient nation. The comprehensive approach—cleaner production, a circular economy, and climate-smart solutions—paves the path to sustainability, offering Pakistan the promise of a prosperous and sustainable future, where challenges are met with ingenuity, opportunities are seized with determination, and Pakistan becomes a global exemplar of resilience and progress.

1. Cleaner Production for a Greener Pakistan

Cleaner production practices are recognized by industries nationwide for their role in resource efficiency, waste reduction, and emissions control. From Karachi to Faisalabad and Islamabad, eco-friendly manufacturing is not just an option but a necessity to safeguard ecosystems and public health. This shift comes as Pakistani industries

acknowledge the environmental costs of growth, with cleaner production practices offering a pathway to sustainable development (Kumar et al., 2024). Maximizing resource efficiency is a key goal, seen, for example, in Faisalabad's textile mills adopting closed-loop water recycling to reduce water use and chemical discharge. Emissions control is also crucial, with investments in technology that are improving Karachi's air quality. Circular economy principles are embraced for waste reduction, aiding in landfill reduction and cost savings for businesses.

Two specific examples of Pakistani industries moving in a cleaner, more sustainable direction include:

- **Textile Industry:** Pakistan's textile industry is one of the largest contributors to the country's economy, but it is also known for its environmental impact due to water pollution and energy consumption. In response to growing concerns about sustainability, many textile manufacturers have started adopting cleaner production practices. For example, some textile mills have invested in wastewater treatment plants to reduce pollution in local water bodies. Additionally, there has been a shift toward using eco-friendly dyes and chemicals, as well as implementing energy-efficient machinery to reduce carbon emissions.
- **Leather Industry:** The leather industry in Pakistan faces similar environmental challenges related to wastewater discharge and chemical usage. However, there has been a notable trend toward cleaner production methods in recent years. Some leather tanneries have implemented measures to recycle water used in the tanning process, reducing both water consumption and pollution levels. Furthermore, efforts are being made to replace hazardous chemicals with

safer alternatives, leading to improved worker safety and reduced environmental impact.

These examples demonstrate how Pakistani industries are motivated by both regulatory pressure and market demands to adopt cleaner production practices. Government policies promoting environmental sustainability, such as stricter regulations on pollution control and incentives for green investments, play a crucial role in driving this transition toward more sustainable industrial practices.

Beyond environmental benefits, cleaner production aligns with the goals of economic growth and social well-being. Sustainable industries are more competitive globally, attracting investment and creating jobs, which are crucial as Pakistan faces high levels of unemployment and energy shortages. The government's policies and incentives play a significant role in supporting this shift toward cleaner production practices.

In recent years, the Pakistani government has introduced various policies and initiatives aimed at promoting environmental sustainability and incentivizing businesses to adopt cleaner production methods. For example, the National Environmental Quality Standards (NEQS) set by the Pakistan Environmental Protection Agency (EPA) establish guidelines for industries to minimize pollution and comply with environmental regulations. Noncompliance with these standards can result in penalties and fines, providing a strong incentive for industries to invest in cleaner technologies and practices.

Furthermore, the government has introduced financial incentives and support mechanisms to encourage businesses to adopt sustainable practices. This includes tax incentives for

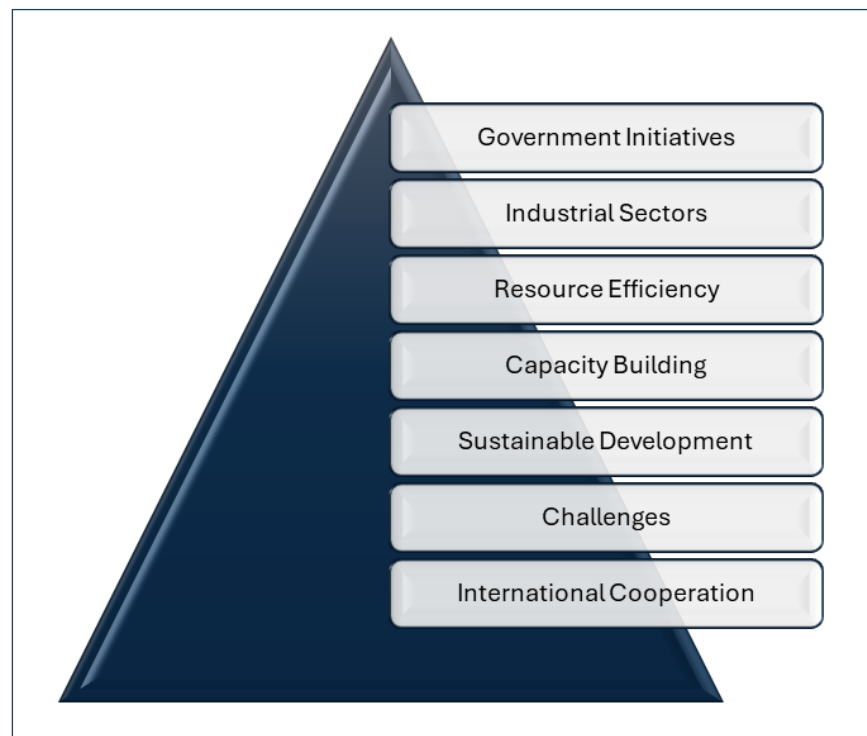
companies that invest in renewable energy sources, energy-efficient machinery, and waste-reduction technologies. Additionally, subsidies and grants are available for businesses that implement eco-friendly initiatives such as installing solar panels or upgrading to cleaner production processes.

Moreover, the government has partnered with international organizations and development agencies to provide technical assistance and capacity-building programs for industries transitioning to cleaner production methods. These initiatives not only help businesses reduce their environmental footprint but also enhance their competitiveness in domestic and international markets.

The impact of cleaner production goes beyond industry, contributing to environmental preservation, economic growth, and an improved quality of life for Pakistani citizens. By embracing sustainable practices and leveraging government support, industries can play a pivotal role in building a greener, more prosperous Pakistan.

Figure 2 displays some key points about cleaner production in Pakistan, an ongoing process

Figure 2. Advancing Cleaner Production in Pakistan: Key Insights and Future Directions



that relies on the commitment of industries, regulatory bodies, and stakeholders. As global attention continues to shift toward environmental sustainability and climate change mitigation, cleaner production practices are poised to gain increased significance within Pakistan's industrial landscape.

2. Circular Economy

The circular economy is a critical component of Pakistan's path to sustainability, closely intertwined with advancements in cleaner production and climate-smart solutions. In essence, a circular economy represents a paradigm shift in how we produce, consume, and manage resources (Ellen MacArthur Foundation, 2019). Rather than following the traditional linear model of "take, make, and dispose," a circular economy promotes a closed-loop system where resources are conserved, reused, and recycled to minimize waste and environmental impact. In Pakistan, where resource scarcity and environmental degradation are pressing concerns, embracing a circular economy is imperative. The importance of this transition cannot be overstated, particularly when viewed through the lens of the broader theme of sustainability. First, adopting circular economy principles aligns with the goals of cleaner production. By designing products with recyclability and reusability in mind, industries can significantly reduce waste generation and the consumption of finite resources. This not only lowers production costs but also lessens the burden on landfills and incineration facilities, mitigating environmental pollution and conserving resources. Landfills and incineration facilities are significant concerns in Pakistan, as they are in many other countries facing waste management challenges. By reducing waste generation and promoting recyclability and reusability, industries can help alleviate the pressure on landfills and incineration facilities. This approach not only reduces environmental pollution but also conserves valuable resources. Therefore, addressing these concerns is essential for promoting sustainable waste management practices and protecting the environment in Pakistan.

Furthermore, the circular economy complements climate-smart solutions by reducing greenhouse gas emissions. The impact of energy-

intensive processes of extracting and manufacturing raw materials are minimized when products are reused or recycled. This reduction in carbon footprint contributes to climate change mitigation, aligning with Pakistan's efforts to combat the impacts of changing climate. In the broader area of sustainability, a circular economy fosters economic resilience and job creation. Pakistan's economy can benefit significantly from a shift toward recycling and refurbishing industries, providing employment opportunities and reducing dependence on resource imports.

The importance of the circular economy is paramount in Pakistan's journey toward sustainability. It is an integral component that not only enhances cleaner production practices and climate resilience but also promotes economic growth and environmental stewardship. By embracing circular economy principles, Pakistan can unlock a wealth of opportunities for a greener, more sustainable future (Bleischwitz et al., 2022). The study conducted by Bleischwitz et al. (2022) in China provides valuable insights into the implementation of circular economy principles in a large and rapidly developing economy. While the specific context of China may differ from that of Pakistan in various aspects (such as scale, industrial structure, and policy framework), the overarching principles and strategies outlined in the study can still be highly relevant to Pakistan.

Pakistan, like China, faces numerous environmental and economic challenges, including resource scarcity, pollution, and unsustainable consumption patterns. By embracing circular economy principles, Pakistan can learn from China's experiences and adapt strategies to its own context. This may include measures to promote resource efficiency, minimize waste generation, and foster sustainable production and consumption practices.

Moreover, the study by Bleischwitz et al. (2022) highlights the potential benefits of transitioning to a circular economy, such as reduced environmental impact, enhanced resource security, and economic resilience. These insights can serve as a source of inspiration and guidance for policymakers, businesses, and other stakeholders in Pakistan as they work toward building a greener and more sustainable future. Therefore, while the

study may focus on China, its findings and recommendations hold relevance and applicability to Pakistan's efforts in advancing circular economy initiatives.

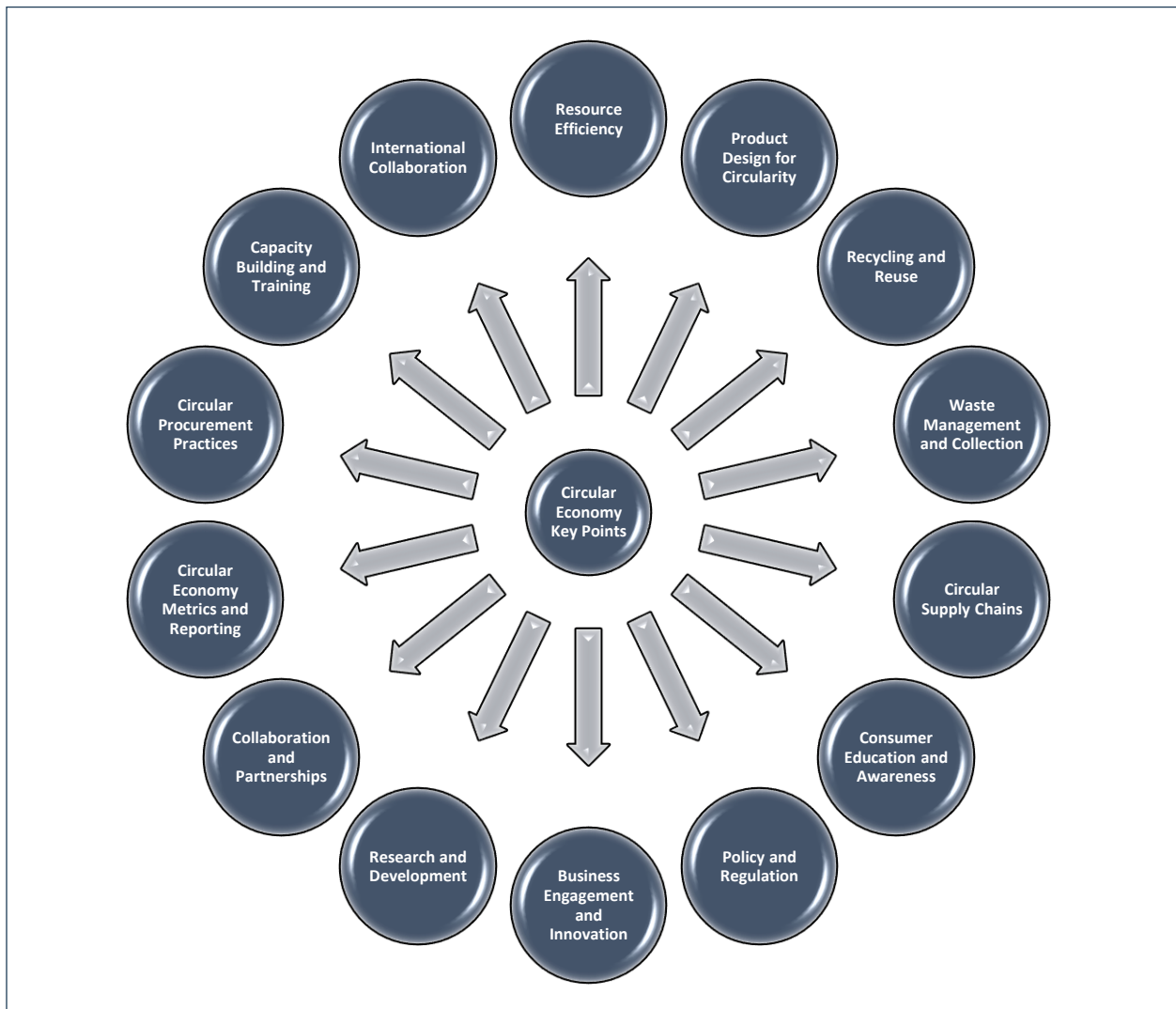
Figure 3 displays some key strategies required for a circular economy in Pakistan, forming a comprehensive framework that emphasizes the importance of collaboration, innovation, and responsible production and consumption practices.

3. Climate-Smart Solutions

Pakistan is actively addressing the impacts of climate change through innovative climate-smart

solutions (International Center for Tropical Agriculture [CIAT] & World Bank, 2017; FAO, 2017a; UN-Habitat, 2023). They include solar energy projects in the Thar Desert and reforestation efforts in northern regions to combat extreme weather events and glacial melting. Urban centers such as Lahore and Rawalpindi are pioneering climate-resilient infrastructure, while farmers in Sindh and Punjab are embracing sustainable agricultural practices. These initiatives not only mitigate environmental risks but also enhance Pakistan's resilience against future climatic uncertainties (United Nations Climate Change, 2015).

Figure 3. Key Strategies for Advancing Circular Economy in Pakistan: A Collaborative and Innovative Framework



The country's vulnerability to climate change is evident from the increasing frequency of extreme weather events, disrupting livelihoods and threatening food security (Abid et al., 2016). Pakistan has responded with solar energy projects, reducing greenhouse gas emissions and ensuring sustainable energy sources amid energy shortages. Reforestation in northern regions aids in carbon sequestration and water regulation for downstream communities. Urban areas such as Lahore are implementing climate-resilient infrastructure like improved drainage systems and energy-efficient public transport, reducing carbon footprint and enhancing urban living. The agriculture sector, vital to Pakistan's economy, is adapting with climate-smart practices such as drought-resistant crops and precision irrigation in Sindh and Punjab, ensuring food security and productivity despite changing

climate conditions. Pakistan's proactive approach to climate resilience is seen in government policies mainstreaming these solutions (Ministry of Climate Change, 2021; Ministry of Planning, Development & Reform, 2014). From renewable energy to resilient infrastructure and sustainable agriculture, Pakistan is forging a more resilient and sustainable future, not only mitigating environmental risks but also contributing to the well-being and prosperity of its citizens.

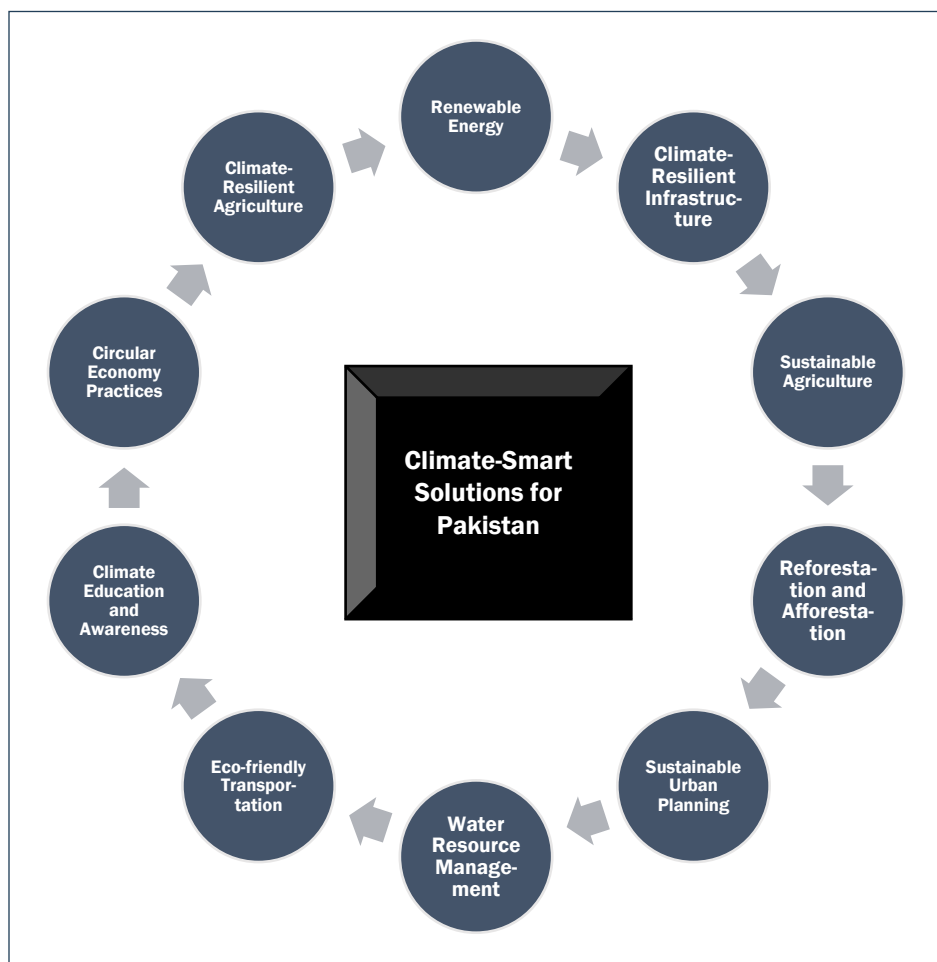
Various climate-smart solutions are important for Pakistan (Figure 4), which encompass a broad spectrum of strategies and actions aimed at addressing climate change challenges while promoting sustainability and resilience in Pakistan.

4. Sustainability: A National Commitment

Sustainability in Pakistan extends beyond environ-

mental conservation to encompass the well-being of its citizens (Amanullah, 2024b). In cities like Peshawar, Quetta, and Multan, efforts for sustainability include addressing population growth, food security, employment, and affordable education. Pakistan aims for cities where clean air, safe water, and affordable housing are available to all, linking economic prosperity with ecological responsibility (CIAT & World Bank, 2017; World Bank, 2023). Challenges in sustainability are intertwined, with population growth straining resources and infrastructure, especially in rapidly urbanizing areas like Peshawar. Sustainable urban

Figure 4. Integrated Climate-Smart Solutions for Pakistan



planning, including affordable housing and efficient public transport, is crucial.

Food security is another key issue, with challenges from water scarcity and climate change affecting agriculture. Sustainable practices, improved water management, and technological investment are vital (Amanullah, 2024b). Job creation is linked to sustainability, aiming to reduce poverty and inequality through promoting industries like renewable energy and green construction (United Nations Environment Programme, 2011). Accessible, quality education is fundamental, and Pakistan is working to improve infrastructure, teacher training, and enrollment rates (Ministry of Federal Education & Professional Training, 2021; Ministry of Planning, Development & Reform, 2014).

Pakistan's vision aligns with the UN's Sustainable Development Goals (SDGs), aiming for economic growth benefiting all and sharing the fruits of development (Figure 5). By aligning its path to sustainability with the SDGs, Pakistan not only addresses its unique challenges but also contributes to the global agenda for a more equitable, prosperous, and environmentally responsible world (Amanullah, 2020). These goals provide a roadmap for Pakistan's transformation, guiding its efforts toward a cleaner, greener, and more sustainable future.

5. The Role of Agriculture in Pakistan Sustainability

Agriculture has a pivotal role in Pakistan's journey toward sustainability (Amanullah & Khan, 2024), particularly in cleaner production, a circular economy, and climate-smart solutions. This sector, deeply intertwined with the country's socio-

economic fabric, is central to addressing environmental, economic, and social challenges while fostering sustainability (Figure 6).

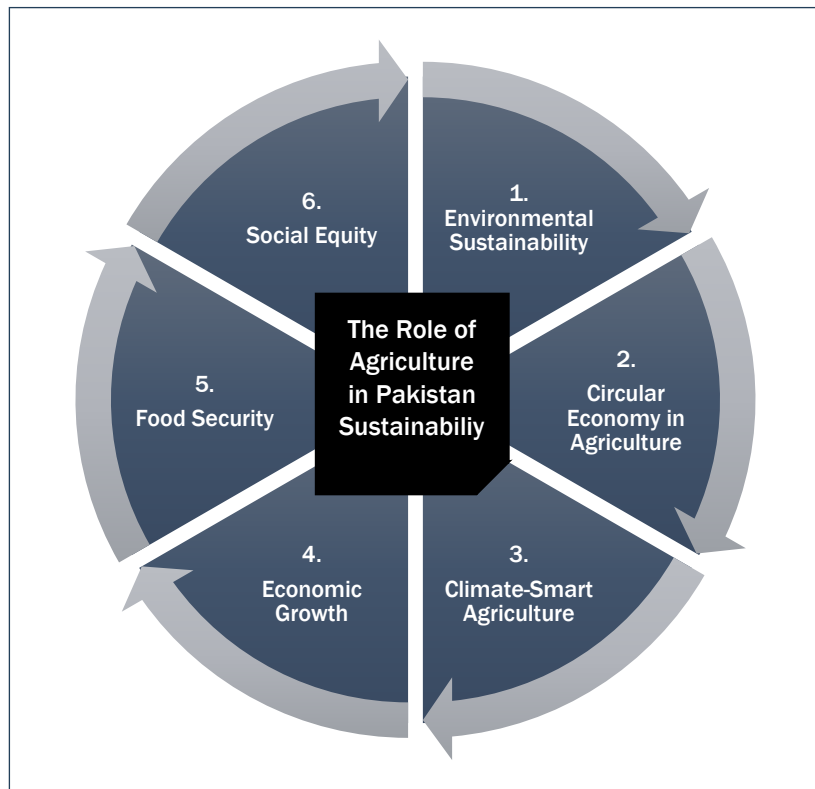
The Path Forward

Pakistan's path to sustainability is a multifaceted journey, tackling issues from population growth to economic disparities. Cleaner production practices are crucial, with industries in cities like Karachi and Faisalabad embracing resource efficiency and waste reduction. Climate-smart solutions are imperative, particularly as Pakistan faces extreme weather events and shifting agricultural patterns (Amanullah, 2024a; FAO, 2017b). Renewable resources such as solar power in Thar and resilient infrastructure in Lahore and Rawalpindi are part of this vision. Pakistan envisions cities with clean air, safe water, and affordable housing, intertwining economic growth with ecological responsibility. To achieve this, recommendations include promoting cleaner production, investing in renewable sources, and supporting sustainable agriculture (Planning Commission, 2021). Climate-resilient infrastructure in cities like Karachi and Peshawar is crucial. Transitioning to a circular economy, investing in green transportation, and

Figure 5. Pakistan's Alignment with UN Sustainable Development Goals



Figure 6. Agriculture's Role in Pakistan's Sustainability



international collaboration are also vital.

Pakistan stands at a pivotal moment in its sustainability journey, with cleaner production and climate-smart solutions offering tangible benefits for public health and well-being. The path forward is challenging, but with concerted efforts and collaboration, Pakistan can become a global model of resilience and progress.

References

- Abid, M., Schneider, U. A., & Scheffran, J. (2016). Adaptation to climate change and its impacts on food productivity and crop income: Perspectives of farmers in rural Pakistan. *Journal of Rural Studies*, 47(A), 254–266.
<https://doi.org/10.1016/j.jrurstud.2016.08.005>
- Ahmad, S. (2018). *Unleashing the potential of a young Pakistan* [National Human Development Report]. United Nations Development Programme. hdr.undp.org/content/unleashing-potential-young-pakistan
- Amanullah (Ed.). (2020). *Agronomy: Climate change & food security*. IntechOpen. <https://doi.org/10.5772/intechopen.78102>
- Amanullah. (2024a). *Harvesting success: A comprehensive guide to agronomy courses*. Punjab Book Company.
- Amanullah. (2024b). *Integrated agriculture: An approach for sustainable agriculture*. Walter de Gruyter.
- Amanullah & Khan, U. (2024). Enhancing public health through modern agronomy: Sustainable and nutrient-rich practices. *Journal of Agriculture, Food Systems, and Community Development*, 13(2), 11–18.
<https://doi.org/10.5304/jafscd.2024.132.014>
- Bleischwitz, R., M. Yang, Huang, B., Xu, X., Zhou, J., McDowall, W., Andrews-Speed, P., Liu, Z., & Geng, Y. (2022). The circular economy in China: Achievements, challenges and potential implications for decarbonization. *Resources, Conservation and Recycling*, 183, Article 106350. <https://doi.org/10.1016/j.resconrec.2022.106350>
- Bourguignon, D. (2016, January). *Closing the loop: New circular economy package* [Briefing, PE 573.899]. European Parliamentary Research Service.
https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573899/EPRS_BRI%282016%29573899_EN.pdf
- Ellen MacArthur Foundation. (2019). *Completing the picture: How the circular economy tackles climate change*.
<https://www.ellenmacarthurfoundation.org>
- Food and Agriculture Organization of the United Nations. (2017a). *Climate-smart agriculture sourcebook* (2nd ed.).
<https://www.fao.org/climate-smart-agriculture-sourcebook/en/>

- Food and Agriculture Organization of the United Nations. (2017b). *The future of food and agriculture: Trends and challenges*. <https://www.fao.org/3/i6583e/i6583e.pdf>
- International Center for Tropical Agriculture [CIAT] & World Bank. (2017). *Climate-smart agriculture in Pakistan* (CSA Country Profiles for Asia Series). <https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA-in-Pakistan.pdf>
- Kumar, L., Naqvi, S. A., Deitch, M. J., Khalid, M. J., Naeem, K., Amjad, A. Q., Kumar, A., Gebremicael, T. G., & Arshad, M. (2024). Opportunities and constraints for cleaner production policy in the developing world: A case study of Sindh Region, Pakistan. *Environment, Development and Sustainability*, 26, 4391–4434. <https://doi.org/10.1007/s10668-022-02889-0>.
- Ministry of Climate Change. (2021). *National Climate Change Policy*. Government of Pakistan. <https://mocc.gov.pk/SiteImage/Policy/NCCP%20Report.pdf>
- Ministry of Federal Education & Professional Training. (2021). *Pakistan education statistics 2017-18*. National Education Management Information System (NEMIS), Academy of Education Planning and Management (AEPAM), Government of Pakistan. <https://pie.gov.pk/SiteImage/Publication/PES%202017-18.pdf>
- Ministry of Planning, Development & Reform. (2014). *Pakistan 2025: One nation — One vision*. Planning Commission, Government of Pakistan. <https://www.pc.gov.pk/uploads/vision2025/Pakistan-Vision-2025.pdf>
- UN-Habitat. (2023). *UN-Habitat Pakistan country report 2023*. https://unhabitat.org/sites/default/files/2023/06/4_pakistan_country_report_2023_b5_final_compressed.pdf
- United Nations Climate Change. (2015). *The Paris Agreement*. <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
- United Nations Development Programme [UNDP]. (2023). *Leaving no Pakistani behind: Working hand in hand to advance the Sustainable Development Goals*. <https://www.undp.org/pakistan>
- United Nations Environment Programme. (2011). *Towards a green economy: Pathways to sustainable development and poverty eradication. A synthesis for policy makers*. <https://wedocs.unep.org/20.500.11822/32245>
- World Bank. (2023). *Pakistan development update: Recent economic developments, outlook, and risks*. <https://thedocs.worldbank.org/en/doc/5ee854aff2b120cb30ef910f4e7421f9-0310012023/original/Pakistan-Development-Update-Report-April-2023.pdf>

COMMENTARY

Assessment of households' food consumption strategies during the COVID-19 pandemic in Ilorin-South LGA, Kwara State, Nigeria

Opeyemi P. Babafemi ^{a*} and Adetunji L. Kehinde ^b
Osun State University

Submitted February 29, 2024 / Accepted February 29, 2024 / Published online June 3, 2024

Citation: Babafemi, O. P., & Kehinde, A. L. (2024). Assessment of households' food consumption strategies during the COVID-19 pandemic in Ilorin-South LGA, Kwara State, Nigeria [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 127–129. <https://doi.org/10.5304/jafscd.2024.133.024>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Introduction

The effects of the COVID-19 pandemic on the agro-food sector included significant effects on existing household food dynamics and tested the resilience of the food system as a whole. The pandemic also negatively affected livelihoods as it resulted in the loss of jobs and, thus, economic hardship (Aday & Aday, 2020). This was especially true in the developing world, where the numbers of vulnerable households were high (World Bank Group, 2022). The study on which this commentary is based was conducted in 2022 and focused

on assessing the food consumption strategies adopted by households in Ilorin-South Local Government Area, Kwara State, Nigeria, during the COVID-19 pandemic in 2020.

The pandemic, which disrupted the global food supply chain, affecting food availability, affordability, and consumption patterns, revealed the importance of understanding how households navigated these challenges—a knowledge that is crucial for enhancing food security in vulnerable communities. The questionnaires for this study were administered to heads of households and explored information about their occupations, family size, and the specific economic situation of each household during the pandemic. The level of food insecurity experienced by the households was determined by assessing the level of anxiety or worry experienced regarding running out of stored food during the pandemic. Food behavior information was also sought to help deduce how COVID-19 affected households in the target area in terms of food availability, accessibility, and

^{a*} *Corresponding author:* Opeyemi P. Babafemi, Global Affairs and Sustainable Development Institute, Osun State University, Osogbo, Nigeria;  <https://orcid.org/0000-0002-1250-8843>; opeyemibabafemi0@gmail.com

^b Adetunji L. Kehinde, Department of Agricultural Economics and Agribusiness Management, College of Agriculture, Osun State University, Osogbo, Nigeria;  <https://orcid.org/0000-0001-6724-8260>; kehindeal@unosun.edu.ng

utilization. Those among the respondents who reported that the COVID-19 pandemic caused changes in the food consumption patterns in their households were asked to give further information about this in terms of changes in serving size and frequency of food consumption.

Aside from economic hardships and large family sizes or number of dependents in a household, some other factors observed to have contributed to changes in food utilization and consumption in households include supply-chain disruption, drops in the market arrivals of food items, increases in food prices, and changes in the frequency of purchase due to the lockdown directives (such as being able to procure food items at the market once a week rather than twice a week). The occurrences of food reduction and meal skipping as shown by the study reveal the urgent need to strengthen food systems at the community level in order to build resilience and forestall hunger crises due to issues with the availability and affordability of food, as was the case during the pandemic.

COVID-19's Impact on Food Security and Livelihoods

While the economy recovered quite slowly, the uncertainties and disruptions brought about by the COVID-19 pandemic continued (World Bank Group, 2022), and the world witnessed the ripple effects of the pandemic on its economy. Prolonged lockdowns were especially difficult for those whose livelihoods rested largely on their employment or occupation. The majority of the respondents in the study area were artisans (33%) and businessmen or -women (27%) who had no stable or fixed income and whose means of livelihood was greatly impacted by the pandemic. Additionally, results from the study revealed that the artisan class also had the highest number of members of households or dependents with an approximate average of 8 persons, while businessmen and -women, civil servants, retirees, and people involved in other businesses all had an approximate average of 5 persons. In the face of the global pandemic, a larger family size coupled with a low or unstable earning capacity tended to worsen the socio-economic disadvantages already contributing to both acute and chronic hunger.

COVID-19's Impact on Food Availability and Affordability

The COVID-19 pandemic exacerbated existing challenges related to food availability and affordability. Results from this study revealed that 84.1 % of the respondents agreed that the COVID-19 pandemic influenced their affordability of food items and its availability to them. Concerns about the sustainability of household food storage showed that 46.4% of respondents sometimes worried about running out of stored food before being able to restock, while 40.6% of respondents often had this worry. Only a small percentage of the respondents (13.0%) claimed they never had to worry about the amount of food left in stock.

COVID-19's Impact on Food Consumption Behavior

The pandemic prompted significant shifts in food consumption behavior among households. As reported by Ben Hassen et al. (2021a), shortly after the announcement of the pandemic, panic-buying of storable food products was rampant in many countries. Many families were worried about the prognosis of the crisis and what it portended for their households, and so foods like rice and pasta were stockpiled (Ben Hassen et al., 2021b; Dladla, 2020). This put more economically vulnerable families, who are unable to stockpile food, at a disadvantage. Respondents in our study also reported changes in the frequency and size of meals consumed, revealing the increased level of food insecurity experienced during the pandemic. The majority of respondents (69.6%) now had just two daily meals, up from 33% prior to the pandemic, whereas the very small group (1.8%) taking one meal per day prior to the pandemic increased to 8.13% after it. The student t-test was applied to determine if the changes in the daily number of household meals before and after the pandemic are statistically significant. It was shown that the decrease in households consuming three daily meals and the change in households consuming two daily meals were both statistically significant at $p\text{-value} < 0.05$. The pandemic therefore clearly had a significant impact on the food security of the majority of households in the study area.

Conclusion

The disruptions to the global food supply chain, coupled with economic challenges, led to increased food insecurity and changes in dietary habits. We posit that the study highlights the need for targeted interventions to enhance food security in vulnerable communities. It provides valuable insights into the challenges faced by households during the COVID-19 pandemic and emphasizes the importance of proactive measures to strengthen food security at the community level. Some pointers for policymakers and actors in the food supply chain include the implementation of targeted interven-

tions to address food insecurity and the high cost of food that still exists even postpandemic. This may include subsidies, price controls, and social safety nets. We also suggest that empowering communities through education on sustainable farming practices, food preservation, and efficient resource utilization can enhance local resilience to future crises. Likewise, encouraging the diversification of food sources and promoting local agriculture can contribute to a more resilient and sustainable food supply chain as well as prevent widespread hunger during crises.



References

- Aday, S., & Aday, M. S. (2020). Impact of COVID-19 on the food supply chain. *Food Quality and Safety*, 4(4), 167–180. <https://doi.org/10.1093/fqsafe/fyaa024>
- Ben Hassen, T., El Bilali, H., Allahyari, M. S., & Charbel, L. (2021a). Food shopping, preparation and consumption practices in times of COVID-19: Case of Lebanon. *Journal of Agribusiness in Developing and Emerging Economies*. Advance online publication. <https://doi.org/10.1108/JADEE-01-2021-0022>
- Ben Hassen, T., El Bilali, H., Allahyari, M. S., & Morrar, R. (2021b). Food attitudes and consumer behavior towards food in conflict-affected zones during the COVID-19 pandemic: case of the Palestinian territories. *British Food Journal*. Advance online publication. <https://doi.org/10.1108/BJFJ-05-2021-0590>
- Dludla, N. (2020, March 19). Panic buying forces South African supermarkets to ration food. *Reuters*. <https://www.reuters.com/article/health-coronavirus-safrica-supermarkets/update-1-panic-buying-forces-south-african-supermarkets-to-ration-food-idUSL8N2BC65B>
- World Bank Group. (2022, January 31). *Food security and COVID-19* [Brief]. Retrieved from Internet Archive page: <https://web.archive.org/web/20220201214223/https://www.worldbank.org/en/topic/agriculture/brief/food-security-and-covid-19>

COMMENTARY

Developing a nascent agriculture industry: Lessons learned with sugar kelp

Stacey F. Stearns ^{a*} and Anoushka Concepcion ^b
University of Connecticut

Submitted May 4, 2024 / Accepted May 5, 2024 / Published online June 17, 2024

Citation: Stearns, S. F., & Concepcion, A. (2024). Developing a nascent agriculture industry: Lessons learned with sugar kelp [Commentary]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 131–134. <https://doi.org/10.5304/jafscd.2024.133.028>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Seaweed is developing into a nascent agricultural industry in the United States. It has long been a staple in Asian and other diets, used in a variety of food dishes because of its taste and nutritional benefits that could rank it among the superfoods (Cherry et al., 2019). Although sugar kelp (*Saccharina lattissima*) is native to Connecticut's coast (Redmond et al., 2014), its use as a food product in Connecticut and in other parts of the U.S. is limited because there is a need for post-harvest and marketing infrastructure (Venolia et al., 2020;

Yarish et al., 2017; Yarish et al., 1998). The Cooperative Extension System and Sea Grant programs are frequently asked to help develop new agricultural products, methods, and market strategies. Connecticut Sea Grant Extension is developing the nascent sugar kelp industry, and this commentary outlines the lessons learned.

Fishing communities and those economically dependent on our waterways are seeking options for diversification because overfishing and the changing climate are decreasing their viability (Engle et al., 2018). In Connecticut, sugar kelp production happens during the fall and winter, which means shellfish farmers could add another crop—sugar kelp—without disrupting their current production practices (Connecticut Sea Grant, 2020; Kim et al., 2015). Connecticut Sea Grant started exploring the state's sugar kelp industry with applied research that showed gaps in the infrastructure and markets needed for a robust sugar kelp industry, as well as identifying target audiences for farmers and consumers (Getchis et al., 2020; Kotowicz et al., 2024; National Seaweed Hub,

^{a*} *Corresponding author:* Stacey F. Stearns, Communications Specialist, Cooperative Extension System, UConn College of Agriculture, Health and Natural Resources; 1376 Storrs Road, Unit 4134; Storrs, CT 06269-4134 USA; +1-860-486-9228;  <https://orcid.org/0000-0002-4711-7244>; stacey.stearns@uconn.edu

^b Anoushka Concepcion, Associate Extension Educator, Connecticut Sea Grant and Department of Extension, UConn College of Agriculture, Health and Natural Resources;  <https://orcid.org/0000-0002-6148-3240>; anoushka.concepcion@uconn.edu

2023). One gap in this applied research that future projects should consider is an economic analysis that determines how many farmers a sustainable industry can support and the total infrastructure and marketing investment needed to build it.

In the next applied research phase, team members researched and developed a guide on food safety practices and hazards for safe production and consumption for sugar kelp (Concepcion et al., 2020). A multifaceted approach helped develop strong working relationships with the Connecticut Department of Agriculture, the regulatory agency, as well as the aquaculture farmers with the greatest interest in the nascent industry. The team members presented webinars, continued the applied research, held events with chefs, and conducted numerous one-on-one meetings with current and prospective sugar kelp farmers. Establishing the National Seaweed Hub provided a national approach and best practices to leverage existing resources (Concepcion et al., in press).

Farmers face two major concerns when considering whether to engage in sugar kelp production: a lack of processing and product manufacturing infrastructure, and a lack of consistent and profitable consumer markets. While there is interest in product diversification through sugar kelp, the infrastructure, support systems, and markets still need further development. Addressing these challenges is something Connecticut Sea Grant Extension is facilitating with all vested parties while recognizing that solutions need to be collaborative and sustainable. This need is further highlighted by the increasing number of prospective kelp farmers entering the industry with high expectations for this new crop.

The lack of infrastructure and market-support systems creates barriers for new entrants to an industry that the current support systems could quickly saturate. This is especially of concern in Connecticut, where farmers are forced by a lack of processing facilities to sell local sugar kelp in its highly perishable fresh (wet) form while in season, but they want to expand that market without oversaturating it (Tian et al., 2022). Infrastructure investment to support manufacturing to expand into other product forms and commodities (e.g., nonfood, including fertilizer) could ensure the sus-

tainability of this emerging industry; however, these forms and commodities are lower in value and require higher volumes to be profitable. The industry must find solutions for a myriad of additional challenges to move forward. These include access to real estate for production facilities (despite high-cost coastal real estate demands), the cost of manufacturing equipment, and the production scale needed for post-harvest infrastructure to be feasible, whether for an individual or a cooperative of farmers.

A further challenge is that many farmers are excited about sugar kelp and jumping into production without understanding this nascent agriculture industry's status. Although Sea Grant professionals and others have tried to communicate that the lack of infrastructure and market-support systems means few operations will be economically viable, many are adding sugar kelp production anyway. This may lead to an oversaturation of the existing market for fresh, in-season sugar kelp during the spring, and frustration for the farmers as they are left with unsold products.

Sugar kelp is not unique in facing these challenges. Açai, one of the many superfood berries produced in Brazil, had obstacles related to how to farm it (versus it growing wild), post-harvest handling, use in conjunction with other foods, and finally, consumer demand (Andrango et al., 1999; Araujo et al., 2024; Binois, 2012). While açai processing strategies exist, they are not always sustainable or cost-effective (Araujo et al., 2024), as is seen with sugar kelp; in both cases, a usable end-product that can be integrated into other foods is needed to realize the full market value. The post-harvest infrastructure is part of the value chain, and building this requires the cooperation of multiple stakeholders, and thus is a process in and of itself (Andrango et al., 1999).

A further challenge is that any post-harvest practices cannot diminish the nutritional value of the products, although those that augment it could be even more beneficial (Araujo et al., 2024). Research in sugar kelp is ongoing but somewhat limited, and this matches research funding trends. Investment in research would increase research and could find solutions to these challenges sooner (Araujo et al., 2024). Previous crops in various

countries have shown the team that the combination of infrastructure investment and education through Extension and other channels can help an agricultural product develop (Andrango et al., 1999; Hewett, 2012). Developing public policy is often a strategy to help develop nascent agricultural sectors (Iles & Marsh, 2012). Different avenues this can take include pathways for the ecosystem services that sugar kelp provides or helping remove constraints on farmer knowledge and capabilities (Iles & Marsh, 2012).

We learned many lessons through the work with sugar kelp. First, developing any new product is time-intensive and all-consuming. While team members had other responsibilities in their roles, these projects were paused or reduced to focus on sugar kelp. Education and communication are crucial, and at times it can feel like the stakeholders are having the same conversations repeatedly, but these are necessary in building a coalition of stakeholders to work on the industry. Finally, whenever possible, manage expectations among the various stakeholder groups. Sugar kelp has become a magic bullet of sorts in the opinion of aquaculture farmers, and it may fail to fulfill these high expectations. Multiple strategies for managing expectations should be employed, especially in a nascent industry.

While much work remains, the initial results from efforts in Connecticut, along with sugar kelp's global use and history, show the continued benefits and impact of involving Sea Grant and other Extension programs in developing new agricultural commodities and practices. The Extension model has a long history of helping build sustainable food systems. Potential ecosystem services provided by sugar kelp can add a greater benefit to its primary use as a food product (Crawford, 2022) and could be another factor influencing consumers and farmers. These experiences in building a nascent agricultural industry warrant further research questions, though. First, we should determine how a state or region can support infrastructure needs and at the same time build demand. Second, we should research the best way to build consumer demand for agricultural products. In this case, we focused on aiding farmers in their own marketing strategies and creating data visualizations. Future research could determine what works best for agriculture products, as sugar kelp will not be the last new product farmers want to try. Work with the sugar kelp industry is ongoing, and it has not transitioned from a nascent to an accepted agricultural industry yet. But the progress to date and indicators from other crops like açai offer an optimistic future for sugar kelp.



References

- Andrango, G., Blare, T., & Hareau, G. (1999). Functional foods: Fad or path to prosperity? Data visualization. *Choices*, 35(4). Agricultural and Applied Economics Association. https://www.choicesmagazine.org/UserFiles/file/cmstheme_762.pdf
- Araujo, N. M. P., Berni, P., Zandoná, L. R., de Toledo, N. M. V., da Silva, P. P. M., de Toledo, A. A., & Junior, M. R. M. (2024). Potential of Brazilian berries in developing innovative, healthy, and sustainable food products. *Sustainable Food Technology*, 2, 506–530. <https://doi.org/10.1039/D3FB00130J>
- Binois, D. (2012). *The obstacles to açai exportation in Brazil* [Master's thesis, School of Business Administration, São Paulo of the Getulio Vargas Foundation]. <https://hdl.handle.net/10438/9985>
- Cherry, P., O'Hara, C., Magee, P. J., McSorley, E. M., & Allsopp, P. J. (2019). Risks and benefits of consuming edible seaweeds. *Nutrition Reviews*, 77(5), 307–329. <https://doi.org/10.1093/nutrit/nuy066>
- Concepcion, A., Bradt, G., Chadsey, M., Clemetson, A., Good, M., Janasie, C., Otts, S., Reitsma, J., & Robidoux, J. (in press). Using virtual platforms to convene and engage diverse sectors of the emerging seaweed aquaculture industry. *Journal of Extension*.
- Concepcion, A., DeRosia-Banick, K., & Balcom, N. (2020). *Seaweed production and processing in Connecticut: A guide to understanding and controlling potential food safety hazards*. Connecticut Sea Grant. https://seagrant.uconn.edu/wp-content/uploads/sites/1985/2020/01/Seaweed-Hazards-Guide_Jan2020_accessible.pdf

- Connecticut Sea Grant. (2019). *Business and economic planning for seaweed aquaculture systems in the United States* [Funded proposal: NOAA-OAR-SG-2019-2005953]. <https://seagrant.uconn.edu/wp-content/uploads/sites/1985/2021/01/Selected-Projects-Sea-Grant-AQ-Econ-2021.docx>
- Crawford, I. M. (2022). *The solution in the sea: New York recently legalized commercial kelp farming. Will it help solve the state's environmental and economic woes?* [Master's thesis, Massachusetts Institute of Technology]. <https://hdl.handle.net/1721.1/147596>
- Engle, C., Cygler, A., Kotowicz, D., & McCann, J. (2018, August 13). Potential supply chains for seaweed produced for food in the northeastern United States [Final grant report]. University of Rhode Island & Rhode Island Sea Grant. https://repository.library.noaa.gov/view/noaa/38074/noaa_38074_DS1.pdf
- Getchis, T. L., Kelly, M. R., Concepcion, A. P. & Bovay, J. (2020). *The Connecticut seafood survey: Assessing seafood consumption, knowledge, behaviors and preferences of Connecticut residents* [Report CTSG-20-03]. Connecticut Sea Grant. https://seagrant.uconn.edu/wp-content/uploads/sites/1985/2020/04/CTSeafoodSurvey.final_.pdf
- Hewett, E. W. (2012). High-value horticulture in developing countries: Barriers and opportunities. *CABI Reviews*, 2012, 1–16. <https://doi.org/10.1079/PAVSNNR20127054>
- Iles, A., & Marsh, R. (2012). Nurturing diversified farming systems in industrialized countries: How public policy can contribute. *Ecology and Society*, 17(4), Article 42. <https://doi.org/10.5751/ES-05041-170442>
- Kim, J. K., Kraemer, G. P., & Yarish, C. (2015). Use of sugar kelp aquaculture in Long Island Sound and the Bronx River Estuary for nutrient extraction. *Marine Ecology Progress Series*, 531, 155–166. <https://doi.org/10.3354/meps11331>
- Kotowicz, D., Concepcion, A., Bradt, G., Chadsey, M., Clemetson, A., Good, M., Reitsma, J., & Robidoux, J. (2024). Needs of the US domestic aquaculture seaweed industry. *North American Journal of Aquaculture*. [Forthcoming].
- National Seaweed Hub. (2023). *National Sea Grant seaweed hub results of needs assessment*. <https://seaweedhub-extension.media.uconn.edu/wp-content/uploads/sites/3646/2023/03/Needs-Assessment-Results-1.25.21.pdf>
- Redmond, S., Green, L., Yarish, C., Kim, J., & Neefus, C. (2014). *New England seaweed culture handbook- nursery systems* [Publication CTSG-14-01]. Connecticut Sea Grant. https://opencommons.uconn.edu/seagrant_weedcult/1
- Tian, Y., Croog, R., Bovay, J., Concepcion, A., Getchis, T. L., & Kelly, M. R. (2022). Who responds to health, environmental, and economic information about local food? Evidence from Connecticut seafood consumers. *Aquaculture Economics & Management*, 26(2), 131–151. <https://doi.org/10.1080/13657305.2021.1945166>
- Venolia, C. T., Lavaud, R., Green-Gavrielidis, L. A., Thornber, C., & Humphries, A. T. (2020). Modeling the growth of sugar kelp (*Saccharina latissima*) in aquaculture systems using dynamic energy budget theory. *Ecological Modeling*, 430, Article 109151. <https://doi.org/10.1016/j.ecolmodel.2020.109151>
- Yarish, C., Kim, J. K., Lindell, S., & Kite-Powell, H. (2017). Developing an environmentally and economically sustainable sugar kelp aquaculture industry in southern New England: From seed to market. *Environmental and Experimental Botany*, Article 38. Retrieved from OpenCommons@UConn repository: https://opencommons.uconn.edu/eeb_articles/38
- Yarish, C., Wilkes, R., Chopin, T., Fei, X. G., Mathieson, A. C., Klein, A. S., Neefus, C. D., Mitman, G. G., & Levine, I. (1998). Domestication of indigenous *Porphyra* (nori) species for commercial cultivation in Northeast America. *World Aquaculture*, 29, 26–29, 55. Retrieved from The University of New Hampshire Scholars Repository: <https://scholars.unh.edu/jel/242/>

Smart Little Campus Food Pantries: Addressing food insecurity at Virginia Commonwealth University

John C. Jones,^{a,*} Lauren Linkous,^b Lisa Mathews-Ailsworth,^c Reyna Vazquez-Miller,^d
Elizabeth Chance,^e Jackie Carter,^f and Isaac Saneda^g
Virginia Commonwealth University

Submitted November 10, 2023 / Revised January 31 and February 26, 2024 / Accepted February 26, 2024 /
Published online April 16, 2024 / Updated April 16, 2025, with corrected interaction data (p. 141 and Table 1)

Citation: Jones, J. C., Linkous, L., Mathews-Ailsworth, L., Vazquez-Miller, R., Chance, E., Carter, J., & Saneda, I. (2024). Smart Little Campus Food Pantries: Addressing food insecurity at Virginia Commonwealth University. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 135–151.
<https://doi.org/10.5304/jafscd.2024.133.016>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

Food insecurity among college students is an emerging public health issue, affecting a considerable proportion of the student population nationwide, approximately 35–45%. Research is discover-

ing links between college student food insecurity and physical and mental health, as well as academic performance. Such high prevalence of student food insecurity highlights the urgency of addressing the

^{a,*} *Corresponding author:* John C. Jones, MPA, PhD, Assistant Professor, Center for Environmental Studies, Virginia Commonwealth University; VCU Life Sciences, 1000 W Cary Street; Richmond VA 23284-2030 USA; jonesj39@vcu.edu

^b Lauren Linkous, Doctoral Candidate, College of Engineering, Department of Electrical and Computer Engineering, Virginia Commonwealth University, Richmond, Virginia; linkouslc@vcu.edu

^c Lisa Mathews-Ailsworth, M. Ed., Associate Director, Division of Student Affairs, Virginia Commonwealth University, Richmond, Virginia.

^d Reyna Vazquez-Miller, Undergraduate Student, Center for Environmental Studies, Virginia Commonwealth University, Richmond, Virginia.

Reyna is now a graduate student in Urban and International Development Planning, New York University, New York, New York.

^e Elizabeth Chance, Undergraduate Student, Department of Psychology, Virginia Commonwealth University, Richmond, Virginia.

^f Jackie Carter, Undergraduate Student, Center for Environmental Studies, Virginia Commonwealth University, Richmond, Virginia.

^g Isaac Saneda, Undergraduate Student, Mechanical Engineering, Virginia Commonwealth University, Richmond, Virginia.

Author Note

The authors declare no conflicts of interest.

Author Contributions

Conceptualization: J. C. Jones, L. Mathews-Ailsworth; Methodology: J. C. Jones, L. Linkous; Data Collection: J. C. Jones, L. Linkous, R. Vazquez-Miller, E. Chance, J. Carter; Formal analysis and investigation: J. C. Jones, L. Linkous, I. Saneda; Writing—original draft preparation: J. C. Jones, L. Linkous, I. Saneda; Writing—review and editing: J. C. Jones, L. Linkous; Funding acquisition: J. C. Jones, L. Mathews-Ailsworth. All authors read and approved the final manuscript.

Funding Disclosure

This study was supported by several grants from Virginia Commonwealth University (Community Engagement Research [CenR] Health Equity Grant, You First @ VCU, and School of Social Work), as well as funding from the VCU Institute for Inclusion, Inquiry and Innovation (iCubed).

lack of consistent access to nutritious food. This research examines a pilot intervention at an urban public university that deployed miniature food pantries across campus from which anyone could take food anonymously. The research team systematically restocked these pantries with food on a weekly basis for nearly two school years. Sensors installed in the pantries collected instances when individuals “interacted” with the pantry’s door. The sensor system documented thousands of interactions with the pantries each school year. As such, the intervention can be considered a success. However, the miniature pantry model was not without flaws: its decentralized nature created challenges for the research team, the sensor system was often unstable, and heavy reliance on undergraduate students proved a long-term problem. The research team believes that administrative and information technology improvements could further enhance the model’s ability to mitigate campus food insecurity. This intervention could be an inspiration to other campuses and other institutions considering similar strategies.

Keywords

college student, higher education, food insecurity, intervention, food pantries, Internet of Things

Introduction

A national study found that approximately 35–45% of college students experience food insecurity or limited food access (Broton & Goldrick-Rab, 2017; Goldrick-Rob et al., 2017). College student food insecurity is emerging as a national public health concern due to the multilayered impact food security has on young adults (Bruening et al., 2016; Martinez et al., 2018; U.S. Government Accountability Office, 2018). Food insecurity significantly impacts the physical health, mental well-being, and academic achievement of college students. Scholars have linked food insecurity to a multitude of consequences for college students, including declining physical health (e.g., fatigue, poor sleep, disordered eating), mental health (e.g., increased stress levels, depressive symptoms, and anxiety), and academic achievement (e.g., impaired focus, lower grades, and reduced engagement with campus life) (Becerra & Becerra, 2020; El Zein et al., 2019;

Haskett et al., 2020; Kim & Murphy, 2023; Payne-Sturges et al., 2018). Despite these troubling findings, the first congressional hearing on college student food insecurity did not occur until September 2021, but resulted in no substantive legislative action (Ending Hunger in America: Examining Hunger on College Campuses, 2021).

Food insecurity can be understood as “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” (Christaldi & Castellanos, 2017, p. 16), and has also been linked to the cultural appropriateness of food an individual might consume (Leroy et al., 2015). Food insecurity is often reported when insufficient financial resources occur as a result of an unexpected life event (e.g., going to college, changing employment, health, or marital status) and/or the absence of savings to buffer economic shocks (Bickel et al., 2000). Student food insecurity is an equity issue that affects many students, but students from diverse and/or low-income backgrounds generally experience this challenge at greater rates than other students (El Zein et al., 2019). The following types of undergraduate students at the University of California Davis were found to be at higher risk of food insecurity: transfer students, first-generation students, fourth-year students, and students of Latino(a)/Chicano(a)/Hispanic heritage (Tanner et al., 2023).

Given the growing evidence of the prevalence and negative consequences of food insecurity among college students, collaboration between institutions of higher education, policymakers, and community organizations is crucial. Implementing targeted programs such as food pantries, meal-sharing initiatives, and financial aid resources can play a vital role in supporting food-insecure students and ensuring the well-being and success of all college students, regardless of their economic circumstances. However, this may be easier said than done for several reasons. Several groups of scholars have noted the challenge of operating effective interventions on campuses, especially when student voices were absent from their management (Coleman-Jensen et al., 2019; Freudenberg et al., 2019; Goldrick-Rab et al., 2019). The Government Accountability Office noted that college

administrators are often unprepared to assist students with basic needs like food insecurity (U.S. GAO, 2018). Ellison et al. (2021) cautioned that existing food insecurity measurement tools are not validated for use with college students and urged standardized efforts to measure the problem. Davis et al. (2021) noted that more intervention-specific research is necessary to create evidence-based programming.

This study examines the effectiveness of one such intervention as part of the larger need to create evidence-based programming around college student food insecurity. Collected, quantifiable data is a necessary part of an evidence-driven approach to address food insecurity, first at a pilot project's local, university level, then as a collective effort in similar environments to better establish trends of need, usage, and impact. While it is argued that colleges must play a role in the food security of their students, just as they offer support for their mental well-being, this is a multifaceted issue that cannot be solely addressed at the university level. The collection of quantifiable, evidence-based research at the university and university-community level can build a case for changing policy and strategy at both the state and federal levels.

However, this sort of intervention-based research presupposes that higher education institutions should play a role in mitigating student food insecurity. Critiques of the emergency food system assert that the movement away from social welfare policies such as the Supplemental Nutrition Assistance Program (SNAP) and towards tax breaks for food producers and farmers to donate excess food to the emergency food system pipelines is ultimately a manifestation of neoliberalization, that helps the interests of capital at the expense of the human right to food (An et al., 2019; Fisher, 2017; Poppendieck, 1999; Tarasuk & Eakin, 2005). The research team is aware that college food pantries rely on this pipeline to secure food for students, and acknowledge this manner of research is technocratic in its efforts to optimize programming for colleges within the already fraught U.S. policy environment of food security in the post-pandemic environment. Any effort to ensure that college

students have enough food to meet their learning goals requires both evidence-based programming on college campuses and, more importantly, national policy change towards a food system rooted in the right to food.

Background

Virginia Commonwealth University (VCU) is an urban, public university in downtown Richmond, Virginia. Across its liberal arts and medical campuses, VCU had roughly 30,000 undergraduate and graduate students enrolled in the 2022–2023 school year. Recent research found that roughly 35% of students, both undergraduate and graduate, at VCU were food insecure (Kim et al., 2022). This number appears to be consistent with peer universities across the U.S. (Broton & Goldrick-Rab, 2017).

In response, the research team launched a pilot program, the Little Ram Pantries (LRP), a decentralized, anonymous, sensor-enabled, miniature food pantry model that was systemically restocked by the research team. This title is an adaption of the Ram Pantry, the campus food pantry, named after the VCU mascot Rodney the Ram. This research tested the effectiveness of the pilot program, which drew inspiration from the “little free library” movement, semi-autonomous and spatially diverse neighborhood-scale book exchanges set up across much of the U.S. since the late 2000s (Sarmiento et al., 2018). These book exchanges use a publicly accessible box or similar device, often with a door, that contains books or similar media. People take or leave books in an anonymous manner. Adapting the little free library concept to emergency food assistance likely occurred sometime in the late 2010s (perhaps first in Arkansas in 2016, according to the Little Free Pantry website.¹ The COVID-19 pandemic may have spurred this adaptation as it allows contactless access to food (Carson, 2020). A member of the research team first observed a Little Free Pantry operating in a single-family neighborhood in Richmond in late 2020 and was inspired to bring the concept to VCU to help mitigate student food insecurity.

Data collection occurred over nearly two complete school years, 2021–2022 and 2022–2023.

¹ <https://www.LittleFreePantry.org>

During this initial pilot, the team developed a magnet-based sensor system operating on the campus Wi-Fi to gather anonymous, quantitative data whenever someone opened a pantry door. The team accepted these data, hereafter referred to as “interactions,” as a proxy variable for pantry usage.

Limited examples of colleges operating Little Free Pantries exist. Scholarly documentation is lacking in this area, but some popular media articles and university websites provide limited information. Known examples include LaGrange College, Penn State Dickinson Law, University of Lynchburg, Surry Community College, North Dakota State, Lindenwood University, Columbia College, and Stockton University. These programs only have limited similarities to this pilot. Most appear to only operate one or two pantries and to obtain food only through direct donation by individuals. No operations appear to collect usage data.

Drake University appears to be an outlier, with two little pantries on campus and another eight in adjacent neighborhoods. All ten pantries are located outdoors. Supporters donate food directly into the pantries, and no centralized distribution system exists. Neighborhood groups own and manage the off-campus pantries. Staff from Drake’s Office of Community Engaged Learning started the project in conjunction with an undergraduate leadership course. Office staff still nominally support the project by seeking groups to adopt individual pantries, both on and off campus, for short periods of time (e.g., a week or weeks). No standardized monitoring occurs, but Drake staff anecdotally report that the pantries are generally empty due to use, and that they were not aware of any major instances of food poisoning due to the outdoor nature of their model (A. Martin, personal communication, October 26, 2023; Drake University Office of Community Engaged Learning & Service, 2023).

The closest peer model to this pilot is the Campus Food Shed (CFS), a student-led project at the University of Wisconsin-Madison which deployed refrigerators at four campus locations. A student organization collected donated produce from local farmers and grocery stores, and gleaned produce from campus farms. Students distributed the produce into the refrigerators, from which

users could engage with the pantry in an unrestricted manner, 24 hours a day, seven days a week. Major challenges CFS faced included concerns over food safety, transportation logistics, and data collection necessary to understand project effectiveness (DePorter et al., 2023).

Pilot Implementation

The LRP pilot program sought to both increase on-campus food accessibility and lower the potential stigma students might feel from accessing emergency food assistance programs, by deploying miniature food pantries in campus buildings (Kim et al., 2022). The LRP model allows individuals 24 hours a day, seven days a week access to emergency food assistance at geographically diffused points across the university and allows for nearly complete user anonymity. Access to the LRP was not means tested or otherwise controlled beyond existing inside official university buildings. The research team relied on many stakeholders spanning all parts of the university to implement the pilot. The team liaised with roughly 25 campus administrators, mostly during the development stage to secure necessary permissions, such as facilities staff, university counsel, branding/marketing, the Americans with Disabilities Act (ADA) coordinator, student affairs, financial administration, public relations, the university foundation, and university development.

The LRP program launched in October 2021, when the team deployed the first five pantries, with eight more pantries following in March 2022, for a total of 13 in operation across both campuses at the program’s height. Data collection efforts ran over nearly two complete school years, from October 2021 to early May 2023, the conclusion of the school year. However, due to a host of issues, data collection from the five pantries located on the VCU medical campus proved too difficult for the team. The data presented herein is exclusively from the eight LRP located at the VCU liberal arts campus.

The research team employed magazine vending boxes to serve as LRP. The team made minor modifications to the magazine vending boxes to allow for data collection (i.e., mounting the magnetic sensors), as well as adding weight to increase

stability. The team consulted with the university's ADA coordinator to identify a low-cost, prefabricated device that was ADA compliant. Figure 1 shows a pantry in operation.

With one exception, all pilot LRP resided inside official university buildings. The team briefly deployed a pantry at a church community building adjacent to campus, but the team relocated it to a campus academic building after continued challenges connecting the sensor to church Wi-Fi. Most pantries resided in academic or communal buildings on campus such as the library and gym. Only one pantry resided in the lobby of a residence hall, but was later moved to an academic building due to Wi-Fi connectivity issues.

The research team ran a logistics operation to distribute food to the LRP on a weekly basis. A

combination of service learning, volunteer, and paid students were primarily responsible for restocking pantries each week with pre-packed, shelf-stable food and hygiene products from Ram Pantry, the central campus food pantry. Ram Pantry acquires food through a combination of direct donation and purchasing from Feed More, the regional food bank for central Virginia. Distribution of food occurred weekly on Wednesdays, under the assumption that some food would be left in the pantries over the weekend. The team ruled out distribution on Fridays due to lack of student interest in supporting the project on Fridays. In addition, signage indicated that interested individuals could donate food and hygiene items directly to the LRP at any time.

The team attempted to standardize weekly distributions, but inconsistencies occurred as different students engaged with the project. What food was available in the central Ram Pantry at the time also influenced what foods and how much could be distributed. The target minimum items per week include six complex carbohydrates; six proteins, including vegetarian options; at least three vegetables or fruits; two lipids or fats; three snack or sugary items; and two hygiene products. Once the team established the food pipeline from Feed More in October 2022, scarcity issues diminished but were still influenced by food availability at the regional food bank.

About 50 students were engaged at various points of the pilot operation. Initially, service learning students and volunteers supported early development, distribution, and observational data collection efforts, but this proved unreliable due to low student interest. The team then pivoted to paying students to manage weekly distribution and data collection, which proved more effective than using service learning teams, but some problems with reliability persisted. As the pilot period drew to a close, the team began to partner with administrative departments or groups to adopt the management of a specific pantry, generally spatially adjacent. Partnership examples include the staff of the campus library and gym and an academic department. Concurrently, student workers at the central Ram Pantry pre-packed bags and boxes weekly for distribution.

Figure 1. A Little Ram Pantry in Operation



Method

This study examines two research questions involving the pilot project:

1. How are the Little Ram Pantries used?
2. Do the Little Ram Pantries help to mitigate student food insecurity?

The research team used two data collection methods to answer these questions: magnetic sensors built into the physical pantry boxes which generated timestamped data when someone opened the pantry door, and standardized visual observation data collected during weekly restocking of each of the LRP. These data collection protocols were approved by the Institutional Review Board of VCU.

Magnetic Door Sensor Data Collection

To collect general interaction data, the research team installed a cost-effective, lightweight, sensor system in the physical pantries to log the opening and closing of the doors. The system is autonomous, anonymous, and unobtrusive. It was designed to be “plug-and-play” for quick deployment, and to streamline normal updates and maintenance of the sensor systems.

The sensor system consists of a Raspberry Pi Model 3 A+ and a magnetic contact door switch from Adafruit. For longevity, the Raspberry Pi is powered using a 5-volt power supply connected to a wall outlet, but with regular charging the sensor system can operate on battery power, or with solar cells. The magnetic contact switch is a two-piece sensor; the magnet is placed on the door, while the switch is attached to the side of the pantry and connected by two wires to the Raspberry Pi. When the two pieces of the sensor are brought together, the switch ‘closes’ and the signal changes. When the door is open, the switch ‘opens.’ When the door status (switch status) changes from ‘open’ to ‘closed,’ or from ‘closed’ to ‘open,’ the Raspberry Pi logs the door status, a time stamp, and the date to a Google Sheet linked to each individual pantry. The code running on the Raspberry Pi manages monitoring the magnet sensor, logging data, and recovering from power outages and/or any Wi-Fi network outages.

Data collection using the sensor system occurred across two school years, October 2021 to May 2022 (i.e., the 2021–2022 school year) and August 2022 to May 2023 (i.e., the 2022–2023 school year). Sensors continued to operate during winter and summer breaks, but the research team was not actively refilling LRP or otherwise supporting the project during those periods. Sensor data first became available with the deployment of the initial five pantries in October 2021, and expanded to include three more in March 2022 for a total of eight pantries. The team deployed five LRP to the VCU medical campus, but instability of that campus Wi-Fi network, and geographic separation, led the team to reject data from them for this research.

Data generated by the magnetic door sensors were interpreted as “interactions” with the pantries, as the anonymous nature of the pilot prevented other inferences beyond someone opening the pantry door. Because of the indoor nature of this pilot, nonhuman actions or events tripping the sensor (e.g., wind or an animal) were not expected. The following five potential human actions could be inferred from an open/close “interaction” with a pantry measured by the sensor: (1) food was taken, (2) food was left, (3) some food was taken and other food left, (4) something unexpected or unmeasurable occurred, and (5) the user observed the contents of the pantry but did nothing. The team accepted these “interactions” as a proxy variable for usage of the pantry. The team developed a data visualization tool to interpret these data, and to allow our administrative partners and other interested parties at the university to understand usage patterns at the LRP. The tool was developed initially by an undergraduate co-author using MATLAB for local analysis of trends over time. This dashboard displayed annual, monthly, and weekly patterns for single locations and for the collection of deployed LRP. As the project expands, the team will rewrite the dashboard for incorporation into a live webpage, retaining the same base functionality and including interactive filtering.

Observational Data Collection

Students supporting the project distributed food weekly to each pantry location throughout both

examined school years. As part of weekly distribution to each location, students used a virtual observational data collection form on their smartphones to collect data about safety issues at the pantry, as well as pictures of the contents of the pantry boxes. Zeisel's (2006) work inspired the creation of the observational research form. Students were instructed to complete the form before refilling the pantry as part of the weekly restock. The 12-item form included questions about presence of unapproved or damaged food, vandalism or damage to the box, and if the sensor was plugged into the wall electrical outlet and unmolested. Students reported the form took less than five minutes to complete.

A combination of service learning, volunteer, and paid students, as well as occasionally members of the research team, completed these weekly forms. A total of 240 responses were collected over the two school years ($n = 137$ during the 2021–2022 school year, and $n = 103$ during the 2022–2023 school year). Instances of damage, vandalism, or the presence of inappropriate foods in the pantries were so rare that no analysis beyond basic descriptive statistical analysis was required. Pictorial data collected by the students through the form helped the research team understand limited instances of inappropriate use of the LRP.

Results

The presentation of results follows the research questions.

1. How are the Little Ram Pantries used?

Data from the sensor system suggests that many people engaged with the LRP. Due to their decentralized, anonymous nature, and the limitations of the sensor system, it is impossible to know if only students interacted with the LRP. Potentially some combination of faculty, staff, visitors, and janitorial workers also may have interacted with the pantries. Furthermore, the nature of the sensor network made it impossible to identify unique users as well as the frequency of a unique user possibly interacting with an individual pantry or multiple pantries. The inability to identify unique users was at least partially intentional by the research team to protect potential users from having to self-identify as requiring food assistance, but technological costs

associated with identifying unique users influenced this decision.

Across both school years, a total of 7,718 interactions were recorded, made up of 2,041 during 2021–2022 and 5,263 during 2022–2023, with 414 interactions recorded outside the normal school year (when the research team was not actively restocking the LRP). Sensor data showed significant bias towards the gym and main library locations. The remaining locations showed roughly comparable rates of interaction. Table 1 shows total interactions per location, as well as per school year. The names of some locations were generalized to increase readability. The research team moved one pantry that was located in a low visibility space in the lobby of a university-owned student dormitory to the Life Sciences building early in the spring 2023 semester due to the combination of low interactions, Wi-Fi instability, and geographic remoteness for the research team.

Users most commonly interacted with the pantries in the afternoon, with 1:00 p.m. the most common hour. However, users interacted at all hours of the day. Across the entire pilot, 809 interactions occurred in the middle of the night (i.e., from midnight to 7:59 a.m.). Figure 2 shows interactions by time of day across all locations. Some pantries located in academic buildings, such as the School of Social Work or the General Education building, were inaccessible during non-academic hours, thus preventing people from interacting with those LRP at those times.

Unfortunately, the pilot was not without some instances of vandalism. Unknown individuals unplugging the sensor power cord was a fairly common occurrence, with roughly 14% of weekly observations noting this. This was especially common at the pantry in the lobby of the School of Social Work, where the team inferred that students would unplug the sensor to plug in their laptop when studying in the chairs located a few feet from the pantry. In at least six instances, unknown individuals either stole the sensor power cords or the USB wall adaptors. No spatial pattern to this vandalism was observed. This led the team in January 2022 to work with university facilities to upgrade the electrical outlets used by the project to contain USB ports, thereby removing the need for a USB

Table 1. Interactions by Pantry Location

Pantry Location	2021–2022 School Year	2022–2023 School Year	Total Interactions ^a
Gym	485	2,127	2,684
Main Library	697	1,362	2,278
Student Commons ^b	337	233	574
School of Social Work	401	433	934
Student Dorm/Life Sciences Building	0 ^c	243	243
Business School	26	375	410
Engineering School	27	451	488
General Education Building	68	39	107
Totals	2,041	5,263	7,718

^a Includes both school years as well as winter break 2021–2022, summer break 2022, and winter break 2022–2023, during which the research team was not actively filling pantries, but some sensors kept recording. People not associated with the pilot could donate food into the pantries during these periods.

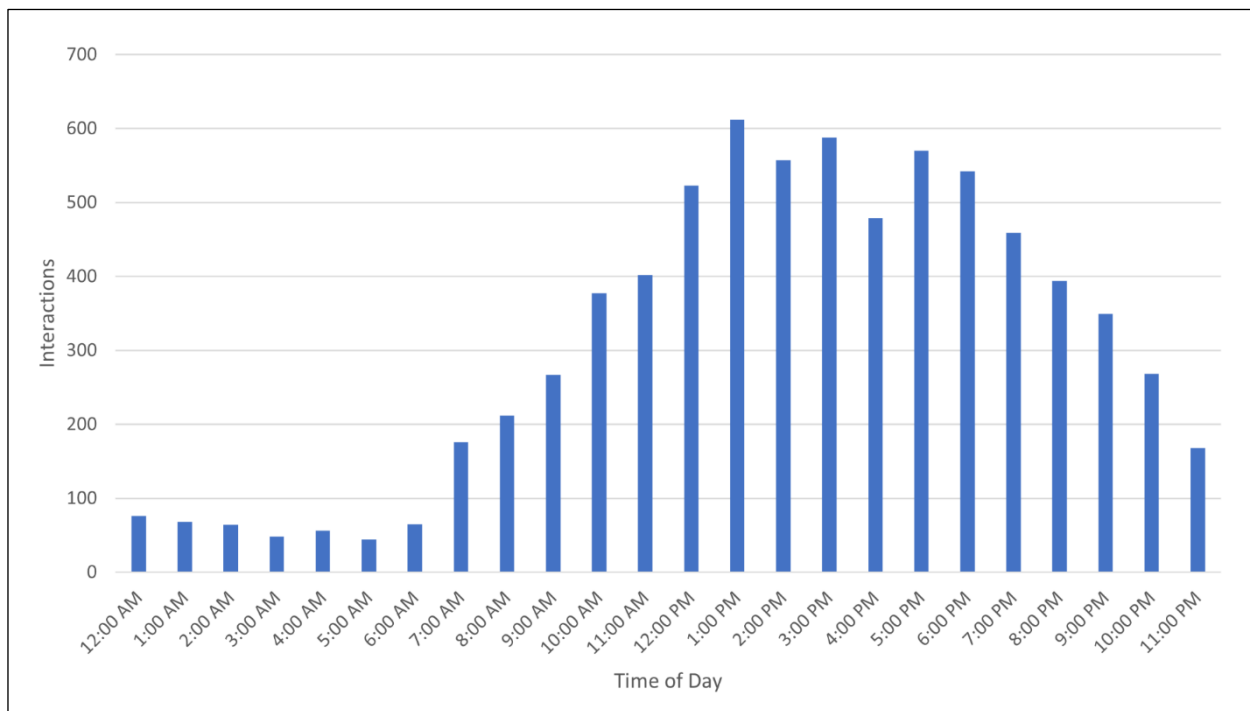
^b Located outside the main campus pantry, effectively giving 24/7 access to the main pantry. However, regular Wi-Fi connectivity challenges plagued this location. Given its location, true usage was likely dramatically higher.

^c Unstable Wi-Fi connections at the initial location led the team to move this pantry during the second school year. Data from 2021–2022 were completely removed due to likely reporting errors.

wall adaptor and hopefully removing competition for use of traditional electrical outlets. Despite this change, unknown individuals continued to unplug sensors for unknown reasons.

Only limited forms of misuse occurred beyond the sensor related vandalism. In five instances,

students discovered either the movement or theft of signage or parts of the pantry. In four other instances, students discovered flyers of a commercial or political nature inside or on top of the pantries. In another instance, on the transparent plastic door of the pantry an individual had drawn abstract

Figure 2. Interactions by Time of Day Across All Locations

art, which was able to be removed with a wet cloth. The bay of one pantry was covered with a dried brown liquid of indeterminate source, which was cleaned up.

Students observed only limited instances of food being donated into the LRP inappropriately, and in no instances were those inappropriately foods of an imminently dangerous nature (e.g., no dairy products donated into an unrefrigerated pantry). Examples of inappropriately donated foods included a sack of potatoes, roughly a pound of rice in a tied plastic grocery bag, a similarly tied bag of dried pasta, and a single fresh orange. Students were instructed to place all of these items in the garbage. Students also threw out some expired products that were well beyond their listed “best by” dates. Data collection did not specifically track this, but anecdotally students reported that box macaroni and cheese and dried noodles were the most commonly well-expired products moved to garbage.

Finally, the research team was not aware of any instances of injury or harm to any individual during the pilot period. A very small potential exists that a user could have become ill from spoiled food, either unintentionally placed in one of the pantries or inappropriately donated foods (e.g., dairy products), but that illness was either not reported or could not be tied directly to food from the pilot.

2. Do the Little Ram Pantries help to mitigate student food insecurity?

Data from the sensor system and the observational data collected suggests that the pilot helped mitigate student food insecurity. However, available data can only suggest, as more expansive and definitive data collection (e.g., pre- and post-surveys) would be required for greater certainty. Such data collection would be ethically and logistically difficult.

At minimum, sensor system data found 6,650 total interactions over the two school years when the pilot was in formal operation, as well as 1,307 during summer and winter breaks when the pilot was not formally in operation. The school year-to-school year usage increased by 129.6% from 2021–2022 to 2022–2023, likely due to both the deployment of additional pantries in March 2022 and

continued growing awareness of the pilot across the campus community. With current data collection tools, it is not possible to know in what percentage of interactions individuals took food, rather than other options. Further, due to current data collection tools, it is not possible to know how many unique users LPR assisted.

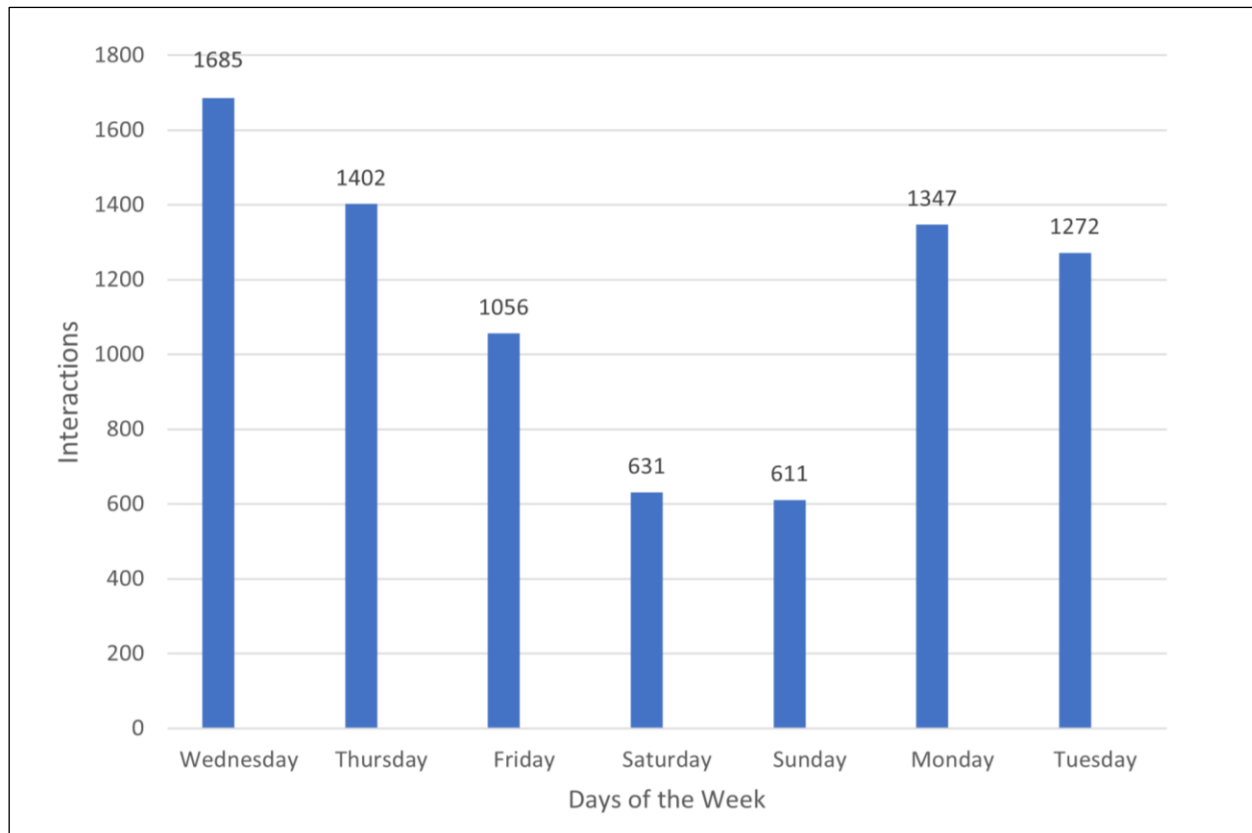
Data from the sensor system, when controlled for by day-of-the-week when the interaction occurred, revealed a noteworthy finding when considering that the research team consistently restocked each pantry on Wednesday. Across all locations, the highest number of interactions occurred on Wednesday, followed by Thursday, and onward till Sunday, the day with the fewest number of interactions. The Wednesday to Sunday decline was a 63.7% drop in total interactions, averaging a 15.9% decrease in interactions per day from Wednesday. On Monday, usage increased 120.4% from Sunday, then declined slightly on Tuesday. On average, each day after Wednesday experienced a 35.2% decline in interactions. Figure 3 shows interactions by day of the week for all locations. There are a total of 8,004 interactions included in this figure; approximately 0.6% variation from Figure 3 exists due to an estimation difference in valid interactions from students using the pantries versus the restocking or sensor testing interactions. These events could be estimated on a weekly basis, and largely occurred on Wednesdays, but to preserve valid interactions where the time of the restock or testing interactions were not precisely known, the data was left in the logs.

Discussion

Analysis of results suggests three major themes: functionality of the model, effectiveness of the pilot in mitigating food insecurity, and limitations of this research.

Functionality of Pilot as a Model

Analysis of the pilot program demonstrated that the intended goal of a decentralized, anonymous, Wi-Fi based sensor-enabled network of miniature food pantries with a structured restocking system functioned as intended. Data suggests that many people used LRP to obtain food. No known injuries or illnesses were reported to the research team.

Figure 3. Total Interactions by Day of the Week

No major instances of vandalism or other malfeasance related to the pilot were documented. Furthermore, development of the system was fairly cost effective. In total, the research team spent slightly less than \$20,000 to implement the model over an approximate 24-months period. Costs include equipment and student labor costs, but did not include any salary support for faculty or staff on the research team or the cost of the food disbursed through the pilot. Using student labor, as service learners, volunteers, or employees, to physically disperse the food weekly and assist with logistics management proved challenging, but not insurmountable. Integrating the model into more established administrative elements of a university would significantly mitigate that problem. These results suggest that the pilot could serve as a model to other universities seeking to create similar programs. The general approach taken with the initial deployment and then the expansion across both campuses over the multiyear period has been thus

far successful as a modular, scalable implementation.

Programmatic Effectiveness at Mitigating Food Insecurity

This research suggests that the overall model is likely effective in mitigating food insecurity on a college campus. The exact extent of that impact is unknowable, due to many methodological factors of practicality and limitations of data collection on food insecure college students, the ethics of collecting such data on that population, and the likely expenses required for such a project. Thus, the overall model might be understood to be as effective as reasonably possible to measure.

The research team had considered some measures to increase the potential of finding demonstrable impact, but rejected them on either ethical or practical grounds. For example, the team considered developing and installing a lock on the pantries that required a specifically coded ID card

to open, such as from a food insecure student. This system might allow for student users to be contacted for pre-and post-testing about the effectiveness of the pilot. However, the team rejected this idea both due to the cost as well as the ethics of creating a means-testing requirement (e.g., opting to identify oneself as food insecure to a campus official, creating administrative barriers to receiving aid).

At the same time, any discussion of the effectiveness of an intervention of this nature must also ask if other interventions or policy changes upstream might be more effective in mitigating the problem (Nazmi et al., 2019). For example, an intervention focused on the systemic donation of meal swipes from the campus meal plan to food insecure students might be more effective for interested faculty and staff to pursue. Expanding the eligibility of more college students to receive federal food assistance programs like the Supplemental Nutrition Assistance Program (SNAP) might be of even greater effectiveness.

Limitations

This research had a number of limitations. Primarily, due to the anonymous nature of the sensor network and the model design, recorded interactions cannot be specifically tied to usage by students. Anyone walking by a pantry could interact with the pantry by opening the door, thus generating a recorded interaction. The research team assumed that most interactions were by students but have no way of confirming this. The research team rejected suggestions about seeking to determine if students were interacting with pantries, due both to ethical (i.e., means testing and the Hawthorne effect) and practical concerns (i.e., expense and technical challenges of collecting such identifying data).

Furthermore, irregularities in readings from the sensor network were common, and individual sensors might not report for a number of reasons. Given the nature of the sensor network and the geographically dispersed nature of the pilot, days might pass before the research team could notice irregularities. Additionally, irregularities went undetected due to inability to remotely determine sensor functionality. Examples include Wi-Fi connectivity issues, power issues such as an outage for the

entire building, malfunctions of sensor hardware, bugs in the sensor software code, and theft of power cords or wall adaptors.

Therefore, the sensor data reported should be understood as raw counts generated when the sensors were functional and someone opened the pantry door, rather than truly representative proxies for pantry usage. That should not undermine the value of the raw counts in understanding how many times people interacted with the pantries. If anything, consistency with the sensor data suggests that the number of interactions reported here are conservative estimates of true usage. Greater stability within the sensor network, and ability to remotely detect when a sensor was not functional, would allow for greater internal validity of data.

Additionally, the combination of undergraduate service learning, volunteer, and paid worker students over the two pilot school years also led to lack of consistency within the weekly restocking of food, during which the weekly observational data form was collected. In total, over 50 undergraduates assisted with this research in some capacity. Often students would not complete the research tasks as described by the research team during their orientation. Examples of noncompliance included completing the restock on a different day than instructed (Wednesday), not completing the restock, not completing the observational data collection form, or not completing elements of the observational data collection form. Sometimes the research team could catch these errors, but the highly dispersed nature of the pilot made it inconvenient for a member of the research team to then complete the required task. The labor-intensive nature of the model is a major limitation both in replicating research and implementing a similar model.

Lessons Learned, Expansion, Implications for Colleges, and Future Research

Practical Lessons Learned

The research team learned three major lessons during this pilot research. First, the decentralized nature of the pilot model was itself challenging, and relying on undergraduates to assist with logistics and management often proved unreliable. This led the team to consider a different management

model. In addition, clearer preliminary planning would likely have reduced information technology challenges; these are explored briefly below. The team encountered challenges noted by Hagedorn-Hatfield et al. (2023) that are common to the successful implementation and sustainment of food insecurity initiatives on college campuses: difficulty securing project funding, ensuring student awareness of the project, and overcoming perceptions of stigma. The research team intends to write about these challenges in other papers.

While the decentralized nature of the pilot intentionally created increased accessibility for users, it proved challenging for the research team. The VCU liberal arts campus is roughly 0.5-mile square in a dense urban environment. Campus buildings are interspersed around public streets. In some cases, the distance between either of the buildings where the research team had their offices or the main campus food pantry and a satellite pantry required a 10–15-minute walk each way. Canvassing each pantry across campus in a single outing might require more than an hour walk. For individual instances these distances were often not an issue, but sustained travel times over the course of the pilot's nearly two complete school years proved burdensome.

These challenges became even more pronounced when the research team deployed five LRP to the VCU medical campus in March 2022. Less than two miles of Euclidean distance separates the campuses, but Richmond's central downtown lies directly between the campuses. As no one from the research team members worked at the medical campus, managing these LRP quickly became untenable for inclusion in this research. Whenever possible, however, the team sought to supply those LRP with food and safety checks.

Second, this research relied heavily on a combination of undergraduate student service learners, volunteers, and work-study workers to manage the logistics of packing and delivering food to each pantry, each week. Effectively, the research team was running a micro-scale logistics operation for nearly two complete school years. While most students involved with the project were enthusiastic, and at times helped co-create aspects of the project, the lack of professional experience and the

transient nature of student involvement significantly added to the complexity of the project's implementation.

There were several distinct examples of difficulties experienced during the pilot, which may be informative for others seeking to replicate the model on their campus. Student turnover, either due to graduation or completion of a class, required regular recruitment and training. Students often did not prioritize completing project tasks, even when employment or grading required it. This was especially true for volunteers. This lack of follow-through often resulted in food not being delivered, observational data not being collected, or sensors remaining unplugged. In some limited cases, students struggled to physically move the required food from the main pantry to the satellite locations. This was especially true for geographically removed locations that might require more than a 15-minute walk to reach, without considering carrying additional weight. The research team bought carts to assist, but these carts proved cumbersome to navigate through busy central city streets. Although mechanisms to alert the research team of the successful completion of certain weekly tasks, such as submission of the observational data form, were possible through Google Forms, initially the team did not use them, however, trying to minimize their daily volume of emails.

Collectively, both of these challenges led the team to realize that relying upon various forms of student labor was simply too unreliable for the model, especially a highly geographically dispersed model, to be sustainable. Towards the end of the pilot study, the team began to solicit partnerships with full-time administrative staff in buildings where the pantries were located to find individuals or groups willing to "adopt" the pantries. This would require willingness to store roughly one month of food for the pantry, and to restock the pantry from that supply and complete the observational safety form each week.

Third, challenges for the technology implementation were largely front-loaded for this project. The microcomputer, the Raspberry Pi, that collected data and logged it to Google Drive for sharing was chosen because of its small size, low cost, Wi-Fi connectivity, and sensor compatibility

options. However, at the time the project was started, a nonstandard Wi-Fi connection work-around was needed in the software in order to connect to the university's private network. This created difficulty during setup and initial testing, but a subsequent software update from the manufacturer largely removed this complication. The team coordinated with the university IT department for Wi-Fi login credentials not tied to an individual account, and a non-university Gmail account was created to allow access to Google Developer Tools. The most noteworthy challenges in developing the sensor system were managing network connectivity (e.g., deployment in Wi-Fi dead zones, areas with poor connectivity over time) and sustaining power to the individual sensors (e.g., theft of power cords and adaptors, building power outages). The team largely fixed them by moving some LRP to better locations and improving the stability of sensor code. LRP at locations with sustained Wi-Fi connectivity issues could be addressed by extending wireless coverage in coordination with IT and Network Services.

Expansion

As of this writing in early 2024, the research was moving towards expanding and refining aspects of the project to support greater sustainability at the home campus as well as expanding the model to other universities, and potentially noncollegiate organizations, such as K-12 schools, elder care facilities, and mutual aid organizations that operate outdoor LRP or community fridges.

Improvements to the sensor system are ongoing, with focus on expanding sensor type options and visibility of collected data. The current sensor systems use a single magnet per pantry to monitor door activity, but the Raspberry Pi boards are capable of interfacing with other sensors such as motion detectors, scales, temperature and humidity sensors for climate monitoring, and even small cameras. Strong emphasis is on unobtrusive sensors and data collection methods, as not to hinder usage. This flexibility allows for some customization for data collection needs without further complicating the system. Data from the sensors are currently logged in Google Sheets so that they can be viewed in real time. While this supports internal

validation and monitoring, a public webpage with an interactive dashboard would provide location and basic usage statistics to users of the LRP, and other interested parties that might be inspired to set up their own satellite pantry system.

These improvements are paramount when considering how a university might source the food needed for this food pantry model. Any economically sustainable management model will likely include a partnership with a university's regional food bank, that requires the university to pay the food bank for shared maintenance costs for the storage, handling, and distribution of donated foods, but in turn the university can receive food donated through the national emergency food assistance system organized by Feeding America. These fees for partnering with a food bank will be minor in comparison to buying the same food at retail prices.

The U.S. Internal Revenue Code, Section §170e3, shapes the nature of food donations nationally, requiring food donations to be tracked from the farmer or manufacturer to the eventual individual pantry distributing the food. Regional food banks maintain these data to ensure compliance and can require individual pantries to report either the number of clients served or weight of food dispersed to corroborate intended people receiving the donated foods. Without a sensor system, the decentralized, anonymous nature of the pilot model would prevent effectively tracking the number of users, likely preventing a regional food bank from knowingly partnering with a university food pantry seeking to create such a model.

Additionally, the technological aspects of the system were designed to be scalable. Data was stored in a Google Drive, and every sensor system in a pantry was responsible for its own Google Sheet. When a new Raspberry Pi system is deployed, it creates the sheet it will write to for its lifetime. By utilizing a one-to-one ratio with devices and files, the limit that Google sets to automated or scripted writing to documents is respected. This system is simple enough to recreate at other universities, and robust enough to support dozens of devices writing to the same Google Drive. As other sensors (e.g., scales, temperature sensors, cameras) are added to the system, it is

important to consider switching to a database or cloud storage such as Amazon Web Services (AWS) with more versatility in storage. Searchability and access time will be foregrounded when the live, web-based dashboard for displaying location, usage, and basic statistics is deployed.

Due to the physical nature of the pantry boxes, undergraduate students supporting this research consistently reported difficulty using the vertically mounted door on the pantries, which required the students to brace the door to keep it from slamming down while they refilled the pantry. Pantry users likely experienced the same conditions. Considering that the pantry boxes for the pilot were originally intended as outdoor magazine vending boxes, the research team sought to design and fabricate a device intentionally created to be a miniature campus food pantry. The team sponsored an undergraduate mechanical engineering Senior Design Capstone team during the 2022–2023 school year to design such a device. As part of the redesign, students tested an inward-facing camera system that would take a photograph of the pantry contents each time the door was closed. This could both inform pantry operations as well as provide avenues for additional research. The prototype is being tested during the fall 2023 semester.

Implications for Colleges

As of late December 2023 the research team had advised senior administrative leaders at VCU about the research findings, along with recommendations for improving and sustaining the pilot. As of this writing, discussion with senior leaders was ongoing. The successes noted herein beg the question of how similar programs could fit into strategies of other institutions in reducing student food insecurity. While this research suggests the pilot model is effective and that administrative burdens for operating such a program likely are sustainable for many colleges, this model will not work at all colleges. Campuses that are geographically dispersed, highly urbanized, or that lack a centralized food pantry may struggle to implement a program such as this.

Furthermore, research of this nature into the effectiveness of interventions is important, but readers should not lose sight that any intervention

at this scale is simply a bandage on a much larger societal problem of food insecurity. Colleges must play a role in improving food security for their students; this is crucial both ethically as well as from a student success perspective. However, food insecurity is a “wicked problem” that requires the intervention of federal policy to truly affect lasting change (Rittel & Webber, 1973). When considering how to best reduce student food insecurity, faculty and administrators should also bring their concerns to political leadership. The research team intends to explore this topic more in a future publication.

Future Research

Several avenues for future research presented themselves as part of this pilot project. First, this pilot research experienced several data collection limitations that future investigations into this model should seek to avoid. Specifically, greater stability within the sensor systems as well as greater consistency within weekly monitoring of LRP would improve internal validity. Replication of aspects of this research, especially at colleges and universities of differing characteristics, would be helpful in developing a picture of the true potential of this model to mitigate food insecurity on campuses.

Second, the research team considered the existence of “silent” interactions with the boxes: someone looking inside the box, which was possible as the door was transparent, seeing the contents, but for whatever reason deciding not to open the door. At face value, the person might not desire any of the pantry food, leading them to proceed with their day. However, that person’s perception of what food was in the box, relative to their needs and their perceived need to not take more than they need, might also influence if they take food or not.

The following hypothetical illustrates this point. A food insecure student who does not necessarily perceive themselves as truly in need of food assistance approaches a pantry. Depending on how much food they see in the box, they may or may not take food. Their hesitance could be linked to the perception, regardless of accuracy, that another individual might have a greater need for food. This hesitance could be rooted in guilt,

shame, or politeness. Awareness of an impending restock of the pantry adds an additional layer to the decision making. Does the student take less before the scheduled restock than they would after the restock? Cultural appropriateness and dietary needs/preferences regarding the food in the pantry might also affect decision making. Availability of individual serving sizes, as opposed to larger containers with multiple servings, could be another factor. The perception of pantry “fullness” might also incentivize people experiencing less acute insecurity, as well as people not insecure but simply looking for free food, to take something. These silent interactions, and their implications, are likely of interest to a number of research approaches. Insight gained from such research could inform communication to the campus community about the pantry model to help users better understand how they fit into the system and help destigmatize the use of such a decentralized, anonymous system.

Finally, the inclusion of inward facing cameras as part of the sensor system in the redesign of the physical pantries would allow researchers to examine usage patterns to better understand what foods users took and when. User anonymity can be preserved by delaying image collection until after the doors have been shut, and it would add reliable observation points for vandalism and pantry condi-

tions. Furthermore, the cameras would allow researchers to run quasi-experimental interventions to examine human behaviors. For example, student workers supporting the project reported that over the span of a few weeks an individual not associated with the research team had donated several boxes of sealed feminine hygiene products into the pantry in the business school. Each sealed box contained multiple “uses” or “servings.” The students anecdotally reported that for some weeks, pantry users took individual “servings” from one of the opened boxes but did not take the sealed boxes with multiple servings. Eventually the students lost track of this behavior, but such a situation could be replicated if cameras were installed to test how long it would take before someone took a sealed box. Potentially, such a finding would have implications to counter the pessimistic narrative that suggests that “needy” or “desperate” people will take whatever they can, whenever they can. 

Acknowledgments

We appreciate Leland Bert Waters, Youngmi Kim, Jennifer Murphy, and Jessica Hoy for their collaborative partnerships with the pilot project. We also want to thank the many students and staff for their dedicated time and love running the Little Ram Pantries pilot.

References

- An, R., Wang, J., Liu, J., Shen, J., Loehmer, E., & McCaffrey, J. (2019). A systematic review of food pantry-based interventions in the USA. *Public Health Nutrition*, 22(9), 1704–1716. <https://doi.org/10.1017/S1368980019000144>
- Becerra, M. B., & Becerra, B. J. (2020). Psychological distress among college students: Role of food insecurity and other social determinants of mental health. *International Journal of Environmental Research and Public Health*, 17(11), Article 4118. <https://doi.org/10.3390/ijerph17114118>
- Broton, K.M., & Goldrick-Rab, S. (2017). Going without: An exploration of food and housing insecurity among undergraduates. *Educational Researcher*, 47(2), 121–133. <https://doi.org/10.3102/0013189X177413030>
- Bruening, M., Brennhof, S., van Woerden, I., Todd, M., & Laska, M. (2016). Factors related to the high rates of food insecurity among diverse, urban college freshmen. *Journal of the Academy of Nutrition and Dietetics*, 116(9), 1450–1457. <https://doi.org/10.1016/j.jand.2016.04.004>
- Carson, J. A. (2020). *Innovation in food access amid the COVID-19 pandemic* [Perspectives brief]. Carsey School of Public Policy, University of New Hampshire. <https://dx.doi.org/10.34051/p/2020.398>
- Christaldi, J., & Castellanos, D. C. (2017). Child and adult food insecurity in the United States. In A. Bryce Hoflund, J. C. Jones, & M. C. Pautz (Eds.), *The Intersection of Food and Public Health: Current Policy Challenges and Solutions* (pp. 15–32). Routledge.
- Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2019). *Household food security in the United States in 2018* (Economic Research Report No. 270). U.S. Department of Agriculture, Economic Research Service. <https://doi.org/10.22004/ag.econ.301167>

- Davis, H., Sisson, S. B. & Clifton, S. (2021) A call for evidence to support food security interventions on college campuses. *Journal of American College Health*, 69(6), 693–695. <https://doi.org/10.1080/07448481.2019.1705829>
- DePorter, H., Moss, S., Ayo Puc, G., Ayalasomayajula, K., & Goldman, I. (2023). Campus Food Shed: Student-led efforts at the University of Wisconsin-Madison to support food-insecure peers. *Journal of Agriculture, Food Systems, and Community Development*, 12(2), 25–35. <https://doi.org/10.5304/jafscd.2023.122.015>
- Drake University Office of Community Engaged Learning & Service. (2023). *Drake Neighborhood Little Free Pantries*. <https://www.drake.edu/community/learningservice/programs/littlefreepantry/>
- El Zein, A., Shelnutt, K. P., Colby, S., Vilaro, M. J., Zhou, W., Greene, G., Olfert, M. D., Riggsbee K., Morrell, J. S., & Mathews, A. E. (2019). Prevalence and correlates of food insecurity among U.S. college students: A multi-institutional study. *BMC Public Health*, 19(1), Article 660. <https://doi.org/10.1186/s12889-019-6943-6>
- Ellison, B., Bruening, M., Hruschka, D. J., Nikolaus, C. J., van Woerden, I., Rabbitt, M. P., & Nickols-Richardson, S. M. (2021). Food insecurity among college students: A case for consistent and comparable measurement. *Food Policy*, 101, Article 102031. <https://doi.org/10.1016/j.foodpol.2021.102031>
- Ending hunger in America: Examining hunger on college campuses: Hearing before the U.S. House Committee on Rules*. 117th Cong. (2021). <https://rules.house.gov/hearing/ending-hunger-america-examining-hunger-college-campus>
- Fisher, A. (2017). *Big hunger: The unholy alliance between corporate America and anti-hunger groups*. MIT Press.
- Freudenberg, N., Goldrick-Rab, S., & Poppendieck, J. (2019). College Students and SNAP: The new face of food insecurity in the United States. *American Journal of Public Health*, 109(12), 1631–1677. <https://doi.org/10.2105/AJPH.2019.305332>
- Goldrick-Rab, S., Baker-Smith, C., Coca, V., Looker, E., & Williams, T. (2019). *College and university basic needs insecurity: A national #RealCollege survey report*. [https://www.insidehighered.com/sites/default/files/media/HOPE_realcollege_National_report_EMBARGOED%20UNTIL%20APRIL%2030%203%20AM%20EST%20\(1\).pdf](https://www.insidehighered.com/sites/default/files/media/HOPE_realcollege_National_report_EMBARGOED%20UNTIL%20APRIL%2030%203%20AM%20EST%20(1).pdf)
- Goldrick-Rab, S., Richardson, J., & Hernandez, A. (2017). *Hungry and homeless in college: Results from a national study of basic needs insecurity in higher education*. Wisconsin HOPE Lab, Association of Community College Trustees. <https://vtechworks.lib.vt.edu/bitstream/handle/10919/83028/HungryAndHomelessInCollege.pdf>
- Hagedorn-Hatfield, R. L., Qamar, Z., Richards, R., Patton-López, M. M., Savoie-Roskos, M. R., Heying, E. K., Landry, M. J., Mann, G., Vegetzang, J. L., OoNorasak, K., Cuite, C. L., & Hood, L. B. (2023). Barriers and facilitators to implementing and sustaining campus food insecurity initiatives. *Studies in Higher Education*, 48(8), 1273–1288. <https://doi.org/10.1080/03075079.2023.2195414>
- Haskett, M. E., Majumder, S., Kotter-Grühn, D., & Gutierrez, I. (2020). The role of university students' wellness in links between homelessness, good insecurity, and academic success. *Journal of Social Distress and Homelessness*, 30(1), 59–65. <https://doi.org/10.1080/10530789.2020.1733815>
- Kim, Y., & Murphy, J. (2023). Mental health, food insecurity, and economic hardship among college students during the COVID-19 pandemic. *Health & Social Work*, 48(2), 124–132. <https://doi.org/10.1093/hsw/hlad006>
- Kim, Y., Murphy, J., Craft, K., Waters, L., & Gooden, B. I. (2022). “It’s just a constant concern in the back of my mind”: Lived experiences of college food insecurity. *Journal of American College Health*. Advance online publication. <https://doi.org/10.1080/07448481.2022.2064714>
- Leroy, J. L., Ruel, M., Frongillo, E. A., Harris, J., & Ballard, T. J. (2015). Measuring the food access dimension of food security: A critical review and mapping of indicators. *Food and Nutrition Bulletin*, 36(2), 167–195. <https://doi.org/10.1177/0379572115587274>
- Martinez, S. M., Webb, K., Frongillo, E. A., & Ritchie, L.D. (2018). Food insecurity in California’s public university system: What are the risk factors? *Journal of Hunger & Environmental Nutrition*, 13(1), 1–18. <https://doi.org/10.1080/19320248.2017.1374901>
- Nazmi, A., Martinez, S., Byrd, A., Robinson, D., Bianco, S., Maguire, J., Crutchfield, R. M., Condrón, K., & Ritchie, L. (2019). A systematic review of food insecurity among US students in higher education. *Journal of Hunger & Environmental Nutrition*, 14(5), 725–740. <https://doi.org/10.1080/19320248.2018.1484316>

- Payne-Sturges, D. C., Tjaden, A., Caldeira, K. M., Vincent, K.B., & Arria, A.M. (2018). Student hunger on campus: Food insecurity among college students and implications for academic institutions. *American Journal of Health Promotion*, 32(2), 349–354. <https://doi.org/10.1177/0890117117719620>
- Poppendieck, J. (1999). *Sweet charity?: Emergency food and the end of entitlement*. Penguin.
- Rittel, H. W. J., & Webber, M. W. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155–169. <https://doi.org/10.1007/BF01405730>
- Sarmiento, C. S., Sims, J. R., & Morales, A. (2018). Little Free Libraries: An examination of micro-urbanist interventions. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 11(2), 233–253. <https://doi.org/10.1080/17549175.2017.1387588>
- Tanner, Z. R., Loofbourrow, B. M., Chodur, G. M., Kemp, L., & Scherr, R. E. (2023). Food insecurity and utilization of campus food resources differ by demographic and academic group. *Journal of Agriculture, Food Systems, and Community Development*, 12(2), 63–78. <https://doi.org/10.5304/jafscd.2023.122.018>
- Tarasuk, V., & Eakin, J. M. (2005) Food assistance through “surplus” food: Insights from an ethnographic study of food bank work. *Agriculture and Human Values*, 22(2), 177–186. <https://doi.org/10.1007/s10460-004-8277-x>
- U.S. Government Accountability Office. (2018). *Food insecurity: Better information could help eligible college students access federal food assistance benefits. Report to Congressional requesters* [GAO-19-95]. <https://www.gao.gov/assets/700/696254.pdf>
- Zeisel, J. (2006). *Inquiry by design: Environment/behavior/neuroscience in architecture, interiors, landscape, and planning*. W.W. Norton.

A sentiment and keyword analysis of college food pantry stigma among users and nonusers

Alisa T. Duong,^a Ayron E. Walker,^{b*} Amanda R. Bossert,^c and Matthew E. Arnold^d
Appalachian State University

Submitted November 27, 2023 / Revised February 2, March 7, and March 18, 2024 / Accepted March 20, 2024 /
Published online June 3, 2024

Citation: Duong, Al, T., Walker, A. E., Bossert, A. R., & Arnold, M. E. (2024). A sentiment and keyword analysis of college food pantry stigma among users and nonusers. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 152–164. <https://doi.org/10.5304/jafscd.2024.133.025>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

Food pantry stigma among college students has been documented as an issue that impacts the utilization of resources but has not been deeply investigated. The objective of this study was to explore sources of food pantry stigma to identify different strategies to encourage food pantry use, which has

the potential to positively alter methods on campuses. This mixed-methods study was a branched (separate questions and responses from both food pantry users and nonusers), 51-item, online, Qualtrics survey that sampled randomly selected students from a rural university ($n = 3,000$) and recruited using flyers posted in food pantries on campus. Reported results include demographic characteristics, use of on-campus food pantries, a validated food insecurity questionnaire, food

^a Alisa T. Duong, BS, Cellular and Molecular Biology Undergraduate Student, Appalachian State University.

Alisa T. Duong is now a dentistry student at Virginia Commonwealth University School of Dentistry; duongat4@vcu.edu

^{b*} *Corresponding author:* Ayron E. Walker, MS, PhD, RDN, Assistant Professor in Nutrition and Health Care Management, Appalachian State University; 1179 State Farm Road; Boone, NC 28607 USA; +1-828-262-2971;  <https://orcid.org/0000-0001-5670-8356>; walkerac2@appstate.edu

^c Amanda R. Bossert, Undergraduate Student in Nutrition and Health Care Management, Appalachian State University; bossertar@appstate.edu

^d Matthew E. Arnold, Undergraduate Student in Nutrition and Health Care Management, Appalachian State University; arnoldme@appstate.edu

Author Contributions

The responsibilities of the authors' are as follows: ATD: designed the study, conducted the project, analyzed data and drafted the manuscript; AEW: contributed to the design of the study, analyzed data, and refined the manuscript for publication; ARB: refined the manuscript for publication; MEA: refined the manuscript for publication.

Author Note

This project was completed through an undergraduate thesis project.

Funding Disclosure

There was no funding to report for this work.

Conflict of Interest

All authors declare no conflicts of interest.

pantry self-stigma, and an adapted measure of self-stigma of seeking help, and affirming or nonaffirming qualitative measures of food pantry stigma. Sentiment and keyword analyses were conducted by two researchers to analyze qualitative data to identify factors that influence food pantry stigma from food pantry users and nonusers. Quantitative data were analyzed with descriptive statistics. Qualitative data determined areas of stigma and aligned with the descriptive statistics on self-stigma and help-seeking measures. Among survey participants ($n = 594$), 35.7% of food-insecure students did not use food pantries. Users ($M = 23.12$, $SD = 9.06$) reported higher perceptions of food pantry stigma than nonusers ($M = 15.79$, $SD = 3.85$). Of the food pantry nonusers ($n = 461$), 322 identified the presence of stigma (69.85%). Sixty-six food pantry users ($n = 97$) identified the presence of stigma (68.04%). The keyword analysis highlighted potential influences of food pantry stigma among all participants including power hierarchy, financial burden, embarrassment, and feeling superfluous. This study highlights influences of stigma and places an emphasis on changing current approaches in campus food pantry implementation and dissemination. Future studies could investigate the barriers and solutions to current messaging and implementation of campus food pantries utilizing implementation science experts and frameworks.

Keywords

food insecurity, pantry stigma, intervention development, Appalachia health, college students

Introduction

According to the U.S. Department of Agriculture (USDA), about 17 million households were categorized as food insecure in 2022, indicating their ability to acquire sufficient food is limited by lack of money and resources (Rabbitt et al., 2023). Notably, experiencing food insecurity significantly impacts college students. Specifically, some researchers approximate that 30% of all college students will experience food insecurity (Dubick et al., 2016). Furthermore, a recent scoping review estimated that college campus food insecurity can range from 10% to 75% of the students experiencing inadequate access, availability, sufficiency, and

stability of food (Nikolaus et al., 2020). Additionally, rural students who are experiencing food insecurity struggle to maintain academic requirements and experience higher amounts of stress, anxiety, and depression, as well as issues with money management (Gaines et al., 2014; Hagedorn et al., 2019; Hagedorn & Olfert, 2018; Hege et al., 2021; McArthur et al., 2018; Nikolaus et al., 2020). Similarly, students experiencing food insecurity may utilize money management coping strategies such as relying on consumer credit card debt or personal loans, or leveraging relationships to borrow money (Gaines et al., 2014; Hagedorn et al., 2019).

While there are assistance programs to support food insecure individuals to manage their money and resources, many students are unable to access them due to strict eligibility guidelines (Hagedorn-Hatfield, Hood, et al., 2022). Therefore, food pantries tend to be the most common campus solution to food insecurity at universities (Hagedorn-Hatfield, Richards, et al., 2022). However, research has reported many barriers to the usage of college campus food resources including lack of knowledge or awareness of programming, inconvenient hours of operation or location, transportation difficulties, and social stigma (El Zein et al., 2018; Peterson & Freidus, 2020). Previous studies have suggested a strong negative association between stigma and seeking food assistance (Kindle et al., 2019). Additionally, qualitative studies have revealed that stigma is a noteworthy barrier to participation in and access to food programs and food pantries among households experiencing food insecurity (Fong et al., 2016; Greer et al., 2016; Kindle et al., 2019; Ward et al., 2018).

Specifically, in a study conducted by McArthur et al. (2020) at a rural, western North Carolina university demonstrated that although 64.8% of participants were aware of the food pantry, only 10.5% had ever visited it. The authors' qualitative data described stigma, shame, and embarrassment as reasons that participants would not acquire items from a college food pantry (McArthur et al., 2020). Feelings of stigma, shame, and embarrassment have frequently been reported in previous food insecurity research as major barriers to food resources (Henry, 2017). However, these studies do not provide an explicit investigation into the stigma

individuals have reported, even though stigma seems to be a major indicator in accessing campus resources for food insecure college students.

Individuals can experience a variety of different directions of stigma. For example, perceived stigma describes the fear of stigma or discrimination, which typically is based on society's beliefs (LeBel, 2008), whereas explicit or external stigma is self-reported or conscious feelings or attitudes about a group (Stull et al., 2013). Public stigma describes the attitudes of individuals that are based on societal perceptions (Latalova et al., 2014). Lastly, individuals can feel self-stigma, which describes the internalized perceived prejudices and biases that lead to the development of negative thoughts or feelings about themselves, which can limit interactions with resources (Latalova et al., 2014; Tesfaw et al., 2020).

Certain campus food security research has mentioned stigma (Henry, 2017; McArthur et al., 2020) but has not necessarily explained the types of perceived stigma that food pantry users and food pantry nonusers experience or acknowledge. Additionally, most current food pantry stigma research is not directed at college campuses or college students (Fong et al., 2016; Greer et al., 2016; Kindle et al., 2019; Ward et al., 2018). Thus, the need to identify and investigate individuals' experiences with stigma and its impacts on acquiring food through campus resources is dire. This study aims to explore the stigma surrounding the use of food pantries on a rural, western North Carolina campus, to identify sources of stigma among users and nonusers, to inform pantry changes, and to build upon previous research conducted at similar universities (McArthur et al., 2020).

Methods

This study was approved by the Appalachian State University Institutional Review Board (protocol number: HS-23-164). Participants were students recruited from Appalachian State University's central campus and randomly selected from a computer-generated recruitment list ($N = 3,000$) provided by the Institutional Research, Assessment, and Planning Office (IRAP) at Appalachian State University.

The campus is a residential, public, state uni-

versity located in rural Western North Carolina.

According to the IRAP office, a total of 21,253 students were enrolled in 2023, with 57.5% identifying as female and 42.5% as male; 15,117 students lived off-campus. Of the students, 22.3% were in their first year, 20.2% in their second, 22.5% in their third, and 25.8% in their fourth, and 8.7% were graduate students. Lastly, IRAP reported 19.0% of the total student population being from racially or ethnically underrepresented groups.

Recruitment was done by an initial email that was sent on Wednesday, January 25, 2023, to randomly selected student emails provided by IRAP. This email was primarily to recruit individuals who did not use the food pantry. Three reminder emails were sent to the same pool of students each Wednesday following the date the initial email was sent, with the last reminder email sent on February 15, 2023.

In addition to the email recruitment, flyers with a QR code and link were posted in the primary Office of Sustainability food pantry in East Hall, in the Garwood Hall Physics food pantry, and in the Leon Levine Hall food pantry at Appalachian State University.

The impetus for this project was to address, in detail, the stigma surrounding food pantries, particularly on college campus, which was motivated through a literature review. The reported results of this paper are a subset of measures that were a part of a larger survey (see supplementary material for description of entire survey measures) conducted to provide more context on systemic barriers, such as stigma, to campus food pantry use. The Qualtrics (Qualtrics, Provo, UT, 2021) survey was a branched survey with two versions that included 51 questions in each version. Both surveys began with a consent form that participants could read, after which they chose to either participate or not participate in the study. One branch of the survey was completed by individuals who self-identified as not using food pantries, and the other branch of the survey was completed by self-identified food pantry users.

Both surveys were informed by previous food pantry stigma and food insecurity research (Kindle et al., 2019; Vogel et al., 2006). The surveys included the 10-item USDA Food Security Scale

for Use with College Students, which assessed whether the participant was food insecure (Ames & Barnett, 2019). All participants were asked a qualitative data question: “Do you believe that there is stigma surrounding food pantry users? Why or why not?” Participants self-selected their answer to the next survey question, which read “Have you used a food pantry at Appalachian State University?” This question categorized the participants into the two separate surveys. The survey then measured food pantry self-stigma through a validated 10-question measures (Kindle et al., 2019), into addition to an adapted version of the validated Self-Stigma of Seeking Help (SSOSH) tool (Vogel et al., 2006), for both food pantry users and nonusers. The sets of self-stigma questions for both surveys used a 5-point Likert scale from strongly disagree to strongly agree (Kindle et al., 2019; Vogel et al., 2006). Examples of questions regarding food pantry self-stigma of food pantry use and help-seeking self-stigma for food pantry users were “I have stopped socializing with some people due to their reaction to me using a food pantry” and “I feel inadequate for using the food pantry for assistance” (Kindle et al., 2019; Vogel et al., 2006). Examples of questions regarding self-stigma for nonusers were “I have stopped socializing with some people because they used a food pantry” and “I would feel inadequate if I went to a food pantry for assistance” (Kindle et al., 2019; Vogel et al., 2006). Demographic questions about gender, race, the year the participant first enrolled at Appalachian State University (i.e., first year college student), and employment status were also asked, in addition to asking whether the participant had a meal plan and whether the participant lived on or off campus.

Analysis

Sentiment Analysis

Sentiment Analysis enables researchers to understand the emotions and opinions of a certain group of people toward another (Medhat et al., 2014). A sentiment analysis was conducted on the qualitative responses from a particular question from the survey (“Do you believe that there is stigma surrounding food pantry users? Why or why not?”). Com-

pleted responses were categorized based on whether the responded reported using the food pantry in the first question, “Have you ever used the on-campus food pantries?” Then, the two categories were analyzed for affirming or nonaffirming responses about food pantry user stigma using an Excel add-on, Azure Machine Learning (Microsoft Corporation, Redmond, WA, 2018). Azure Machine Learning was prompted to categorize responses into negative (nonaffirmative/no stigma), neutral (uncertain), or positive (affirmative/stigma identified) sentiments. We (AEW and ATD) reviewed the sentiment categories to ensure accuracy of categorization.

Keyword search for themes

Following sentiment analysis, a keyword analysis was performed. Identifying keywords can provide context to sentiments provided by participants (Dalayya et al., 2023). Once data from both food pantry use categories were analyzed, the positive and negative sentiments were further analyzed for keywords and themes in the responses by a hand-coded search of frequencies of terminology. We (AEW and ATD) tallied keywords in Excel by reporting the frequencies of periodically reported words and themes. In other words, we counted the number of times a keyword or theme was mentioned out of all of the responses in each sentiment category. The final step was to define and describe the meaning of the keywords and themes to understand the positive and negative sentiment of food pantry stigma between food pantry users and nonusers.

Descriptive statistics

Descriptive statistics, including means and frequencies of certain quantitative variables, were conducted in SPSS version 28 and Microsoft Excel to describe the data.

Food insecurity

To understand food insecurity percentages across the sample, the 10-item USDA Food Insecurity screener was used for data collection and scoring (Ames & Barnett, 2019). Completed responses were scored based on affirming responses (“yes,” “often,” “sometimes,” “almost every month,” and

“some months but not every month”) and non-affirming responses to create a categorical variable. Raw scores of 0–2 were categorized as food secure, 3–5 as low food security, and 6–10 as very low food security. For binomial analysis and further comparison with other variables, the food security score was 0–2 and the food insecurity score was 3–10.

Food pantry use and food security

To identify food pantry use and food insecurity, responses were categorized into four categories by aligning response scores for food insecurity and food pantry use. Categories included (a) food insecurity and food pantry use; (b) food security and food pantry use; (c) food insecurity and food pantry nonuse; and (d) food security and food pantry nonuse.

SSOSH measures

In using the 10-item adapted SSOSH (Vogel et al., 2006), we sought to comprehend whether individuals felt self-stigma toward seeking help (using food pantries) or in general by assessing the mean score between food pantry users and nonusers. Scores were summed for an overall SSOSH score, then mean scores were calculated. A higher mean score suggests that individuals feel more self-stigma.

Food pantry self-stigma scale

Similarly, descriptive statistics were used to report the mean of the summative scores of the self-identified food pantry self-stigma scale between non-food-pantry users and food pantry users (Kindle et al., 2019). Analysis of both the collected quantitative and qualitative data granted a better understanding of the gap between how those who use a food pantry believe others perceive them versus how those who do not use a food pantry perceive food pantry users.

Results

Quantitative Data

We recorded and analyzed 594 responses, of which, 17% ($n = 101$) self-reported currently or historically using

on-campus food pantries (Table 1). The majority of the entire sample (50.7%) were food secure; however, 30.1% experienced very low food security. To understand food pantry use among food-insecure and food-secure participants, responses were categorized into food insecurity and food pantry use; food security and food pantry use; food insecurity and food pantry nonuse; and food security and food pantry nonuse (Table 1). Almost 36% were food insecure and did not use food pantries on campus. Additional descriptive statistics are displayed in Table 2.

Adapting the SSOSH measure, we aimed to explore whether individuals felt self-stigma toward seeking help (using food pantries; Table 3). Both groups, nonusers and users, reported higher perceptions of self-stigma with levels above the midpoint of the scale. However, users had a slightly higher self-stigma ($M = 27.49$, $SD = 9.44$). According to the food pantry self-stigma scale, users ($M = 23.12$, $SD = 9.06$) reported higher perceptions of stigma than nonusers ($M = 15.79$, $SD = 3.85$).

Qualitative Data

Sentiment analysis results

Sentiment analysis (Table 4) categorized each survey response as positive (stigma surrounding food pantry use), neutral, or negative (no stigma surrounding food pantry use). Sentiment analysis was conducted separately for food pantry nonusers and food pantry users to compare the percentages. Within the nonusers, there were 461 usable

Table 1. Food Security and Food Pantry Use

Variable	Frequency (n)	Percent
Food Pantry User	101	17.0%
Food Pantry Nonuser	493	83.0
Food Security	301	50.7
Low Food Insecurity	114	19.2
Very Low Food Insecurity	179	30.1
Food Insecurity and Food Pantry Use	81	13.6
Food Security and Food Pantry Use	20	3.4
Food Pantry Nonuse and Food Insecurity	212	35.7
Food Pantry Nonuse and Food Security	281	47.3

Table 2. Participant Demographics

Variable	Frequency (n)	Percent
Male	171	28.8%
Female	291	49.0
Nonbinary/Third Gender	36	6.1
Prefer Not to Say	7	1.2
White/Hispanic	5	1.0
White/Non-Hispanic	397	66.8
African American	14	2.4
Hispanic	16	2.7
Asian	7	1.2
Other	155	25.9
1 st -Year College Student	125	21.0
2 nd -Year College Student	138	23.2
3 rd -Year College Student	135	22.7
4 th -Year College Student	86	14.5
Other	21	3.5
Unemployed	224	37.7
One or More Part-time Jobs	266	44.8
One Full-time Job	15	2.5
On-Campus	229	38.6
Off-Campus	273	46.0

responses, with 98 negative responses (21.26%), 41 neutral responses (8.89%), and 322 positive responses (69.85%). Within the food pantry users, there were 97 usable responses, with 25 negative responses (25.77%), 6 neutral responses (6.19%), and 66 positive responses (68.04%).

Keyword analysis results

Similar to sentiment analysis, keyword analysis was completed (Tables 5 and 6) separately for food pantry nonusers and users. For both food pantry users and nonusers, however, only the positive responses were identified with a keyword category. Negative and neutral responses for both nonusers and users mostly consisted of “No” with no explanation or claimed that they had a lack of knowledge surrounding stigma.

Positive FPNU keyword analysis

Within the food pantry nonusers’ responses that showed a stigma, the respondents explained that they supposed that if they used a food pantry, they would feel the stigma, or respondents directly stated they believed there was food pantry stigma for users. The positive nonusers’ responses were classified and quantified into keyword categories out of the total nonusers’ responses ($n = 322$); see Table 5. Among food pantry nonusers who

Table 3. Food Pantry Users (FPU) and Nonusers’ (FPNU) SSOSH Measure and Food Pantry Self-Stigma of FPU and FPNU Users

Variable	N	Minimum	Maximum	Mean	Std. Deviation
FPU SSOSH	85	10	50	27.49	9.444
FPNU SSOSH	417	10	50	25.60	9.204
Food Pantry Self-Stigma among FPU	94	10	43	23.12	9.064
Food Pantry Self-Stigma among FPNU	451	10	42	15.79	3.853

Table 4. Sentiment Analysis

	Total Responses	Negative Responses <i>n</i> (%)	Neutral Responses <i>n</i> (%)	Positive Responses <i>n</i> (%)
Pantry Nonusers	461	98	41	322
Food Pantry Nonusers	—	98 (21.26%)	41 (8.89%)	322 (69.85%)
Food Pantry Users	97	25	6	66
Food Pantry Users	—	25 (25.77%)	6 (6.19%)	66(68.04%)

believed there was stigma, nine themes arose. Many believed explained the stigma in terms of a *power hierarchy* in which food pantries are associated with social classism and if you use them you are lesser in society (20.81%). Additional themes included *finance*, in which going to a food pantry meant you were poor (23.29%); *laziness*, as going to a food pantry meant you were taking advantage of the system (7.76%); *judgment* (8.70%); *pride*, in wanting to prove they can solve their own challenges (4.04%); and *embarrassment* (13.98%). Other themes including thinking that **other people are worse off than them (feeling superfluous)** (7.45%), **that others don't understand due to a lack of knowledge** (4.66%), and that there is **limited accessibility** to healthy options, as food pantries have mainly unhealthy foods (1.86%).

Within the positive food pantry users'

responses, the stigma mentioned was either self-stigma, meaning that the respondent imposed the stigma on themselves, or stigma received from others. The positive food pantry users' responses were placed into the following keyword categories, and a percentage was calculated for each keyword category out of the total positive food pantry users' responses ($n = 66$); see Table 6. Among food pantry users who believed there was stigma, many believed so because of a *power hierarchy* (12.12%), *finance* (27.27%); *laziness* (10.61%); *judgment* (7.58%); *embarrassment* (21.21%); the belief that *other people are worse off than them (feeling superfluous)* (16.67%); *appearance*, in that food pantry users were associate with certain physical features (7.58%); and *self-blame*, where they felt the situation was their fault (3.03%).

Table 5. Keyword Analysis for Positive Food Pantry Nonusers

Keyword	Number of Responses ($n = 322$)	Percentage Calculated
Power Hierarchy	67	20.81%
Finance	75	23.29%
Laziness	25	7.76%
Judgment	28	8.70%
Embarrassment	45	13.98%
People are worse off	24	7.45%
Others not understanding	15	4.66%
Pride	13	4.04%
Accessibility to Healthy Options	6	1.86%

Table 6. Keyword Analysis for Positive Food Pantry Users

Keyword	Number of Responses	Percentage Calculated
Power Hierarchy	8	12.12%
Finance	18	27.27%
Laziness	7	10.61%
Judgment	5	7.58%
Embarrassment	14	21.21%
People are worse off	11	16.67%
Appearance	5	7.58%
Self-blame	2	3.03%

Discussion

The results and methods of this study contribute significantly to food insecurity research. For example, our results provide a deeper understanding of public and self-stigma and its influences on food pantry use, which tends to be the primary food insecurity intervention on college campuses (Hagedorn et al., 2020). However, the breadth and depth of research on understanding food pantry stigma is scarce (McArthur et al., 2020) and often

does not measure how nonusers perceive food pantry use or examine the specific areas for which users feel stigmatized. This study highlights perceived stigmas from food pantry users and nonusers, which assists in reinforcing users' experience in attempting to access food resources on campus. Characterizing different perspectives presents meaningful information that can help identify sources of stigma and create better resources for campuses. Our evidence-based methodology is unique and could be useful to others doing campus food insecurity research.

This study reported 50.7% of the study participants were food insecure, with 35.7% of food-insecure students not utilizing the food pantry and

only 13.6% reporting food pantry use. Due to this gap, the concern shifts to those that are food insecure, but are not using resources such as food pantries. A study done at the University of Florida found that while 32% of respondents were classified as food insecure, only 15.6% had ever used the food pantry (El Zein et al., 2018). The same study suggested that the reason most college students were not seeking help from resources available to them was due to social stigma, inconvenient hours, and insufficient information on food pantry regulations (El Zein et al., 2018). These findings are similar to our study suggesting, that a large majority of both food pantry users and nonusers identified sources of stigma and its interaction with food pantry use. Although this begins to explain why many of this study's participants are food insecure but do not use a food pantry, the descriptions and types of stigmas are underreported.

A key finding from the descriptive statistics of both the SSOSH (Vogel et al., 2006) and those provided by the Food Pantry Stigma Scale (Kindle et al., 2019) is that food pantry users reported greater means than food pantry nonusers, meaning food pantry users had a higher self-stigma attached to seeking help than nonusers. In a study comparing stigma between food pantry users and nonusers, findings suggested that food pantry users' perception of stigma was significantly higher than the portion of the public who does not use food pantries (Kindle et al., 2019). The authors explained this by suggesting that food pantry users believed there would be social disapproval if they used a food pantry as they would be deemed not self-reliant or self-sufficient (Kindle et al., 2019). Based on qualitative data obtained from our keyword analysis of food pantry users, 3.03% reported that the stigma was a result of self-blame. This number shows that stigma does not solely stem from others but can also result from internal thoughts.

Based on research done with relevance to this study, a difference was expected to be observed between the beliefs of a food pantry user and non-user (Kindle et al., 2019). More specifically, it was likely that the self-perception of those who used a food pantry of themselves would be worse than the perception nonusers hold of users. This is explained by the "why try" effect, which is the

belief by individuals that there will always be others worse off than them and as a result they do not deserve the offered resources (Corrigan et al., 2009). Studies suggest that counseling or therapy can address the self-stigma of food pantry users and the "why try" effect and assist in changing attitudes around seeking help (Latalova et al., 2014). However, time and finances can be major barriers to therapy or counseling. Therefore, online therapy, free counseling, group therapy at food pantries, and/or extended hours of availability could combat the barriers to care.

Aside from self-blame, another major source of self-stigma felt by food pantry users was finance (23.29%). Stigma that results from financial burdens was reported by users who believed that others view them as poor for using a food pantry. Food pantry users also experience stigma because they think others deem them as lazy (10.61%) or weaker in a power hierarchy (12.12%) because they are unable to provide for themselves and instead rely on a resource. Similarly, users report that constant food pantry advertising as a place for low-income or for the "needy" portrays users as victims and deters them from seeking help or resources (El Zein et al., 2022). To begin to break this stigma felt by food pantry users, resources that are offered need to be more normalized (El Zein et al., 2022; Fong et al., 2016). Normalization could occur through greater promotional awareness of these resources, and it could also result from more food pantry locations being offered as resources (El Zein et al., 2022). When these resources are more normalized, more people who need these resources will not feel alienated when they resort to them.

Similarly, finance was a stigma shared between food pantry nonusers and food pantry users. The keyword *finance* refers to the stigmatization of poverty, in that food pantry users believed that they were poorer than others, or that others viewed them as such. A study that analyzed different measures of poverty relative to food-insecure households found that there was a small but statistically significant association between poverty and food insecurity (Wight et al., 2014). Rather, finances had to do more with an income-to-needs ratio (Wight et al., 2014). Thus, additional attention should be focused on other factors that can affect

income ratios, especially among college students, whose income ratios are affected by their tax filing and ability to apply for federal aid (Hagedorn et al., 2019; Hagedorn & Olfert, 2018; Hagedorn-Hatfield, Hood, et al., 2022). Additionally, research has suggested that “time privilege” can be a factor that influences food availability and eating behaviors (Sharaievska et al., 2011). To illustrate, Sharaievska and colleagues (2011) collected qualitative data on the factors that influence food insecure individuals accessing healthy foods. The authors’ findings suggest that time to obtain, learn about, and cook healthy meals is a major barrier to utilizing resources such as farmers’ markets and fresh foods from pantries. Likewise, a study involving young adults attending an Appalachian University assessed their schedules’ relative to food insecurity and their academics (Hagedorn & Olfert, 2018). The study found that those that were identified as food insecure had to manage schedules with a full-time job, or one or more part-time jobs, which in turn affected their on-time graduation, class attendance, and overall academic success compared to food-secure students (Hagedorn & Olfert, 2018). Many food-insecure students lack the time to obtain resources and are financially burdened. Therefore, universities should consider the times that the food pantries and other resources are open so that they become more accessible to those with conflicting schedules (El Zein et al., 2022). Furthermore, providing more resources in one location can assist with the time constraints (Ball et al., 2019).

Although food pantry nonusers cannot directly experience stigma the way food pantry users do, nonusers indicated that stigma exists for food pantry users. Food pantry nonusers reported *finance* (23.29%), *power hierarchy* (20.81%), and *embarrassment* (13.98%) being sources of stigma food pantry users could experience. Interestingly, the same keywords were also identified among food-pantry users. Both sets of participants associated these keywords with characteristics reported of being poor, weak, or embarrassed/shameful. The participants reported their reasoning was either dependent on whether they believed food pantry users should feel that way (explicit stigma) or that they would feel similar if they used food pantries (perceived stigma). These

findings suggest that participants in our study are identifying areas of stigma either explicitly or based on societal perceptions that inform reported attitudes (public stigma) toward food pantry users (Latalova et al., 2014). In research conducted on public stigma on depression, authors provide a model that expresses how public stigma can contribute to the experience of self-stigma, which can influence help-seeking attitudes and willingness (Latalova et al., 2014). This model aligns with our qualitative research findings, which show food-pantry users express similar reasons for stigma as food pantry nonusers. Additionally, it also aligns with our descriptive statistics showing that 37.5% of food-insecure respondents do not seek help from food pantries and that many participants reported in our self-stigma scales and qualitative data that they do not believe they should seek help. According to Latalova and colleagues (2014), addressing feelings of self-stigma that are confounded by public stigma, can change help-seeking attitudes by addressing said attitudes directly. To address public stigma, a study conducted at a university in the southeastern U.S. suggested that public support could be shared through spreading awareness by positive marketing messages (emphasizing resourcefulness not neediness) that destigmatize food pantry use (El Zein et al., 2022). Additionally, universities must review or remove previous messaging about food pantries that describe them as places for low-income or in-need students; that has resulted in unintended consequences that influence public and self-stigma (El Zein et al., 2022; Fong et al., 2016b).

Limitations

Limitations of this study included sampling bias. Although the sampling technique aimed to include a diverse set of participants, with voluntary participation, a greater number of participants could have resulted from an area where there was better implementation. Thus, this could have skewed the statistics of this study toward a certain demographic, which suggests that the reported results may not be generalizable. Another limitation was recruitment of food-pantry users, as it was expected that there would be fewer users than nonusers who completed the survey. Furthermore, since participants

were kept anonymous, it was difficult to fully comprehend what some participants meant without asking follow-up, explanatory questions.

Conclusions

Through this research, the study of stigma surrounding the use of food pantries at Appalachian State University was investigated. Specifically for food-insecure college students, this study highlighted indicators of stigma and places an emphasis on changing current approaches in food pantry implementation and the dissemination of information about food pantries. Approaches such as education tactics and awareness toward reducing stigma are needed. For example, some food pantry awareness campaigns may need to be evaluated and de-implemented if found ineffective. Doing so can create space for more neutral and normative awareness approaches to food pantry usage. Additionally, university administrators should advocate for more funding (a continuous barrier to effective food pantry implementation) to incorporate more resources (counseling, nutrition education, longer operation hours, variety of apparent locations) into food pantries to provide more opportunities for reach and access for food-insecure students (Goldrick-Rab et al., 2018). Normalizing the messages about food pantries, providing more opportunities for using food pantries, providing locations of food pantries that are easily accessible and open, and allowing more resources to flow into food pantries could significantly help to destigmatize usage. Meetings with administrators and campus food pantry leadership would be an important next step to ensure dedication in attempting to shift

stigmatizing normative beliefs around food pantry use.

Key Recommendations for Research

To build upon the current reported findings, future research should further investigate the demographic differences between food pantry users and non-users. For example, studies could leverage data on meal plans, food pantry use, and on- and off-campus housing to understand at-risk populations. From previous research, we see a higher likelihood of individuals who experience food insecurity being associated with inadequate living spaces, limited meal plan access, and barriers to receiving federal food assistance (Hagedorn et al., 2019; Hagedorn & Olfert, 2018; Hagedorn-Hatfield, Hood, et al., 2022; Nikolaus et al., 2020; Olfert et al., 2021; Peterson & Freidus, 2020). This could illuminate more information needed for intervention design and implementation. Furthermore, other campuses might adopt the use of our survey tool to better identify how to change their food assistance programs and include interviews to parse out more detailed information about the self-stigma, public stigma, and biases that users experience and nonusers perceive. This has the potential to inform cultural shifts needed to address use of food resources. Additional research is needed to understand the barriers and solutions to current messaging about and implementation of campus food pantries. This could be done with the assistance of implementation science experts evaluating current implementation outcomes of campus food pantries to see whether current methods need to be adjusted to help with reach and effectiveness. 

References

- Ames, A. J., & Barnett, T. M. (2019, January 1). Psychometric validation of the 10-Item USDA Food Security Scale for use with college students. *Journal of Applied Measurement*, 20(3), 228–242. PMID: 31390600
- Ball, L., Andrews, J., Gruber, K., & Dharod, J. (2019). Implementation of a WIC clinic farmers' market improves accessibility and consumption of fresh fruits and vegetables among WIC farmers' market nutrition program participants. *Journal of Hunger & Environmental Nutrition*, 14(6), 838–849. <https://doi.org/10.1080/19320248.2018.1491364>
- Corrigan, P. W., Larson, J. E., & Rüsch, N. (2009). Self-stigma and the “why try” effect: Impact on life goals and evidence-based practices. *World Psychiatry*, 8(2), 75–81. <https://doi.org/10.1002/j.2051-5545.2009.tb00218.x>
- Dalayya, S., Elsaid, S. T. F. A., Ng, K. H., Song, T. L., & Lim, J. B. Y. (2023). Sentiment analysis to understand the perception and requirements of a plant-based food app for cancer patients. *Human Behavior and Emerging Technologies*, 2023, Article 8005764. <https://doi.org/10.1155/2023/8005764>

- Dubick, J., Mathews, B., & Cady, C. (2016, October). *Hunger on campus: The challenge of food insecurity for college students*. National Student Campaign Against Hunger and Homelessness.
<https://studentsagainsthunger.org/hunger-on-campus/>
- El Zein, A., Mathews, A. E., House, L., & Shelnutt, K. P. (2018). Why are hungry college students not seeking help? Predictors of and barriers to using an on-campus food pantry. *Nutrients*, 10(9), Article 1163.
<https://doi.org/10.3390/nu10091163>
- El Zein, A., Vilaro, M. J., Shelnutt, K. P., Walsh-Childers, K., & Mathews, A. E. (2022). Obstacles to university food pantry use and student-suggested solutions: A qualitative study. *PLOS ONE*, 17(5), Article e0267341.
<https://doi.org/10.1371/journal.pone.0267341>
- Fong, K., Wright, R., & Wimer, C. (2016). The cost of free assistance: Why low-income individuals do not access food pantries. *Journal of Sociology and Social Welfare*, 43(1), 71–93. <https://doi.org/10.15453/0191-5096.3999>
- Gaines, A., Robb, C. A., Knol, L. L., & Sickler, S. (2014). Examining the role of financial factors, resources and skills in predicting food security status among college students. *International Journal of Consumer Studies*, 38(4), 374–384.
<https://doi.org/10.1111/ijcs.12110>
- Goldrick-Rab, S., Cady, C., & Coca, V. (2018, September 28). *Campus food pantries: Insights from a national survey*. The Hope Center. <https://files.eric.ed.gov/fulltext/ED628059.pdf>
- Greer, A. E., Cross-Denny, B., McCabe, M., & Castrogivanni, B. (2016). Giving economically disadvantaged, minority food pantry patrons' a voice: Implications for equitable access to sufficient, nutritious food. *Family and Community Health*, 39(3), 199–206. <https://doi.org/10.1097/FCH.0000000000000105>
- Hagedorn, R. L., McArthur, L. H., Hood, L. B., Berner, M., Anderson Steeves, E. T., Connell, C. L., Wall-Bassett, E., Spence, M., Babatunde, O. T., Kelly, E. B., Waity, J. F., Lillis, J. P., & Olfert, M. D. (2019). Expenditure, coping, and academic behaviors among food-insecure college students at 10 higher education institutes in the Appalachian and Southeastern regions. *Current Developments in Nutrition*, 3(6), Article NZZ058.
<https://doi.org/10.1093/cdn/nzz058>
- Hagedorn, R. L., & Olfert, M. D. (2018). Food insecurity and behavioral characteristics for academic success in young adults attending an Appalachian university. *Nutrients*, 10(3), 361. <https://doi.org/10.3390/nu10030361>
- Hagedorn, R. L., Pampalone, A. L., Hood, L. B., Yura, C. A., Morrow, D. F., & Olfert, M. D. (2020). Higher education food insecurity toolkit development and feedback. *Journal of Nutrition Education and Behavior*, 52(1), 64–72.
<https://doi.org/10.1016/j.jneb.2019.09.021>
- Hagedorn-Hatfield, R. L., Hood, L. B., & Hege, A. (2022). A decade of college student hunger: What we know and where we need to go. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.837724>
- Hagedorn-Hatfield, R. L., Richards, R., Qamar, Z., Hood, L. B., Landry, M. J., Savoie-Roskos, M. R., Vogelzang, J. L., Machado, S. S., OoNorasak, K., Cuite, C. L., Heying, E., Patton-López, M. M., & Snelling, A. M. (2022). Campus-based programmes to address food insecurity vary in leadership, funding and evaluation strategies. *Nutrition Bulletin*, 47(3), 322–332. <https://doi.org/10.1111/nbu.12570>
- Hege, A., Stephenson, T., Pennell, M., Revlett, B., VanMeter, C., Stahl, D., Oo, K., Bressler, J., & Crosby, C. (2021). College food insecurity: Implications on student success and applications for future practice. *Journal of Student Affairs Research and Practice*, 58(1), 44–61. <https://doi.org/10.1080/19496591.2020.1726359>
- Henry, L. (2017). Understanding food insecurity among college students: Experience, motivation, and local solutions. *Annals of Anthropological Practice*, 41(1), 6–19. <https://doi.org/10.1111/napa.12108>
- Kindle, P. A., Foust-Newton, M., Reis, M., & Gell, M. (2019). Food pantries and stigma: Users' concerns and public support. *Contemporary Rural Social Work Journal*, 11(1). <https://doi.org/10.61611/2165-4611.1178>
- Latalova, K., Kamaradova, D., & Prasko, J. (2014). Perspectives on perceived stigma and self-stigma in adult male patients with depression. *Neuropsychiatric Disease and Treatment*, 2014, 1399–1405.
<https://doi.org/10.2147/NDT.S54081>
- LeBel, T. P. (2008). Perceptions of and responses to stigma. *Sociology Compass*, 2(2), 409–432.
<https://doi.org/10.1111/j.1751-9020.2007.00081.x>

- McArthur, L. H., Fasczewski, K. S., Farris, A. R., & Petrone, M. (2020). Use and perceptions of a campus food pantry among food insecure college students: An exploratory study from Appalachia. *Journal of Appalachian Health*, 2(2), 7–23. <https://doi.org/10.13023/JAH.0202.02>
- McArthur, L. H., Fasczewski, K. S., Wartinger, E., & Miller, J. (2018). Freshmen at a university in Appalachia experience a higher rate of campus than family food insecurity. *Journal of Community Health*, 43(5), 969–976. <https://doi.org/10.1007/s10900-018-0513-1>
- Medhat, W., Hassan, A., & Korashy, H. (2014). Sentiment analysis algorithms and applications: A survey. *Ain Shams Engineering Journal*, 5(4), 1093–1113. <https://doi.org/10.1016/j.asej.2014.04.011>
- Nikolaus, C. J., An, R., Ellison, B., & Nickols-Richardson, S. M. (2020). Food insecurity among college students in the United States: A scoping review. *Advances in Nutrition*, 11(2), 327–348. <https://doi.org/10.1093/advances/nmz111>
- Olfert, M. D., Hagedorn, R. L., & Walker, A. E. (2021). Food Insecurity Risk among First-Generation College Students at an Appalachian University. *Journal of Appalachian Studies*, 27(2), 202–219. <https://doi.org/10.5406/jappastud.27.2.0202>
- Peterson, N. D., & Freidus, A. (2020). More than money: Barriers to food security on a college campus. *Culture, Agriculture, Food and Environment*, 42(2), 125–137. <https://doi.org/10.1111/CUAG.12252>
- Rabbitt, M. P., Hales, L. J., Reed-Jones, M., & Coleman-Jensen, A. (2023). *Household food security in the United States in 2022* (Report No. ERR-325). U.S. Department of Agriculture Economic Research Service. <https://doi.org/10.32747/2023.8134351.ers>
- Sharaievska, I., West, S., & Weddell, M. (2011). The privilege of healthy eating: A qualitative study exploring the local food choices of low-income families from Appalachia. *Journal of Health Disparities Research and Practice*, 11(3), Article 10. <https://digitalscholarship.unlv.edu/jhdrp/vol11/iss3/10>
- Stull, L. G., McGrew, J. H., Salyers, M. P., & Ashburn-Nardo, L. (2013). Implicit and explicit stigma of mental illness: Attitudes in an evidence-based practice. *Journal of Nervous and Mental Disease*, 201(12), 1072–1079. <https://doi.org/10.1097/NMD.0000000000000056>
- Tesfaw, G., Kibru, B., & Ayano, G. (2020). Prevalence and factors associated with higher levels of perceived stigma among people with schizophrenia Addis Ababa, Ethiopia. *International Journal of Mental Health Systems*, 14(1), Article 19. <https://doi.org/10.1186/s13033-020-00348-9>
- Vogel, D. L., Wade, N. G., & Haake, S. (2006). Measuring the self-stigma associated with seeking psychological help. *Journal of Counseling Psychology*, 53(3), 325–337. <https://doi.org/10.1037/0022-0167.53.3.325>
- Ward, C., Maruyama, G., Jessen, L., Song, W., Kratchmer, L., & Zeaske, R. (2018). Attitudes toward food insecurity in the United States. *Analyses of Social Issues and Public Policy*, 18(1), 400–424. <https://doi.org/10.1111/asap.12168>
- Wight, V., Kaushal, N., Waldfogel, J., & Garfinkel, I. (2014). Understanding the link between poverty and food insecurity among children: Does the definition of poverty matter? *Journal of Children and Poverty*, 20(1), 1–20. <https://doi.org/10.1080/10796126.2014.891973>

Are we meeting student needs? Developing a measure for college food pantry satisfaction

Kelsey D. Gardiner ^{a *} and Susan P. Harvey ^b

University of Kansas, Lawrence

Submitted November 10, 2023 / Revised January 12, March 4, and April 22, 2024 /
Accepted April 22, 2024 / Published online June 12, 2024

Citation: Gardiner, K. D., & Harvey, S. P. (2024). Are we meeting student needs? Developing a measure for college food pantry satisfaction. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 165–176. <https://doi.org/10.5304/jafscd.2024.133.027>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

Food insecurity is a growing concern in higher education. As universities adapt to meet the growing need of college students to access adequate amounts of healthy food, food pantries are among the most widely implemented food security supports. However, little has been done to measure whether this resource is meeting the needs of students. This study aims to fill gaps in the existing literature by using a cross-sectional design to develop a novel satisfaction survey and measure

overall satisfaction, use of resources, and additional support needs of students utilizing an on-campus food pantry. A convenience sample of 100 student on-campus pantry users participated. The survey consisted of a ten-item, investigator-designed satisfaction scale, which demonstrated a high measure of reliability (Cronbach's alpha = .849). Based on a five-point Likert scale (1 = strongly

^{a *} *Corresponding author:* Kelsey D. Gardiner, PhD, Graduate Student, Department Health Sport and Exercise Science, University of Kansas, Lawrence.

Dr. Gardiner is now Assistant Professor, School of Nursing and Health Studies, University of Missouri Kansas City; 2464 Charlotte Street; Kansas City, MO 64108 USA;
 <https://orcid.org/0000-0002-7687-7752>;
kgardiner@umkc.edu

^b Susan P. Harvey, PhD, Associate Professor, Health Sport and Exercise Science, University of Kansas, Lawrence, Kansas, USA;  <https://orcid.org/0000-0001-8103-6731>;
suharvey@ku.edu

Author Note

This project was the doctoral dissertation of Kelsey Gardiner (previously Kelsey Fortin; Fortin, 2022). Dr. Harvey was the faculty advisor to Kelsey Gardiner as a graduate student at the time of this project.

Funding Disclosure

This project received funding through a summer research scholarship from the Office of Graduate Studies at the University of Kansas.

Statement of Ethical Conduct

This study was approved by the University of Kansas Human Subjects Committee.

Disclosures

The authors have no conflicts of interest to disclose.

disagree to 5 = strongly agree), overall student satisfaction was high [$\bar{x}$ = 3.8]. Students reported the highest level of satisfaction with friendliness of staff volunteers [$\bar{x}$ = 4.55], location of the pantry [$\bar{x}$ = 4.26], and availability of shelf stable food items [$\bar{x}$ = 4.11]. Students reported lowest satisfaction with the selection of fresh fruits [$\bar{x}$ = 3.18] and fresh vegetables [$\bar{x}$ = 3.21], and the selection of dairy products [$\bar{x}$ = 3.59]. Most indicated a need for additional support from the pantry site, including school supplies (n = 48), hygiene and toiletry supplies (n = 47), cooking utensils (n = 47), information on other emergency resources (n = 28), financial resources (n = 25), and recipes (n = 25). More research is needed to better understand pantry-site satisfaction, identify potential additional desired supports, and the impacts of on-campus food pantries. This study is the first of a multiphase project that will continue to explore on-campus food pantries as an intervention strategy, the student experience of utilizing food pantries, and their potential impact on students.

Keywords

food insecurity, college students, food pantries, student supports, college student basic needs

Introduction

Roughly 11% of U.S. households were food insecure in 2020 (Coleman-Jensen et al., 2021). According to the U.S. Department of Agriculture Economic Research Service, “Food insecurity is the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” (USDA ERS, 2023a). The USDA has a set of validated survey measures to assess food security status, ranging from high food security (no access or nutritional issues related to food) to very low (disrupted eating patterns and reduced food intake due to lack of resources). Assessment can be done with three modules: the Household Food Security Survey Module (18 items), the Adult Food Security Survey Module (ten items), and the Six-Item Short Form Food Security Survey Module (USDA ERS, 2023a; 2023b).

Rates of food insecurity among college stu-

dents have shown varying results in the literature. A recent scoping review of 51 studies found that the percentage ranged between 13% and 50%, depending on the study and which instrument was used (USDA 6-item vs. USDA 18-item), with an average food insecurity rate of 41% (Nikolaus et al., 2020). Some recent critiques have noted a high prevalence among college students, especially when compared to the general population, and have called for a validated measure for college students specifically (Ellison et al., 2021). Though further research is needed regarding measuring student food insecurity prevalence, there is still a case to be made for intervention among this population.

Charitable food networks play an important role in the food system and have the potential to be a change agent, acting as an intervention space for food insecurity and diet quality (Schwartz & Caspi, 2023). Food distribution sites such as food pantries provide food to those in need at no cost, through organizations that are stand-alone meal distribution sites (e.g., food pantries) or established community organizations such as schools, churches, or shelters (CDC, 2020). Historically, food distribution sites have served the important role in the food system of providing a safety net within the social service sector, often serving individuals considered to be the working poor that fall between the cracks of the social service safety net. These individuals earn too much to qualify for federal food assistance, but not enough to pay for basic needs like food (Oxfam America & Feeding America, 2014). They experience healthy food access issues based on proximity to food, and availability and affordability of healthy food (Cooksey-Stowers et al., 2017; C. King, 2017).

College students often fall into this category. as they face unique factors that place them at greater risk of food insecurity than the general population, including increased financial strain and limited buying power (e.g. limited disposable income, lack of budgeting skill) (Camelo & Elliott, 2019; Nikolaus et al., 2019; Owens et al., 2020). Changing college student demographics compounded by rising tuition costs, decreases in Pell Grant funding, and the COVID-19 pandemic has created new challenges in acquiring basic needs (Freudenberg et al., 2019; Henry, 2017; The Hope Center for College

Community and Justice, 2021). College students may also inherently be at risk for experiencing greater inequities associated with food access due to their specific position in society (Darby et al., 2023), transitioning from adolescence to adulthood with frequently more responsibility for the first time for basic needs (e.g. food, shelter), financial independence, and self-management (budgeting, cooking). Financial instability and increased population-specific eligibility criteria for federal food assistance programs, e.g. the Supplemental Nutrition Assistance Program (SNAP), are contributing factors to these inequities in the student population. Traditional college student demographics have changed, with greater numbers of enrolled students identifying as low-income, first-generation, and financially independent from their parents (Johnson & Johnson, 2019).

The U.S. Government Accountability Office reported in 2018 that 7.3 million college students had household income levels qualifying them for SNAP benefits, but of them, only 31% were actually enrolled in the program (Freudenberg et al., 2019; Laska et al., 2021). This low rate can be associated with a strict and cumbersome SNAP application process that creates barriers for college students, which include lack of knowledge about SNAP and how to apply, administrative barriers (e.g., long wait times), and meeting the work requirement (20 hours per week). There also remains social stigma connected to applying for and using SNAP benefits among college students, emerging from factors such as feelings of individual failure, perceptions of who should be using social welfare programs (stereotyping), and shame/embarrassment about utilizing assistance programs (Dickinson, 2022; Freudenberg et al., 2019; Laska et al., 2021; Owens et al., 2020). This low rate demonstrates the importance of advocating for policy changes that reduce barriers to accessing federally funded nutrition programs and providing on-campus resources targeting students facing food insecurity, such as food pantries.

Universities are beginning to recognize food insecurity as an issue among their students. There has been an increase in offering potential interventions strategies like on-campus food pantries. The College and University Food Bank Alliance

(CUFBA) reported a growth from 450 campus food pantries in 2017 to over 900 in 2019 (Henry, 2017; Laska et al., 2021). Other solutions include Swipe Out Hunger, a nonprofit program that allows students to donate extra meals from their meal plans to students in need; meal voucher programs that resemble the free and reduced-cost lunches in public schools; improving dissemination of SNAP information and petitioning for SNAP to expand student eligibility; farmers market-based food boxes; and campus garden programs (Freudenberg et al., 2019; Henry, 2017; Laska et al., 2021).

Although a variety of program offerings is becoming available to address student food insecurity, there is limited information for measuring effectiveness of current program offerings (Davis, et al., 2020). Scholars have identified opportunities for researchers and practitioners to develop targeted interventions and measurements for evidence-based programming to address campus food insecurity (Davis et al., 2020). Recent efforts have aimed to start the process through a case study evaluation of student-led initiatives addressing food waste and food insecurity (OoNorasak et al., 2022), and a community-based participatory research approach (CBPR) in resource identification and through asset mapping (Shisler et al., 2023). However, there remains a gap in the literature specific to the use, satisfaction, and additional support needs among on-campus student pantry users. Considering the growth in food pantries as an intervention strategy, this study will begin to explore this gap by understanding more about on-campus food pantries as a food insecurity resource from the perspective of students who utilize these services. This study also aims to contribute to the larger body of research to support institutions in measuring on-campus food pantry satisfaction and additional areas of need for student support at pantry sites.

Methods

Because of both the lack of evaluation data related to the experience of student on-campus pantry users and of tools to measure how on-campus food pantries are meeting the needs of students, the purpose of this study was to develop a reliable pantry satisfaction scale and measure the overall satisfac-

tion, use of resources, and additional support needs of pantry users. Three research questions were assessed: What is the reliability of a ten-item investigator-designed on-campus food pantry instrument to measure student satisfaction? (2) What is the overall satisfaction of students with pantry services? (3) What types of additional supports are needed?

The study used a quantitative cross-sectional survey study. Participants were college students at the University of Kansas (KU), a large mid-western university, that were current and returning users of the on-site campus food pantry. This excludes pantry users visiting for the first time. All participants were required to have the ability to read and write English. The study used convenience sampling to recruit participants through on-site personal appeals. During the required pantry client check-in process, pantry staff or a member of the research team recruited clients directly to participate in the study. Oral-informed consent was obtained prior to data collection to ensure all participants were willing to complete the survey, informed of the purpose and potential risks (e.g. psychological discomfort with survey questions) of the study, were returning pantry users, and had not already completed a survey. Paper surveys were completed on-site, in a private room adjacent to the pantry, and placed in a secure lock box to maintain confidentiality. Participation in the study was incentivized by giving two additional pantry points to be used during their pantry shopping visit.

Measures

Data collection was conducted using a novel investigator-designed survey instrument, developed using the current study's research questions, a comprehensive literature review, and the consultation of a team of academic and professional staff working on issues relating to college food insecurity. Instrument development used a participatory evaluation approach, with key stakeholder input that included the on-campus food pantry staff and on-campus food insecurity committee to contribute to instrument development and data collection procedures (Fawcett et al., 2003). The instrument consisted of ten items. They represent constructs in on-campus food pantry use that are interrelated

and when grouped together create an overall measure for pantry satisfaction. The items were presented as statements to the participants and they were asked to rate their level of agreement on a five-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree). Additional information about the items, constructs, and associated scholarly sources is in Table 1. The five-point Likert scale is the basis for statistical analyses, both in this study (measuring mean scores and an overall satisfaction score—composite score) and for use in future studies (e.g., comparison of satisfaction between pantries, relationships between satisfaction, and other variables).

Instrument Development

The on-campus Food Insecurity Committee identified evaluation of on-campus food pantry efforts as a need and a priority area. The Assessment & Evaluation Subcommittee was charged with the development of an instrument and the dissemination of the survey. The Subcommittee is led by a faculty member in the Department of Health, Sport and Exercise Sciences and included members of various department stakeholders: the Financial Aid Office, Center for Service Learning (CSL), The Campus Cupboard (on-campus food pantry), the Center for Community Outreach (CCO), and student representatives. The Subcommittee met four times in the Fall 2020 and Spring 2021 semesters for instrument development and edits. Following the finalized draft submitted from the Subcommittee, the director of the on-campus food pantry reviewed the instrument and dissemination protocol for any additional feedback.

The final survey consisted of 30 questions, organized into three sections:

- **Food Pantry Operations:** This section asked students to provide feedback about current pantry operations, including location, hours of operation, the shopping point system, pantry volunteer experience, food selection and item availability, pantry visit frequency, and how they learned about the on-campus pantry. One open-ended question requesting further feedback on pantry improve-

ments was included. This section was used as a scale to measure overall pantry satisfaction.

- **Current Food Habits and Additional Resources:** This section asked students to reflect on current food habits, such as how long their groceries last, if they know how to prepare a variety of meals, if they use federally funded food safety net programs, and if they have dietary restrictions. Students were asked to indicate what additional resources might be beneficial (e.g., recipes, information on finances, hygiene products, school supplies, housing assistance information, etc.).
- **Demographic Information:** This section included general demographic questions such as gender and race, with added college demographic questions such as residency status (in-state, out-of-state, international),

year/position status (e.g., graduate student, staff, faculty), and residence status (on-campus, off-campus with roommates, etc.).

As this is a survey specially designed for the purpose of this study, no previous validity or reliability properties of the survey existed. However, the development of the instrument does support a high degree of internal validity through the participation of experts and engaged community stakeholders, and a comprehensive literature review. The results indicate a high degree of scale reliability when measured in the current study. The overall satisfaction measures were guided by best practices in health, social, and behavioral research scale development as an overarching framework (Boateng et al., 2018), while also integrating elements of participatory evaluation through stakeholder engagement (Fawcett et al., 2003), and literature examining student food access issues. (Table 1).

Table 1. Ten-item Satisfaction Scale Instrumentation Conception

Scale Item	Construct	Citation
1. The Campus Cupboard is located at a convenient location.	Resource accessibility	Aragon, Armstrong Shultz, Bush-Kaufman, & Barale, 2019; El Zein, Mathews, House, & Shelnutt, 2018; Fortin, Harvey, & Swearingen White, 2020; J. A. King, 2017
2. The CC's hours are at convenient times for me.	Resource accessibility	Aragon et al., 2019; El Zein et al., 2018; Fortin et al., 2020; Ginsburg et al., 2019; J. A. King, 2017
3. The point system allows me to get enough food to sustain me through the week.	Program structure	Aragon et al., 2019; El Zein et al., 2018; Fortin et al., 2020; Ginsburg et al., 2019; J. A. King, 2017
4. The staff and volunteers at the CC are friendly and helpful to me.	Program structure	Aragon et al., 2019; El Zein et al., 2018; Fortin et al., 2020; Ginsburg et al., 2019; J. A. King, 2017
5. I am generally satisfied with the fresh fruit selections the CC has to offer.	Food availability & Acceptability	Aragon et al., 2019; Caspi et al., 2021; Ginsburg et al., 2019; Kihlstrom, Long, & Himmelgreen, 2019
6. I am generally satisfied with the fresh vegetable selections the CC has to offer.	Food availability & Acceptability	Aragon et al., 2019; Caspi et al., 2021; Ginsburg et al., 2019; Kihlstrom et al., 2019
7. I am generally satisfied with the dairy selection (milk, cheese, yogurt) the CC has to offer.	Food availability & Acceptability	Aragon et al., 2019; Caspi et al., 2021; Ginsburg et al., 2019
8. I am generally satisfied with the protein selections (meat, eggs, nuts, beans) the CC has to offer.	Food availability & Acceptability	Aragon et al., 2019; Caspi et al., 2021; Ginsburg et al., 2019
9. I am generally satisfied with the shelf stable food items (canned goods, rice, pasta, spices, flour, sugar, oils) the CC has to offer.	Food availability & Acceptability	Aragon et al., 2019; Caspi et al., 2021; Ginsburg et al., 2019
10. I am generally satisfied with the variety of food that is available at CC.	Food availability & Acceptability	Aragon et al., 2019; Caspi et al., 2021; Ginsburg et al., 2019; Kihlstrom et al., 2019

Table 1 outlines the ten items, including a rationale for the item and applicable citations. The rationale consisted of three major categories: (a) Resource Accessibility: if students are satisfied with pantry accessibility (e.g., hours, location); (b) Program Structure: if students are satisfied with how the pantry operations are delivered; (c) Food Availability & Acceptability: if students are satisfied with the types of food offered.

Analysis of Data

Analysis was conducted based on the three established study research questions. For the first question, Cronbach's alpha measured scale reliability of the pantry satisfaction scale. This measure provides the amount of internal consistency between the ten items established in the instrument, showing how closely related they are as a group of that measures overall pantry satisfaction. Cronbach's alpha is represented as a score between 0 and 1. Acceptable scores for high reliability range from 0.70 to 0.95; higher scores, closer to 1, demonstrate better inter-relatedness between the items (Tavakol & Dennick, 2011). For the second research question, responses and mean scores were reported as an overall satisfaction score. For the third research question, descriptive statistics were used to report frequency data of participant responses.

Results

We analyzed the data using the procedures above and provide descriptive statistics.

Sample Population

The study included 100 on-campus food pantry student users. Roughly half identified as international students (54%) and the majority reported undergraduate student status (63%). Half reported living off-campus in an apartment or house with roommates, with one student reporting irregular/unstable housing conditions. More than half of the participants identified as female (59%), 4% identified as nonbinary, and 12% identified as bisexual or gay. Students identifying as Asian/Pacific Islander (36%) had the highest level of participation, followed closely by Hispanic or Latinx (25%), white (23%), and Black or African American (17%). Table 2 presents the full demographic data.

Table 2. Participant Demographic Characteristics

Demographic Category	<i>n</i>	%
Residency Status		
In-State Student	32	32%
Out-of-State Student	14	14%
International Student	54	54%
Class Status		
First-Year	7	7%
Second-Year	22	22%
Third-Year	12	12%
Fourth-Year	20	20%
Fifth-Year	1	1%
Masters	37	37%
Living Situation		
On-campus residence hall	5	5%
On-campus scholarship hall	1	1%
On-campus apartment	8	8%
Off-campus apartment or house (alone)	23	23%
Off-campus apartment or house (with roommates)	49	49%
Off-campus apartment or house (with spouse/partner and/or children)	9	9%
With parent or family members outside of college town	1	1%
No Stable/Regular Housing	1	1%
Gender		
Female	59	59%
Male	36	36%
Non-binary	4	4%
Other	1	1%
Sexual Orientation		
Heterosexual	74	74%
Bisexual	9	9%
Homosexual	3	3%
Prefer not to answer	11	11%
Race		
Asian/Pacific Islander	36	36%
Black/African American	17	17%
Hispanic/Latinx	25	25%
Native American/Indian American	3	3%
White	23	23%
Other: Eastern European, Ethiopian, Human Being, North African	5	5%

Findings

For the first research question, the results demonstrate good reliability or internal consistency between all ten items with a Cronbach's alpha of 0.849. This indicates that the pantry satisfaction scale items are strongly related items as a group measure.

The second research question aimed to evaluate the overall satisfaction of students with services received at the food pantry, using a five-point Likert scale. Students reported being generally satisfied with services received at the pantry, with an overall mean score of 3.8 out of 5.0 using the ten-item satisfaction scale. A summary of individual scale items including frequency of student responses and mean scores is provided in Table 3.

Students reported the highest level of satisfaction with the friendliness of staff volunteers [$\bar{x} = 4.55$], the location of the pantry [$\bar{x} = 4.26$], and shelf-stable food items [$\bar{x} = 4.11$]. Students reported lowest overall satisfactions with the selection of fresh fruits [$\bar{x} = 3.18$] and fresh vegetables [$\bar{x} = 3.21$] and the selection of dairy products [$\bar{x} = 3.59$].

The third research question asked students to identify additional supports needed to supplement the food pantry. Table 4 summarizes additional support needs reported by students. The most needed included school supplies (48%), hygiene and toiletry supplies (47%), cooking utensils (47%), information on other emergency resources (28%), financial resources (25%), and recipes (25%).

Table 3. Student Response Summary: Ten-item Overall Pantry Satisfaction Scale

Scale	Item (N = 100)	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	($\bar{x} = 3.8162$)
1.	The Campus Cupboard is located at a convenient location.	3% (3)	3% (3)	8% (8)	37% (37)	49% (49)	4.26
2.	The Campus Cupboard's hours are at convenient times for me.	1% (1)	4% (4)	7% (7)	60% (60)	28% (28)	4.10
3.	The point system allows me to get enough food to sustain me through the week.	3% (3)	7% (7)	24% (24)	46% (46)	20% (20)	3.73
4.	The staff and volunteers at the Cupboard are friendly and helpful to me.	1% (1)	0% (0)	4% (4)	33% (33)	62% (62)	4.55
5.	I am generally satisfied with the fresh fruit selections the campus Cupboard has to offer.	4% (4)	28% (28)	26% (26)	30% (30)	12% (12)	3.18
6.	I am generally satisfied with the fresh vegetable selections the Campus Cupboard has to offer.	4% (4)	26% (26)	25% (25)	35% (35)	10% (10)	3.21
7.	I am generally satisfied with the dairy selection (milk, cheese, yogurt) the Campus cupboard has to offer.	5% (5)	14% (14)	19% (19)	41% (41)	21% (21)	3.59
8.	I am generally satisfied with the protein selections (meat, eggs, nuts, beans) the campus Cupboard has to offer.	3% (3)	10% (10)	14% (14)	56% (56)	17% (17)	3.74
9.	I am generally satisfied with the shelf stable food items (canned goods, rice, pasta, spices, flour, sugar, oils) the Campus Cupboard has to offer.	2% (2)	3% (3)	10% (10)	52% (52)	33% (33)	4.11
10.	I am generally satisfied with the variety of food that is available at Campus Cupboard.	2% (2)	12% (12)	21% (21)	46% (46)	19% (19)	3.68

* Note: The question prompt preceding each item on the scale stated: "Using the following rating scale, please indicate your level of agreement with each of the following statements."

Discussion

Food insecurity among college students is a growing public health issue ((GAO, 2018; Nikolaus et al., 2020). Changing student demographics compounded by rising tuition costs, decreases in Pell Grant funding, and the COVID-19 pandemic has created new challenges to fulfilling their basic needs (Freudenberg et al., 2019; Henry, 2017; The Hope Center for College Community and Justice, 2021). In response, universities have seen growth in on-campus food pantries as a support to assist students with food insecurity (Henry, 2017; Laska et al., 2021). Despite the growth observed, little research has been conducted evaluating if the support is meeting the needs of students. There is a renewed emphasis on scholarship focusing on college student food insecurity through call-to-action studies of existing and new equity-based, student-informed approaches to address student food insecurity (Budowle et al., 2023; Davis et al., 2020).

Though some studies have been done to measure barriers to pantry use, including stigma, lack of knowledge, and perceived insufficient need (Brito-Silva et al., 2022; El Zein et al., 2022; Idehai et al., 2024) they have aimed at understanding low use, rather than the actual experience of pantry student users. In addition, concepts around addressing food waste and resource identification to address food insecurity (OoNorasak et al., 2022; Shisler et al., 2023), and projections for changes in nutrients (Mitchell & Prescott, 2023), have also begun to explore food acquisition and nutritional quality of on-campus pantries, but still lack student perceptions of the pantry as a resource. A recent study did measure pantry satisfaction as a component of a comprehensive analysis of food pantry use, but did analyze the reliability of the developed measure (Mitchell & Prescott, 2022). This study is unique in its aims to measure and also scrutinize the reliability of an overall satisfaction scale. The development and use of this instrument to begin exploring how we are meeting the needs of student food pantry users is novel, and has implications for future research to evaluate on-

Table 4. Student Reported Additional Support Needs

Support Category (N = 100)	n	%
School supplies (e.g. notebooks, paper, pens, pencils)	48	48%
Hygiene and toiletry supplies	47	47%
Cooking utensils (e.g. pots, pans, utensils)	47	47%
Information on other emergency assistance programs	28	28%
Recipes	25	25%
financial resources	25	25%
Healthcare Resources	22	22%
General nutrition information	18	18%
Cooking classes	13	13%
Housing assistance information	10	10%
Pet food	9	9%
Diapers	6	6%
Baby formula	2	2%

campus food pantries. More research is needed regarding the experience of on-campus food pantry, if the support is meeting basic needs, and what additional supports might be needed.

The most needed supports reported by all students included school supplies (48%), hygiene and toiletry supplies (47%), cooking utensils (47%), information on other emergency resources ($n = 28$, 28%), financial resources (25%), and recipes (25%). Basic needs of college students such as rent, food, transportation, and books, are rarely covered by financial aid (Freudenberg et al., 2019; Henry, 2017), which along with their likelihood to experience complex social conditions such as housing insecurity and unemployment put them at increased risk of experiencing food insecurity (Freudenberg et al., 2019; Gaines et al., 2014). College students may not qualify for non-educational federal and state assistance programs due to circumstances such as dependent status and employment, or may experience barriers in accessing resources due to lack of awareness, social stigma, and administrative barriers (Freudenberg et al., 2019; Laska et al., 2021; Owens et al., 2020). These, combined with increased financial constraints, highlight the importance of basic need supports. The findings from the current study support the literature highlighting that college students have basic needs beyond foods that universities may be in a position to address, such as school supplies, cooking supports, and financial and emergency assistance.

Based on these findings, the need for supports outside of food within an on-campus food pantry setting supports a more holistic approach to addressing basic needs.

Though not explored in this study, it is worth noting that a large majority of students lived off-campus (94%), over one-third (37%) identified as graduate students, and 16% as members of the LGBTQIA+ community. These groups have been identified in the literature as high-risk for food insecurity (Henry et al., 2023; Riddle et al., 2020; Soldavini et al., 2019; Willis, 2019). Due to their identification as pantry users in this study, additional research exploring these groups and their unique experience with on-campus food pantries warrants attention from research and higher education communities.

Limitations

The present study is not without its limitations. There are limitations in generalizability as this study was conducted with only one sample of 100 students at a large Midwestern university. Despite a good level of internal reliability having been, the tool hasn't been tested outside of this study. Participant self-reporting may introduce potential sources of survey error. It should be acknowledged that while the students did report lower levels of satisfaction with the fresh fruit and vegetable selection, the times of year that the survey responses were collected were outside of the Midwest growing season, limiting availability of fresh, local, produce in the charitable food system and potentially impacting participant responses.

Conclusions

Food insecurity among college students and on-campus interventions to address and support basic needs among a diversifying student population is a growing concern within the higher education community. This study aimed to explore these concepts further by measuring the overall satisfaction, addi-

tional support needs, and the development of a ten-item on-campus food pantry satisfaction scale. Results of the study highlight the establishment of a reliable scale that can be used by other institutions to measure overall student pantry services. Overall satisfaction was high among student users, with the lowest satisfaction rate for fruit and vegetable availability, indicating a desire for fresh produce at the pantry. This may be particularly important considering the relationship between fruit and vegetable consumption, diet quality, and chronic disease. Beyond this, the importance of food pantries filling a social service gap and food system need within the college student demographic was highlighted through students reporting the desire for additional support needs offered at the pantry, such as financial resources and information on other emergency resources. Due to the high number of students identifying with certain demographic markers who are on-campus pantry users, exploring differences in food insecurity interventions and support needs based on demographic characteristics (e.g., residency status, graduate student status, LGBTQIA+, etc.) warrants research attention to better address high-risk communities. More research is needed not only to measure satisfaction, but additional supports and impacts of on-campus food pantries. This study is the first of a multiphase project that will continue to explore on-campus food pantries as an intervention strategy, satisfaction and support needs based on and comparing demographic subgroups, the student experience utilizing food pantries, and their potential impact on students.

Acknowledgments

The authors would like to thank the Office of Graduate Studies at the University of Kansas for funding this project work and the group of faculty mentors that served on the dissertation committee to advise this project.

References

- Aragon, M. C., Armstrong Shultz, J., Bush-Kaufman, A., & Barale, K. (2019). Low-income respondents' perceptions about food retail and food pantry shopping environments. *Journal of Hunger & Environmental Nutrition*, 14(1–2), 110–127. <https://doi.org/10.1080/19320248.2018.1434097>

- Babic, M., Dys, T. D., Hake, M., O'Leary, M., Waxman, E., & Yarrow, A. (2014). *From paycheck to pantry: Hunger in working America*. Oxfam America, Feeding America.
<https://www.feedingamerica.org/sites/default/files/research/hunger-in-working-america/from-paycheck-to-pantry.pdf>
- Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quinonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health*, 6, Article 149. <https://doi.org/10.3389/fpubh.2018.00149>
- Brito-Silva, F. K., Wang, W., Moore, C. E., Warren, C., Miketinas, D. C., Tucker, W. J., & Davis, K. E. (2022). College campus food pantry program evaluation: What barriers do students face to access on-campus food pantries? *Nutrients*, 14(14), Article 2807. <https://doi.org/10.3390/nu14142807>
- Budowle, R., Porter, C., & McLennan, C. (2023). Justice and equity approaches to college and university student food (in)security: Introduction to the special section. *Journal of Agriculture, Food Systems, and Community Development*, 12(2), 3–9. <https://doi.org/10.5304/jafscd.2023.122.013>
- Camelo, K., & Elliott, M. (2019). Food insecurity and academic achievement among college students at a public university in the United States. *Journal of College Student Development*, 60(3), 307–318. <https://doi.org/10.1353/csd.2019.0028>
- Caspi, C. E., Davey, C., Barsness, C. B., Gordon, N., Bohen, L., Canterbury, M., Peterson, H., & Pratt, R. (2021). Needs and preferences among food pantry clients. *Preventing Chronic Disease*, 18, Article 200531.
<https://doi.org/10.5888/pcd18.200531>
- Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2021). *Household food security in the United States in 2020* (ERR-298). U.S. Department of Agriculture Economic Research Service.
<https://www.ers.usda.gov/webdocs/publications/102076/err-298.pdf?v=8615>
- Cooksey-Stowers, K., Schwartz, M. B., & Brownell, K. D. (2017). Food swamps predict obesity rates better than food deserts in the United States. *International Journal of Environmental Research and Public Health*, 14(11), Article 1366.
<https://www.mdpi.com/1660-4601/14/11/1366>
- Darby, K., Hemmer, L., Holt, R., Kempton, T., del Rosario, M., Stubblefield, J., & Webster, G. (2023). From food access to food sovereignty: Striving to meet university student needs. *Journal of Agriculture, Food Systems, and Community Development*, 12(2), 97–117. <https://doi.org/10.5304/jafscd.2023.122.020>
- Davis, H., Sisson, S. B., & Clifton, S. (2020). A call for evidence to support food security interventions on college campuses. *Journal of American College Health*, 69(6), 693–695. <https://doi.org/10.1080/07448481.2019.1705829>
- Dickinson, M. (2022). SNAP, campus food insecurity, and the politics of deservingness. *Agriculture and Human Values*, 39(2), 605–616. <https://doi.org/10.1007/s10460-021-10273-3>
- El Zein, A., Mathews, A. E., House, L., & Shelnutt, K. P. (2018). Why are hungry college students not seeking help? Predictors of and barriers to using an on-campus food pantry. *Nutrients*, 10(9), Article 1163.
<https://doi.org/10.3390/nu10091163>
- El Zein, A., Vilaro, M. J., Shelnutt, K. P., Walsh-Childers, K., & Mathews, A. E. (2022). Obstacles to university food pantry use and student-suggested solutions: A qualitative study. *PloS ONE*, 17(5), e0267341.
<https://doi.org/10.1371/journal.pone.0267341>
- Ellison, B., Bruening, M., Hruschka, D. J., Nikolaus, C. J., van Woerden, I., Rabbitt, M. P., & Nickols-Richardson, S. M. (2021). Viewpoint: Food insecurity among college students: A case for consistent and comparable measurement. *Food Policy*, 101, Article 102031. <https://doi.org/10.1016/j.foodpol.2021.102031>
- Fawcett, S. B., Boothroyd, R., Schultz, J. A., Francisco, V. T., Carson, V., & Bremby, R. (2003). Building capacity for participatory evaluation within community initiatives. *Journal of Prevention & Intervention in the Community*, 26(2), 21–36.
https://doi.org/10.1300/J1005v26n02_03
- Fortin, K. (2022). *Campus Cupboard: Evaluating an on-campus food pantry in higher education* [Doctoral dissertation, University of Kansas, Lawrence]. ProQuest Dissertations Publishing.
<https://www.proquest.com/openview/811236ed9dab4ca10be6107d974cc8be/1.pdf>

- Fortin, K., Harvey, S., & Swearingen White, S. (2020). Hidden hunger: Understanding the complexity of food insecurity among college students. *Journal of the American College of Nutrition*, 40(3), 242–252.
<https://doi.org/10.1080/07315724.2020.1754304>
- Freundenberg, N., Goldrick-Rab, S., & Poppendieck, J. (2019). College students and SNAP: The new face of food insecurity in the United States. *American Journal of Public Health*, 109(12), 1652–1658.
<https://doi.org/10.2105/AJPH.2019.305332>
- Gaines, A., Robb, C. A., Knol, L. L., & Sickler, S. (2014). Examining the role of financial factors, resources and skills in predicting food security status among college students. *International Journal of Consumer Studies*, 38(4), 374–384.
<https://doi.org/10.1111/ijcs.12110>
- Ginsburg, Z. A., Bryan, A. D., Rubinstein, E. B., Frankel, H. J., Maroko, A. R., Schechter, C. B., Cooksey Stowers, K., & Lucan, S. C. (2019). Unreliable and difficult-to-access food for those in need: A qualitative and quantitative study of urban food pantries. *Journal of Community Health*, 44(1), 16–31. <https://doi.org/10.1007/s10900-018-0549-2>
- Henry, L. (2017). Understanding food insecurity among college students: Experience, motivation, and local solutions. *Annals of Anthropological Practice*, 41(1), 6–19. <https://doi.org/10.1111/napa.12108>
- Henry, L., Ellis, D., Ellis, S., Fleck, M., Migdol, S., Rodriguez, N., Delgado, V., Esmonde, S., Ishraq Islam, M., Sun, W., & Tajallipour, P. (2023). Experiences of food insecurity among LGBTQIA+ college students in North Texas: Meaning, experiences, and recommendations for inclusive solutions. *Journal of Agriculture, Food Systems, and Community Development*, 12(2), 119–134. <https://doi.org/10.5304/jafscd.2023.122.021>
- The Hope Center for College, The, Community, and Justice at Temple University. (2021). *#Realcollege 2021: Basic needs insecurity during the ongoing pandemic*.
https://hope.temple.edu/sites/hope/files/media/document/RC2020_InstRpt_Temple%20University_0.pdf
- Idehai, O. V., Mbaya, P., Chung, T., & Bhurosy, T. (2024). A systematic review of factors associated with student use of campus food pantries: Implications for addressing barriers and facilitating use. *BMC Public Health*, 24(1), Article 97.
<https://doi.org/10.1186/s12889-023-17583-7>
- Johnson, D. M. (2019). *The uncertain future of American public higher education: Student-centered strategies for sustainability*. Springer.
- Kihlstrom, L., Long, A., & Himmelgreen, D. (2019). Barriers and facilitators to the consumption of fresh produce among food pantry clients. *Journal of Hunger & Environmental Nutrition*, 14(1–2), 168–182.
<https://doi.org/10.1080/19320248.2018.1512923>
- King, C. (2017). The food environment and social determinants of food insufficiency and diet quality in rural households. In A. B. Hoflund, J. C. Jones, & M. C. Pautz (Eds.), *The intersection of food and public health: Current policy challenges and solutions* (pp. 55–74). Routledge.
- King, J. A. (2017). *Food insecurity among college students—Exploring the predictors of food assistance resource use* [Dissertation, Kent State University]. OhioLINK. http://rave.ohiolink.edu/etdc/view?acc_num=kent1492466215893925
- Laska, M. N., Fleischhacker, S., Petsoulis, C., Bruening, M., & Stebleton, M. J. (2021). Food insecurity among college students: An analysis of US state legislation through 2020. *Journal of Nutrition Education and Behavior*, 53(3), 261–266.
<https://doi.org/10.1016/j.jneb.2020.11.010>
- Mitchell, A., & Prescott, M. P. (2022). The role of campus food pantries in the food security safety net: On-going or emergency use at a Midwest campus pantry. *Nutrients*, 14(22), Article 4876. <https://doi.org/10.3390/nu14224876>
- Mitchell, A. I., & Prescott, M. P. (2023). Evaluating a campus food pantry's potential impact on nutrition security using the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework. *Current Developments in Nutrition*, 7(9), Article 101984. <https://doi.org/10.1016/j.cdnut.2023.101984>
- Nikolaus, C. J., An, R., Ellison, B., & Nickols-Richardson, S. M. (2020). Food insecurity among college students in the United States: A scoping review. *Advances in Nutrition*, 11(2), 327–348. <https://doi.org/10.1093/advances/nmz111>
- Nikolaus, C. J., Ellison, B., & Nickols-Richardson, S. M. (2019). Are estimates of food insecurity among college students accurate? Comparison of assessment protocols. *PloS ONE*, 14(4), e0215161.
<https://doi.org/10.1371/journal.pone.0215161>

- OoNorasak, K., Barr, M. L., Pennell, M., Hinton, J., Garner, J., Kerber, C., Ritter, C., Dixon, L., Rohde, C., & Stephenson, T. J. (2022). Evaluation of a sustainable student-led initiative on a college campus addressing food waste and food insecurity. *Journal of Agriculture, Food Systems, and Community Development*, 11(4), 223–237. <https://doi.org/10.5304/jafscd.2022.114.014>
- Owens, M. R., Brito-Silva, F., Kirkland, T., Moore, C. E., Davis, K. E., Patterson, M. A., Miketinas, D. C., & Tucker, W. J. (2020). Prevalence and social determinants of food insecurity among college students during the COVID-19 pandemic. *Nutrients*, 12(9), Article 2515. <https://doi.org/10.3390/nu12092515>
- Riddle, E. S., Niles, M. T., & Nickerson, A. (2020). Prevalence and factors associated with food insecurity across an entire campus population. *PloS ONE*, 15(8), e0237637. <https://doi.org/10.1371/journal.pone.0237637>
- Schwartz, M. B., & Caspi, C. E. (2023). The charitable food system as a change agent. *Frontiers in Public Health*, 11, Article 1156501. <https://doi.org/10.3389/fpubh.2023.1156501>
- Shisler, R., Cordero Ocegüera, E., Hardison-Moody, A., & Bowen, S. (2023). Addressing and preventing food and housing insecurity among college students: An asset-based approach. *Journal of Agriculture, Food Systems, and Community Development*, 12(2), 135–153. <https://doi.org/10.5304/jafscd.2023.122.022>
- Soldavini, J., Berner, M., & Da Silva, J. (2019). Rates of and characteristics associated with food insecurity differ among undergraduate and graduate students at a large public university in the Southeast United States. *Preventive Medicine Reports*, 14, Article 100836. <https://doi.org/10.1016/j.pmedr.2019.100836>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- U.S. Centers for Disease Control and Prevention. (2020). *Food and food system resources*. CDC Nutrition. <https://www.cdc.gov/nutrition/resources-publications/food-and-food-system-resources-during-covid-19-pandemic.html>
- U.S. Department of Agriculture Economic Research Service [USDA ERS]. (2023a). *Measurement*. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement/>
- U.S. Department of Agriculture Economic Research Service. (2023b). *Survey tools*. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools/>
- U.S. Government Accountability Office. (2018). *Food insecurity: Better information could help eligible college students access federal food assistance benefits* (GAO-19-95). <https://www.gao.gov/assets/700/696254.pdf>
- Willis, D. E. (2019). Feeding the student body: Unequal food insecurity among college students. *American Journal of Health Education*, 50(3), 167–175. <https://doi.org/10.1080/19325037.2019.1590261>

Toward a justice approach to emergency food assistance and food waste: Exploring pantry–urban gardener partnerships in California’s Santa Clara County

Christopher M. Bacon,^{a*} Ava Gleicher,^b Emma McCurry,^c and Christopher McNeil^d
Santa Clara University

Submitted September 2, 2022 / Revised August 11, November 11, November 28, 2023, and February 16, 2024 /
Accepted February 19, 2024 / Published online April 25, 2024

Citation: Bacon, C. M., Gleicher, A., McCurry, E., & McNeil, C. (2024). Toward a justice approach to emergency food assistance and food waste: Exploring pantry–urban gardener partnerships in California’s Santa Clara County. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 177–198.
<https://doi.org/10.5304/jafscd.2024.133.017>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license

Abstract

The 60,000 food pantries in the United States are well known for charity-based emergency food assistance and edible food recovery, serving 53 million people in 2022 (Feeding America, 2023a). Thousands of urban gardens emphasize vegetable production and food justice, but lack strong con-

nections to food pantries. We explore how food pantries and urban gardens could partner to transform pantries into distribution sites that also become food justice education and organizing spaces. To assess this potential, we engaged in participatory action research with a leading social services provider that offers programs supporting both organized urban gardeners and a large urban food pantry in San Jose, California. We conducted and analyzed 21 interviews with food pantry volunteers and urban gardeners affiliated with the same

^{a*} *Corresponding author:* Christopher M. Bacon, Associate Professor of Environmental Studies, Department of Environmental Studies and Sciences, Santa Clara University; 500 El Camino Real; Santa Clara, CA 95053 USA; +1-408-551-3082;  <https://orcid.org/0000-0002-2534-6900>; cbacon@scu.edu

^b Ava Gleicher, Department of Environmental Studies and Sciences, Santa Clara University; 500 El Camino Real; Santa Clara, CA 95053 USA; agleicher2@fordham.edu

^c Emma McCurry, Department of Bioengineering, Santa Clara University; 500 El Camino Real; Santa Clara, CA 95053 USA; emmamadison417@gmail.com

^d Christopher McNeil, Center for Food Innovation and Entrepreneurship, Santa Clara University; 500 El Camino Real; Santa Clara, CA 95053 USA;  <https://orcid.org/0000-0002-9146-6601>; tofumcneil@gmail.com

Funding Disclosure

Thanks to the financial support from SCU’s Environmental Justice and Common Good Initiative, College of Arts and Sciences, Provost’s Office, and the Ignatian Center for Jesuit Education and to CalEPA’s Environmental Justice Small Grants program (Grant # G21-EJ-056) for supporting follow-up actions currently underway. Funding for the vermicomposting and training activities was also provided by the California Environmental Protection Agency’s Small Grants Program.

Author Note

This project was approved by Santa Clara University’s institutional review board (IRB.).

agency, and eight interviews with other urban gardeners and food pantry staff from external organizations. We found that while both food pantry volunteers and urban gardeners expressed concerns about increasing healthy food access and reducing food waste, pantry volunteers were often unfamiliar with food justice and uncomfortable talking about race and culturally rooted food preferences. These findings were similar with the informants from external organizations. To support urban gardener and food pantry volunteer collaboration, we developed a food justice approach to emergency food assistance and food waste management in which both groups co-create onsite vermicomposting infrastructure and partner with a university to design a training program focused on diversity, justice, and systemic change.

Keywords

food justice, food waste, food sovereignty, composting, urban gardening, urban agriculture, food pantry, emergency food assistance, climate change

Introduction

The U.S. industrialized food systems left approximately 34 million people food insecure in 2021, a number generated by measuring food security as a household-level economic and social condition of limited or uncertain access to adequate food (Coleman-Jensen et al., 2021; U.S. Department of Agriculture Economic Research Service, 2023). Food insecurity numbers would likely be higher based on our preferred, internationally accepted food security definition, from the 1996 World Food Summit, stating that it exists “when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” Economic, racial, and ethnic disparities exacerbate food injustices in the U.S., as low-income residents and communities of color, including Black, Latinx, and Native American communities, are more likely to be food insecure than wealthy and White residents. (Economic Research Service, 2023; Giraud et al., 2021).

Food waste is a problem not only in and of itself but also linked to food insecurity and related

injustices. More than a third of total agricultural production is wasted, a quarter of which is edible “surplus” food that is recoverable and could have been redistributed to help address hunger (ReFED, 2023). Furthermore, studies show that higher-income households produce more consumer food waste (Bräutigam et al., 2014; Yu & Jaenicke, 2020), most of which goes to landfills, accounting for 24% of the municipal solid waste stream in the U.S. (Krause et al., 2023, p. 13). Decomposing food waste emits methane, a potent greenhouse gas that accelerates the global climate crisis and its associated injustices (Casey et al., 2021). Moreover, populations living near landfills, potentially exposed to more air and water pollution, have lower average incomes and are more likely to be people of color (Cannon, 2020).

Food justice is “the right of communities everywhere to produce, process, distribute, access, and eat good food regardless of race, class, gender, ethnicity, citizenship, ability, religion, or community” (Horst et al., 2017, p. 279). Food justice also involves struggle against racism, exploitation, and oppression, as well as engagement with the systemic work to address the root causes of inequalities (Alkon & Guthman, 2017; Hislop, 2014, p. 24). The challenges associated with severe food insecurity, food waste, and equity gaps, are compounded by the fact that many small-scale farmers, farmworkers, restaurant workers, and other food system participants suffer from hunger, poverty, and marginalization because of structural injustices in modern food production, distribution, and consumption systems (Alattar, 2021; Bacon et al., 2014; Jayaraman & De Master, 2020). While these systemic problems call for transformative responses (Anderson & Leach, 2019; Marya & Patel, 2021), most food security funding in the U.S. has focused on important medium-term food access and antipoverty supports for low-income citizens, such as the Supplemental Nutrition Assistance Program (SNAP), and addressing emergency food needs through programs, such as the Temporary Emergency Food Assistance Program, that support the rapidly expanding private food assistance networks (Fisher, 2017).

Food pantries are one of the most important sites of access to emergency food assistance, and

they also play a key role in reducing surplus food through edible food recovery to be distributed to populations in need. More than 60,000 U.S. food pantries served 53 million people in 2022 (Feeding America, 2023a). Most food pantries are charities, dependent upon donations from large food retailers, government grants, and partnerships with powerful national regional food banks (Bacon & Baker, 2017). They are largely private nonprofit organizations managed by a broad range of churches, social service agencies, schools, and other institutions. Although many have paid staff, they heavily rely on volunteer labor (Bruckner et al., 2021).

Despite the good intentions of the food pantry operators, most people that need access to the free food report feelings of stigma, as receiving food aid is too often characterized as socially unacceptable; it is associated with shame and embarrassment for recipients (de Souza, 2019; Tims et al., 2021). Sustained critiques of the mainstream charity-based approach to private emergency food assistance (Poppendieck, 1999; Williams, 2022) and the rise of local and alternative food systems have spurred a small, but growing, number of food banks and food pantries to explore ways to engage local food systems, and, in some cases, the broader food justice approach (Dixon, 2015; Vitiello et al., 2015). This study aims to contribute to this latter effort by analyzing partnerships to foster a food pantry's transition toward food justice and sustainable food waste management.

We used a community-based participatory action research case study, conducted in collaboration with a food pantry and organized urban gardeners in California's Silicon Valley, to identify strategies for how food pantries and urban gardens could partner to advance food justice. Our integrative work contributes to the literature about food justice approaches to emergency food assistance, food recovery/food waste management, and urban agriculture. We focus on the possibilities for transforming food pantries into food justice spaces that simultaneously help meet basic food needs, sustainably manage food waste, and address racism and the structural causes of hunger. Specifically, we examine ways for a pantry and organized network of urban gardeners to partner with each other and

leverage a community-university partnership to achieve these goals.

Our team of university researchers partnered with Sacred Heart Community Service (SHCS) to conduct this action-oriented study. Located in the City of San Jose, California, SHCS is the designated social service provider in for the County of Santa Clara. SHCS is a robust nonprofit organization that aims to meet the basic food, housing, immigration, and security needs of marginalized populations in the county, while also building power with the same residents in need through a community-organizing approach that also aims to address systemic racism, and change policies to create a more just and sustainable society (Sacred Heart Community Service, 2021). Santa Clara County, a major agricultural production center in the 19th and 20th century, is now the geographic center of Silicon Valley (Diekmann et al., 2013). While the study area focuses on Santa Clara County, it also includes San Mateo County as together they constitute the South Bay Area. Studies that take into account the high cost of housing estimated that one in five residents of Santa Clara County of 1,870,945 were living in poverty and about 200,000 were food insecure before the intersection of the COVID-19 pandemic and uneven development exacerbated the situation, doubling food pantry visits to 500,000 people per month (Second Harvest, 2021; University of California Cooperative Extension, 2021; U.S. Census Bureau, 2022). During the pandemic and as our partnership developed, SHCS and other groups rapidly expanded their operations to help meet resident needs. Our team partnered with SHCS's Food Pantry and their organized urban gardener network, La Mesa Verde (LMV), a network of low-income home gardeners that offers materials and training for backyard gardens, food justice education, and leadership development training. While the SHCS Pantry focuses largely on emergency food assistance, reaching an estimated 25,000 individuals annually, LMV emphasizes access to fresh, culturally relevant produce. Figure 1 compares the two programs.

Because of potential tensions between the SHCS Food Pantry and LMV—tensions that generally exist between mainstream charity-dependent emergency food assistance networks and urban

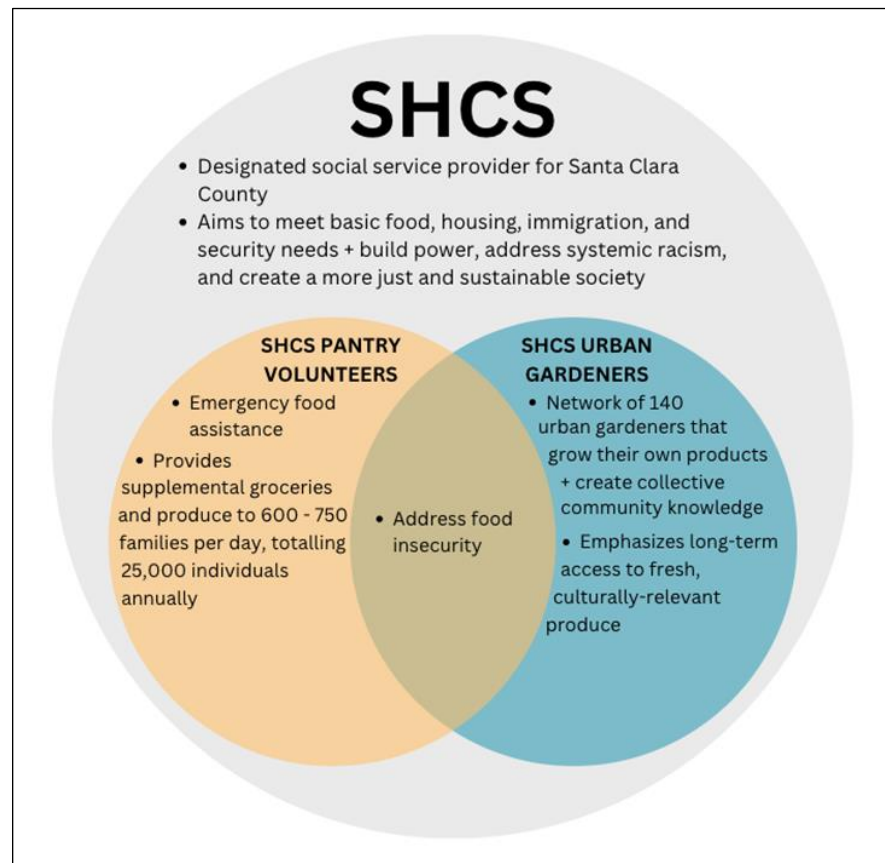
agriculture and food justice organizations (Gray et al., 2014)—our research team sought to understand several questions. Through our engagement with external pantries and urban gardeners, we sought to understand the extent to which qualitative differences identified between SHCS Pantry Volunteers and LMV Gardeners could be extrapolated to External Pantries and External Urban Gardeners in Silicon Valley. Our first question was, What are similarities and differences in the ways that SHCS-LMV Gardeners, SHCS Pantry Volunteers, External Pantry Staff, and External Urban Gardeners in the broader South Bay Area conceptualize and practice food justice? Second, What are the similarities and differences in the ways that they

approach food waste? The questions are designed to be action-oriented, centering the partnership between the research team and SHCS program staff. We explore how the SHCS Food Pantry could partner with SHCS-LMV Gardeners and leverage the community-university partnership to develop interventions that help transform the pantry into a food justice education and organizing space.

Literature Review

Our literature review begins with comparing mainstream and alternative food justice approaches to emergency food assistance. Then we discuss studies of urban gardens and food waste/recovery, highlighting each concept's interconnection with food justice and contending that these relationships remain underexplored, especially in relation to the potential role of food pantries. After explaining the food justice critique of emergency food assistance, we synthesize studies on urban agriculture and

Figure 1. Conceptual Diagram of Case Study Social Service Agency and Two Embedded Programs



food sovereignty with a focus on their roles in fostering food security, community, and autonomy. These terms are significant for food justice and systems change efforts and are relevant to this study, as we interviewed urban gardeners and pantry staff and volunteers about how they interpret their meaning. Next, we summarize several significant studies that analyze scale, environmental impact, and recent public policy developments related to food loss, waste, and recovery. The literature review offers important background for understanding trends of the mainstream emergency food assistance networks involved in these efforts and the potential of developing food justice approaches to food pantry food security and food waste management activities. For further analysis, we conducted a systematic search using bibliometric analysis and visualization software to assess co-occurrences and gaps among these terms, and to help generalize beyond this case.

Mainstream and Alternative Approaches to Emergency Food Assistance

Many agencies within the mainstream emergency food assistance system, working to connect food banks to food pantries, aim primarily at improving efficiency to meet rising demands under pressure from COVID, inflation, and gaps in government support. This approach relies on depending on an overburdened food system to produce “surplus” food, “while longer-term problems of hunger and environmental resource expenditure remain” (Cooks, 2021, p. 84). Mainstream food assistance programs generally measure success in tons of food distributed, individuals served, and food waste diverted from landfills, rely on corporate donations, and omit the community organizing and political work needed to address hunger’s root causes, such as poverty, racism, and structural food systems inequalities (Fisher, 2017). Although Feeding America’s national network of over 200 affiliated food banks that connect with over 50,000 pantries appears to be investing more resources into improving the quality, nutrition, and cultural appropriateness of food offered (Feeding America, 2023b), the vast majority of food banks and food pantries do not employ a food justice approach (Lohnes, 2021).

Fortunately, many community groups, farmers, and a small—but growing—number of policy-makers and food banks have developed a wide range of mutual-aid, community-based, and other alternatives that aim to address hunger, while also centering food and racial justice (Alkon & Guthman 2017; Fisher 2017; Hammelman et al., 2020; Spring et al., 2022; Vitiello et al., 2015). For example, Boston’s food solidarity economy movement consists of nonprofits, social enterprises, and cooperatives that produce, cook, distribute, consume, and compost through strategies that include sharing common land and kitchens and building intercultural and cross-class alliances (Loh & Agyeman, 2019). However, only a few food justice studies start their analysis with strategies that engage the mainstream food assistance and food recovery and waste management systems (Cloke et al., 2016; Lohnes, 2021). Research examining food pantries as spaces for advancing food justice, such as an analysis of how narrative strategies could help

transform pantry volunteers into advocates (Dixon, 2015), is rare, as are studies focused on pantry sustainability and innovation (Hecht & Neff, 2019; Sewald et al., 2018).

Urban Gardeners, Food Justice, and Food Sovereignty

In contrast to food waste studies, which often lack a food justice framework, researchers have documented how many farmers and advocates use urban agriculture to advance food justice, community, well-being, environmental sustainability, closer producer-consumer relations, and fresh produce access (Diekmann et al., 2020; Lin et al., 2015). Urban agriculture (UA) involves producing, distributing, and marketing food in cities and their edge regions, a wide diversity of activities that can include collective, individual, and rooftop gardening, intensive urban farms, community-supported agriculture, and food production in metropolitan greenbelts (Singer et al., 2020). While some forms of UA can address several barriers to food system equity and food justice by producing food that helps close equity gaps in food access and dietary diversity (Poulsen, 2017), UA generally does not produce sufficient food to eliminate food insecurity (Diekmann et al., 2020). Beyond food production, some forms of civic UA (an approach that prioritizes building more inclusive, locally based social relations, conserving local ecologies, and community engagement over profit maximization [Poulsen, 2017]), offer participants an opportunity to improve their health and develop new skills, cultivate community, support local environmental sustainability, and enhance cultural heritage (Guitart, 2012; Kingsley et al., 2022). Still, urban agriculture alone “cannot resolve many of the fundamental causes of food injustice” (Horst et al., 2017, pp. 277–278), especially because it is generally more accessible to wealthy White communities (Bellemare & Dusoruth, 2020).

A growing number of organized urban gardening efforts claim to be motivated by both food justice and food sovereignty (Block et al. 2012; Bowness & Whittman, 2021). Food sovereignty is the “right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to

define their own food and agriculture systems” (World Forum for Food Sovereignty, 2007, p. 1). This term emerges from a long tradition of farmer organizing in the Global South, and, like food justice, is also shaped through sustained engagement connecting farmers, social movement leaders, scholars, and, increasingly, policy makers (Marya & Patel, 2021). The concept emphasizes autonomy, self-determination, and self-governance (Patel, 2009). Noll and Murdock assert that movements rooted in food sovereignty view food not just as a commodity, but as something intertwined with identity, culture, politics, and place (2019, p. 4). As such, food sovereignty projects must be designed by those they serve and built upon existing community strengths, local ecologies, and partnerships. Although food sovereignty has strong roots among organized small-scale farmers and farm workers in the Global South, the ideas and practices also inform urban agriculture, gardening, and food justice in the Global North, including wealthy cities in the U.S., Canada, and Europe (Bowness & Whittman, 2021). For example, community members in a food swamp (an area characterized by an over-allocation of unhealthy food places like fast food restaurants, convenience stores, liquor stores, etc.) in Winnipeg, Canada built community and agency through the West Broadway Community Organization, which features programs such as “community gardens, Farmer’s Markets, good food boxes and local farm field trips” (Tursunova, 2020, p. 102). Like food justice movements, food sovereignty movements see fundamental structural changes as essential to reducing food and nutrition-related disparities, arguing that lasting food security is impossible without first building food sovereignty (Carney, 2012). With few exceptions, however—including a study proposing indicators for urban food sovereignty (García-Sempere et al., 2019)—in our targeted review we found very few urban food sovereignty studies that engaged food waste and edible food recovery.

Scholars have also used food justice frameworks to critique exclusivity and White leadership in some UA efforts (Hoover, 2013), critically examine the political-economic context and the types of human subjectivity produced within organized community garden projects (Pudup, 2008), and

demonstrate how some UA projects, including community gardens, can undermine the local food justice outcomes they claim to promote, as well as driving up property values and exacerbating gentrification (Alkon & Guthman, 2017; McClintock et al., 2018). In response, critical scholars and advocates continue to develop strategies to mitigate the unintended consequences that UA and food justice projects can produce (Alkon et al., 2019). Despite a few important recent studies (Furness & Gallaher, 2018; Tims et al., 2021), we found that studies examining partnerships between organized urban gardeners and mainstream emergency food assistance operations remain underdeveloped.

Food Waste, Food Recovery and Environmental Impacts

The significant scale of food losses and waste illustrates the inefficiencies, excessive environmental costs, and persistent injustices in the dominant food system. Globally, food loss and waste account for more than one-third of food produced (Food and Agriculture Organization of the United Nations [FAO], 2019). Food loss is more common in low-income countries and occurs when it becomes unfit for human consumption due to pests, extreme weather, or spoilage, while food waste, more common in higher-income countries, occurs when food is discarded that is still fit for human consumption (Hanson et al., 2016; United Nations Environment Programme, 2021). In the U.S., 91 million tons of surplus food or about 38% of total production, roughly equal to 141 billion meals, went unsold or uneaten in 2021 (ReFED, 2023). Of this, 36% was landfilled, 18% composted, 14% not harvested, and only 2% donated (ReFED 2023). Sectors contributing to food loss and waste include residential (48%), consumer-facing businesses (20%), farms (17%), and manufacturing (14%) (ReFED 2023). A prioritized set of strategies to reduce food loss and waste would emphasize prevention, edible food recovery and redistribution, composting and recycling, and improved coordination across ecosystems, farms, food banks, food pantries, restaurants, groceries, and government agencies (Broad Lieb et al., 2022; Mourad, 2016). The largest private emergency food assistance agencies in the U.S. have positioned them-

selves as leaders in developing strategies to address food loss and waste (Lohnes, 2021). Indeed, increasing food recovery and redistribution are a civic priority, not only to help alleviate food insecurity but to benefit the environment by diminishing climate change emissions associated with food decomposition in landfills and saving trillions of gallons of irrigation water.

Government policy can play an important role in setting goals, offering incentives, adjusting regulations, and supporting food loss and waste prevention and recovery (Broad Lieb et al., 2022). The federal government recently set a goal of reducing food loss and waste by 50% by 2030, and in 2016 California passed S.B. 1383, which aims to reduce the amount of organic material—largely food waste—entering landfills by 75% by 2025 (CalRecycle, n.d.). S.B. 1383 also aims to recover 20% of disposed food for human consumption, suggesting that food pantries could experience an influx of recovered food (Chiarella et al., 2023). These policies will significantly increase food recovery flowing to pantries. While most of the recovered food should be useful for meeting the increasing demand for emergency food assistance, the quality of the recovered food is inconsistent, and pantries will likely generate more food waste even as S.B. 1383 extends to regulate pantries. This will further spur pantries to invest in food waste management strategies, such as on-site composting.

Systematic Search: Food Pantries, Food Justice, Food Waste, and Urban Agriculture

To complement the targeted literature review, we conducted a systematic search for keywords using the Web of Science Core Collection to download titles and abstracts from articles published in the last decade. The search yielded 1,408 peer-reviewed articles. The data was imported into VOSviewer,¹ a program for bibliographic mapping that clusters key terms in the literature by frequency counts and relationships of the words in titles and abstracts, to generate a visual representation of their connectedness. The structure of co-occurrence suggests strengths and gaps in relationships among concepts of interest. We selected the 200 most relevant

terms according to the VOSviewer relevance score, and hand-removed terms related to research methods and words commonly used in academic writing (e.g., lens, critique, baseline).

The result shown in Figure 2 is a representation of our search that illustrates the gaps in the literature linking food pantries, urban gardens, and food justice (e.g., the fact that each is essentially about food, illustrated in the figure by the terms “vegetable” and “fruit”). However, beyond these shared terms, food pantries, urban gardening, and food justice are each largely relegated to their own sphere, suggesting that each approach to shifting the food system is siloed. The physical distance between clusters of interrelated terms is represented in Figure 2 in blue, green, and red. The red cluster contains terms like “food pantry,” “assistance,” “food stamps” and “food bank” (e.g., charity-based food assistance), while the more interconnected blue and green clusters contain terms like “diversity,” “innovation,” “movement,” “equity,” and “sovereignty” (e.g., food justice/food system change and urban gardening, respectively). We contend that the lack of connections between the red cluster and blue/green clusters represents a lost opportunity to develop a food justice approach to food pantries.

Methods

After sharing additional details about the key community-based partner organization and our study area, we explain our community-based participatory action research approach and describe how we used mixed methods to answer the research questions.

Community-Based Partner and Study Location

Sacred Heart Community Service (SHCS) aims to help fill basic needs gaps by providing essential services to low-income residents, ranging from support for utility bills, housing, and immigrant rights, to emergency food assistance through the SHCS Pantry, which served over 25,000 people in 2021. As part of their mission to increase food security and self-sufficiency, SHCS includes the SHCS-LMV Garden, which started as an independent

¹ <https://www.vosviewer.com/>

The network visualization displays a complex web of relationships between various concepts. The nodes are represented by circles of different sizes, and the edges are lines connecting them. The network is organized into four main clusters, each color-coded:

- Blue Cluster (Top Left):** Includes concepts like justice, food justice, equity, movement, politic, right, debate, food system, social change, power, land, resistance, desire, innovation, and urban space.
- Green Cluster (Bottom Left):** Includes concepts like urban agriculture, garden, diversity, human, root, urban garden, experiment, food waste, vegetable, vegetable consumption, waste, yield, compost, metal, lettuce, crop, species, plot, allotment, and garden.
- Red Cluster (Right):** Includes concepts like food insecurity, health outcome, food assistance, high rate, assistance, food pantry, food pantries, food pantry client, healthy eating index, adult, percent, family, diet meal, child, efficacy, fruit, weight, nutrient, and community partner.
- Purple Cluster (Center):** Includes concepts like food waste, vegetable, vegetable consumption, waste, yield, compost, metal, lettuce, crop, species, plot, allotment, and garden.

A legend in the bottom right corner indicates the size of the nodes, with a scale from 20 to 300.

* Note on figure production: Using Web of Science, we searched the literature using the following query: All Fields: “food pantry” OR “food pantries” OR “food justice” OR “urban gardening” OR “urban garden” OR “food waste” AND Publication Date: 2013-01-01 to 2023-04-01.

shared interests and community connections. In contrast, the SHCS Pantry Volunteers had not participated in educational workshops that engage food justice, nor do they have a similar learning and organizing space within SHCS.

Volume 13, Issue 3 / Spring-Summer 2024

Clara, but also includes the smaller San Mateo and San Francisco Counties, also has some of the U.S.A.'s highest levels of inequality (Pellow & Park, 2002; Bacon & Baker, 2017). The poverty rate using the Federal Poverty line, is only about 5%, but by the Self-Sufficiency Standard, which defines the amount of income necessary to meet basic needs without public subsidies or private and/or informal assistance, the rate stands at 28% (Joint Venture, 2023). As with other indicators of wealth and human health, there are troubling racial and ethnic and economic disparities in hunger across the Bay Area, which were exacerbated during COVID-19; a UCSF study found a sharp rise in food insecurity among Latinx households during the first part of pandemic (Escobar et al., 2021).

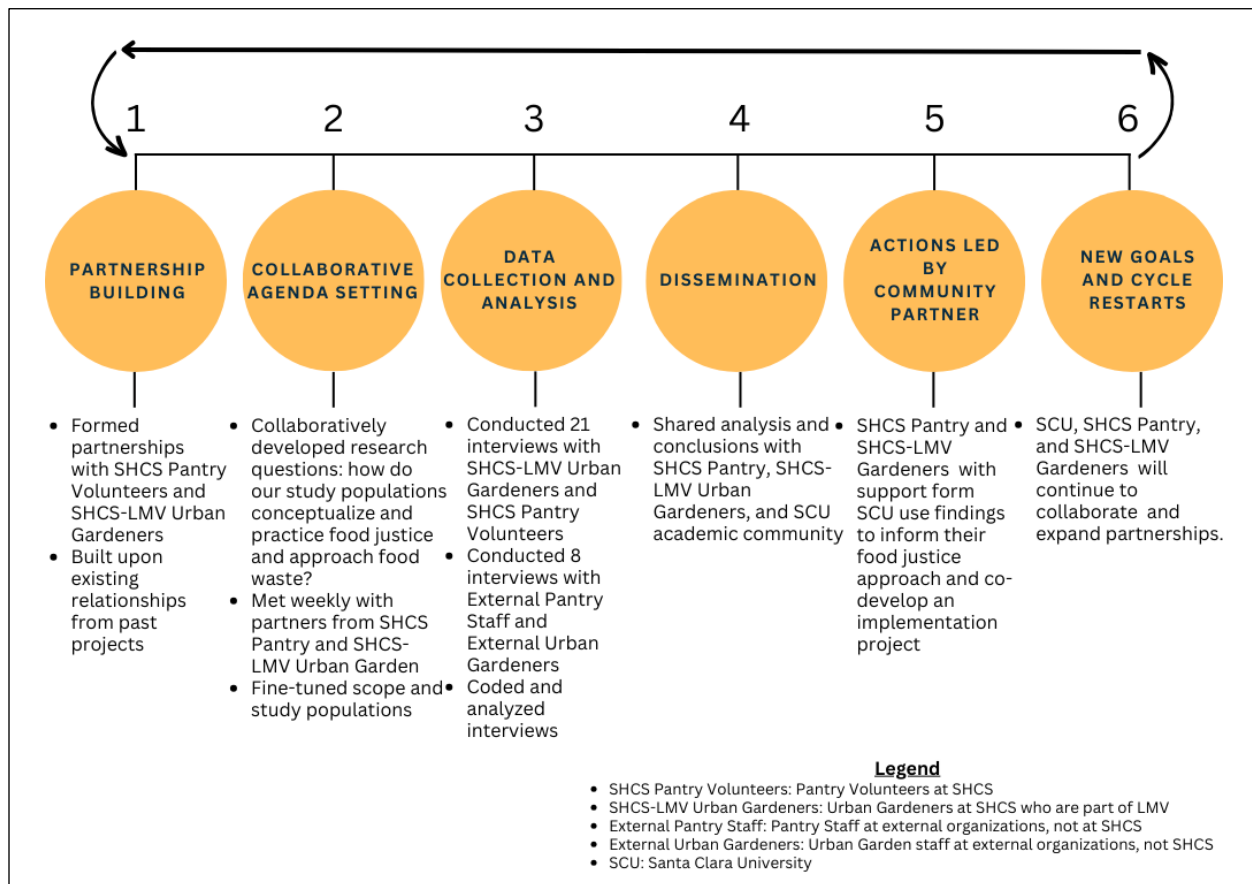
Community-Based Participatory Action Research Project

This research is informed by a community-based participatory action research (CB-PAR) approach, which starts with establishing a community-university partnership that recognizes power and resource-access inequalities, commits to reciprocity, and negotiates mutual goals for a project (e.g., program improvement and student learning) (Maiter et al., 2008). It is also an exploratory case study (Yin, 2012) about the starting points, process, and potential benefits emerging from a partnership linking a food pantry, urban gardening network, and university (Porter, 2018). This sort of collaboration challenges traditional top-down models of knowledge production, while encouraging researchers to include diverse perspectives (Tremblay, 2018). CB-PAR and allied action research approaches are particularly useful for research involving marginalized populations and community-based food justice organizations, as they emphasize tangible improvements while creating respectful and mutually beneficial relationships between researchers and community-based partners (Porter, 2018). Like other forms of participatory research, CB-PAR is challenging in practice, but we have worked to listen deeply, show up for SHCS and SHCS-LMV events, and support student interns working directly for the program. These additional steps underscore why CB-PAR

takes more time than applied work and requires ongoing critical reflection and dialogue to help the research team remain accountable to partners (Mendez et al., 2017; Tremblay, 2018).

CB-PAR projects traditionally operate in a cyclical and iterative manner, as shown by Figure 3, which presents our study activities within a CB-PAR cycle (Balazs & Morello-Frosch, 2013). First, partnership with the SHCS-LMV Garden and the SHCS Pantry emerged from a decade of collaboration with Santa Clara University. The lead author has worked with SHCS-LMV since 2012 through a range of activities, including partnering with them as community-based mentors for multiple 11-week intensive interdisciplinary undergraduate student projects addressing food justice themes as part of a Environmental Studies and Sciences capstone class, co-organizing a workshop in March of 2020 that helped launch a South Bay Area coalition of food justice organizations, and through many volunteer days with LMV Hardeners and in the Pantry. Next, we collected and analyzed data with a shared agenda in mind and disseminated the information to our community-based partners. Following analysis and dissemination, the SHCS-LMV program and SHCS Pantry plan to utilize the data and materials to inform training and change strategies within the SHCS Pantry and support the cross-training effort linking SHCS-LMV Gardeners and SHCS Pantry Volunteers and staff. Then the cycle will restart (Figure 3).

To address the aforementioned research questions, our team collaborated with the SHCS-LMV Garden and SHCS Pantry to design a semi-structured interview guide (Merriam & Tisdell, 2015). The guide included several brief short-answer questions and longer open-ended questions about experiences at SHCS Pantry and with the SHCS-LMV Garden program. After the introductions and informed consent process, the questions also addressed experiences with food pantries and/or urban agriculture, duration and type of engagement with SHCS, current and past experiences with food waste reduction activities, interpretations and definitions of food justice, and perspectives about the extent to which interviewees see relationships linking food justice, racial justice, and food waste. We were especially interested in under-

Figure 3. Diagram of Community-Based Participatory Action Research (CB-PAR) Cycle and Project Activities

Source: Updated and modified to include project-specific activities from Balazs & Morello-Frosch, 2013.

standing how their past experiences and cultural identities influence their approaches to food justice and engagement with SHCS. After the interviews with SHCS Pantry Volunteers and SHCS-LMV Gardeners, we sent a short demographic survey, asking standardized questions modeled after the U.S. Census about racial and ethnic identity, as well as gender and income. We did not send the demographic survey to External Pantry Staff or External Gardeners: we interviewed only one person per organization and wanted to avoid deductive disclosure, which could be possible in the case of smaller organizations with few employees.

We conducted the research in two phases. We interviewed 13 SHCS-LMV Gardeners and eight SHCS Pantry Volunteers, totaling 21 interviews. We worked with the SHCS coordinators and managers for LMV and the Pantry to help recruit

participants for this convenience sample who had been involved with LMV for at least three years and had been regular Pantry volunteers for at least one year. We then relied on suggestions from staff members at the SHCS Pantry and SHCS-LMV Garden to recruit interviewees at five External Food Pantries and three External Urban Gardens in the South Bay, totaling eight interviews at the organization level. We interviewed at the individual level (with SHCS Pantry Volunteers and SHCS-LMV Gardeners) and organizational level (with External Pantry Staff and External Urban Gardeners) to understand whether our first phase of results at the individual level were particularized to SHCS or whether they could be extrapolated to pantries and urban gardens more generally. All interviews were conducted one-on-one. Table 1 compares demographic data across the SHCS

research participants: more Pantry Volunteers self-identified as White or Asian/Pacific Islander and tended to have higher household incomes than the SHCS-LMV Gardeners, who were largely Hispanic/Latino, White, or multiracial, and tended to have lower household incomes.

Our research team conducted interviews May–September 2021 and February–April 2022. SHCS Pantry and SHCS-LMV Garden staff helped recruit all interview participants: they suggested External Pantries and External Urban Gardens, and SHCS-LMV Gardeners and SHCS Pantry Volunteers based on those that had been involved with the respective organization longer. We contacted interviewees via email to link them with the members of the research team. Our team conducted these 25- to 75-minute interviews on Zoom in both Spanish and English depending on interviewee preference. We recorded, transcribed, translated, and then anonymized the transcripts. We identified the interview transcripts by respondent affiliation to SHCS

(Pantry vs. Gardeners) and organization (SHCS/SHCS-LMV or External).

Following Saldaña (2013), we used an inductive coding process that began with reading transcripts and identifying the most frequently occurring codes. After most key ideas started repeating, we concluded that we had reached a saturation point at the individual level with SHCS. Given the relatively small sample, we used documents and spreadsheets to coordinate the coding process across the team members. We identified quotes that illustrated major themes and findings. We shared preliminary findings with SHCS and LMV staff and received feedback before presenting these findings.

Finally, after the manuscript entered the review process, we began co-implementing the food justice workshops with SHCS Pantry Volunteers and SHCS-LMV Gardeners. Our research team took detailed notes during them and asked several SHCS Pantry Volunteers and SHCS-LMV Gardeners to submit testimonies about their experiences with food justice, food waste, and food security in the context of the workshops. Although we did not code this transcript as part of the analysis, we cite a testimony in our discussion, as an update to this work and an illustration of the efforts and challenges to integrate approaches across these areas.

Results

We begin by showing a comparative analysis of the different interpretations of food justice that emerged from our analysis of interview transcripts with both SCHC food pantry volunteers and SHCS gardeners (Table 2), and then assess the degree that these findings hold for the interviews conducted with external pantry staff and external urban gardeners (Table 3). We continue by developing a similar analysis contrasting how these same four groups approach food waste.

Contrasting Definitions of Food Justice: SHCS Pantry Volunteers and Gardeners

Four of the eight SHCS Pantry Volunteers were unfamiliar with food justice or could not provide a meaningful definition—or any definition—of the term. Those who could provide a definition agreed

Table 1. Sacred Heart Community Service-La Mesa Verde (SHCS-LMV) Gardeners' and Pantry Volunteers' Demographic Data

	SHCS-LMV Gardeners (n = 13)	SHCS Pantry Volunteers (n = 8)
Gender		
Male	3	5
Female	10	3
Race/Ethnicity		
White	4	5
Asian/Pacific Islander	0	3
Hispanic or Latino	7	0
Multiracial	2	0
Household Income in Past 12 Months (US\$)		
\$5,000–\$34,999	4	0
\$35,000–\$49,999	4	0
\$50,000–\$99,999	2	2
\$100,000–\$149,999	0	2
\$150,000–\$199,999	0	2
Over \$200,000	1	1
Other	2	1

Sources: 2021 and 2022 interviews.

upon a simplistic one: everyone should have access to nutritious food. An Asian/Pacific Islander female SHCS Pantry Volunteer added more nuance, noting that everyone should have access to nutritious food “not based on their economic, racial or demographic area, region or part of the world.” Overall, SHCS Pantry Volunteers either had a limited understanding of food justice or were not at all familiar with the concept.

SHCS-LMV Gardeners were all familiar with food justice; each contributed nuanced and diverse definitions. SHCS-LMV Gardeners’ reflections on food justice yielded three significant themes. Four SHCS-LMV Gardeners emphasized food justice as a *right*, which none of the SHCS Pantry Volunteers mentioned. Four Gardeners cited gardening and access to land as part of their definitions of food justice. For these members, food justice expands

Table 2. Sacred Heart Community Service (SHCS) Pantry Volunteers’ and SHCS-La Mesa Verde (LMV) Gardeners’ Definitions of Food Justice

	Definitions of Food Justice
SHCS Pantry Volunteers	• “I think people should be able to have sufficient food to live comfortably. ... That doesn’t necessarily mean that they have to have filet mignon every day, but it does mean they should have sufficient food to meet basic nutritional needs.” (White male) • “I don’t think I can give that a really good answer ... because I haven’t heard or read anything about it.” (White male) • “Equal access to good food. ... I haven’t been a victim of not being able to get food.” (White male) • “I’m not sure I would know how to define that. Maybe food that was of, you know, average to good quality, you know, so that people are able to consume it.” (Asian/Pacific Islander female)
SHCS-LMV Gardeners	• “I mean, it’s food for all, right?” (White female) • “We all have the right to have these affordable foods.” (Latinx female) • “I didn’t know this concept of food justice until I became a part of [the SHCS-LMV Garden]. The first time they showed it in a workshop, to me it was very eye-opening how even the produce that comes from the soil is very politicized.” (Latinx female) • “Food justice would be like we could all have the opportunity to grow our own vegetables.” (Latinx female) • “That’s a big thing, you know, keeping accessibility to food, the quality of food, the quality of food being equal to all.” (Latinx female) • “It’s about talking about justice. It’s talking about rights and laws so for me food justice also includes workers. From the workers to the consumer. And it is a process.” (Multiracial female)

Table 3. External Pantry Staffs’ and External Urban Gardeners’ Definitions of Food Justice

	Definitions of Food Justice
External Pantry Staff	• “I don’t really know the movement well. I think we do a lot of what the stuff that I read is talking about, but I’m not so familiar with it.” • “I would define [food justice] like just dignity. Feasible for us is dignity. Dignity because people in need can be provided with dignity that food that they need.” • “Food justice? ... Really, the first time I heard that term was in your email.” • “Food justice is food insecurity in simple terms.” • “So, I’m tangentially familiar with the idea of food justice. I’m not an expert.”
External Urban Gardeners	• “I would define food justice as providing equity and access to everybody. ... Food justice means that every human being, for the sake of being a human being has the right to safe, secure, and nutritious food, and we are all responsible in making sure that that is upheld.” • “I think it has to do with not just accessibility to food, but sustainability within that and also sovereignty over food systems and in communities.” • “I feel like food sovereignty takes [food justice] a step further, which I really like in the sense that you are sovereign in this. ... And beyond just picking like your own vegetables, but maybe it’s that you have a say in how your food system is structured.”

Sources: 2021 and 2022 interviews.

beyond access to food to include sovereignty over what is grown and eaten. Third, SHCS-LMV Gardeners noted the importance of high quality, organic, culturally relevant food for food justice, beyond mere access to food. Two SHCS-LMV Gardeners' definitions of food justice that included both food *production* and food *consumption* (Table 2). Both Gardeners noted inequality in food production systems; one White LMV-SHCS Gardener said, "I think farm workers are just treated so bad. Like, we do not respect—at all—the work that they do. They're not compensated well... They're mistreated. They're overworked. They're exposed to a lot of hazards in their work. And, I mean, everybody eats the food that, you know, that they provide and they're just exploited."

Contrasting Definitions of Food Justice: External Pantry Staff and External Urban Gardeners

We found that these contrasting definitions of food justice were similar across other food pantries and urban gardens in the South Bay Area. External Urban Gardeners generally had more nuanced definitions of food justice than External Pantry Staff. External Pantry Staff from three of the five external food pantries were unfamiliar or only slightly familiar with food justice. Of the remaining two External Pantry Staff in the study, one reflected on the importance of dignity in food justice: "I would define [food justice] like just dignity. Dignity because people in need can be provided with dignity [by ensuring they have access to] food that they need." The second External Pantry Staff member conflated food justice and food security, defining the two synonymously. Still, this interviewee acknowledged that "everybody has the right to be able to—and this is a little more social economics than just food itself—but be able to have a livable wage where they can actually, you know, buy food. ... Nobody should go hungry."

Each External Urban Gardener provided a nuanced definition of food justice. One reflected, "I would define food justice as providing equity and access to everybody. ... Food justice means that every human being, for the sake of being a human being, has the right to safe, secure, and nutritious food, and we are all responsible in

making sure that that is upheld." The other two External Urban Gardeners challenged the limitations of food justice and instead emphasized food sovereignty, acknowledging the importance of community member autonomy and having a role in constructing their food systems. For them food sovereignty can be expansive: "I feel like food sovereignty takes [food justice] a step further, which I really like in the sense that you are sovereign in this. ... And beyond just like picking like your own vegetables, but maybe it's that you have a say in how your food system is structured."

Importantly, the language that External Pantry Staff and External Urban Gardeners utilized when talking about food justice differed significantly based on organization type. External Urban Gardeners tended to center and integrate community needs and voices, whereas External Pantry Staff were more focused on "educating" the community. For example, an External Urban Gardener reflected, "We are actively trying to improve on—especially in the work that we do—making sure that we're not coming at this from, like, a savior mindset, and also that we are, you know, really rooting this in community." Staff from this urban garden take time to ask their clients what produce they are eating and enjoying, what produce they dislike and are wasting, and how the urban garden may better serve them and their community. These approaches are distinct.

Contrasting Approaches to Food Waste: SHCS-LMV Gardeners and SHCS Pantry Volunteers

In their own homes and practices, most SHCS-LMV Gardeners and SHCS Pantry Volunteers made conscious efforts to reduce food waste. Four SHCS Pantry Volunteers mentioned trying to eat everything, and avoiding food waste through various strategies. For example, an Asian/Pacific Islander female SHCS Pantry Volunteer mentioned what her family calls "eating for the cause": strategically placing food close to spoiling in a certain area in the fridge and upcycling leftovers. "So like, for instance, if I did a batch of rice or something—today is Thursday I made it on Monday—it's not going to last much longer through the weekend, so I will make something like fried rice or I'll serve it

like tonight.” And two SHCS Pantry Volunteers emphasized buying food consciously. One White male reflected, “We try to not buy stuff, so we don’t generate waste. That’s number one. ... The basic thing is just not—not producing the waste to begin with. ... We don’t go to Costco and buy 50 pounds of potatoes and watch them rot.” Other strategies employed include freezing food, composting, and eating beyond satiety.

SHCS-LMV Gardener approaches differed from SHCS Pantry Volunteer approaches in that many more SHCS-LMV Gardeners compost their food waste and emphasize a passion for reducing food waste, beyond that of SHCS Pantry Volunteers. A White/Mexican female SHCS-LMV Gardener cited the “power of soil and the Earth and how much that it’s alive and really the source of where everything begins.” For her, SHCS-LMV Garden workshops underscored “how important composting is,” leading to “a snowball effect [in spreading knowledge and enthusiasm] about food waste.” Most SHCS-LMV Gardeners feel similarly: a Latinx female SHCS-LMV Gardener noted that they will peel potatoes and save the peels for compost. A Latinx male SHCS-LMV Gardener emphasized, “All the waste we have here at home, we use. I like to have garden beds with soil where my crops are. There I am burying the waste under the ground so that it remains good, this compost, for good working soil.”

Comparing Approaches to Food Waste: External Urban Gardeners and External Pantry Staff

As with these individual approaches, all the External Pantries and External Urban Gardens in this study have strategies for reducing or mitigating food waste (Table 4). Two External Pantries compost food waste, whether on-site or via industrial composting off-site. One External Pantry gives away pre-cooked food to churches or other community centers in the area. Interestingly, two of the External Pantries tailored their services for the specific needs of the community, thereby reducing food waste. One

External Pantry Staff member noted, “For example, this community, these folks, they just want protein. They don’t want the starch. They don’t want the veggie, so I can understand that dynamic a little bit too. So that gives us a little more ability to figure something out... We do more veggies in one place—we offer more, we offer less, and kind of work on that angle.”

External Urban Gardens utilized a variety of different strategies to manage and reduce food waste, such as instructing their clients to only take what they’ll eat, composting, ordering produce carefully and thoughtfully, and adjusting the price of produce in response to availability. At one External Urban Garden, if they have a surplus of produce, they “slash the price in half, and make sure that if [they] have more of it, that it can go out to folks at a cheaper rate, so maybe they’ll buy more.” An External Urban Gardener described the value of their donation-based system: “Because we

Table 4. Strategies for Reducing Food Waste

	Strategies for Reducing Food Waste
SHCS Pantry Volunteers	• Buying consciously • Repurposing leftovers • Composting • Freezing food • Eating beyond satiety
SHCS-LMV Gardeners	• Buying consciously • Repurposing leftovers • Composting • Cooking at home • Let food waste break down in piles • Worm composting • Sharing excess produce with fellow gardeners
External Pantry Staff	• Considering what foods clients can physically open and utilize • Sharing with churches and other local community organizations • Redistributing food from grocery stores • Composting on-site • Composting off-site
External Urban Gardeners	• Donation-based system • Ordering produce carefully and thoughtfully • Decreasing the price of surplus produce • Removing unwanted produce from clients’ boxes • Adding additional produce to clients’ boxes • Utilizing feedback from the community • Composting on-site • Teaching clients how to compost at home

Source: 2021 and 2022 Interviews.

have a donation-based system, we are kind of able to offer more to folks, maybe, than they would normally take based on like a price restriction...we want it to get into the hands of the community, so I think anyone who is coming to our farm stand is able to like walk away with—really—as much as they need, not just as much as they can afford.”

SHCS-LMV Gardener approaches to food waste and connections to the land are stronger than those of SHCS Pantry Volunteers. For many of the Latinx SHCS-LMV Gardeners, their feelings stem from experiences in different countries, and, relatedly, to the wastefulness that they perceive in aspects of mainstream American culture. But their feelings are ingrained and bolstered as well by the food justice framework that the SHCS-LMV Garden employs and develops through educational workshops for members. Most SHCS Pantry Volunteers had not considered a food justice framework—including a food justice approach to food waste—because they had never heard of such an approach.

Discussion

This research has revealed differences in the conceptualization and operationalization of food justice and food waste management strategies through analysis of interviews conducted with SHCS Pantry Volunteers and SHCS-LMV Gardeners, as well as interviews with External Pantry Staff and External Urban Gardens. From our literature review, we expected to find that SHCS-LMV Gardeners and External Urban Gardeners had developed more sophisticated and multidimensional understandings of food justice, in comparison to SHCS Pantry Volunteers and External Pantry Staff who are more influenced by a charity and direct service-oriented strategy. We did not initially expect to find meaningful differences among how the different groups approached food waste.

Consistent with our expectations—and based on the SHCS-LMV Gardeners’ exposure to food justice through the LMV curriculum and through their own lived experiences—we found that SHCS-LMV Gardeners have a more robust understanding of food justice than SHCS Pantry Volunteers. Moreover, SHCS-LMV Gardeners were comfortable talking about food as a right, addressing distrib-

utive and procedural justice, and analyzing the structural causes of hunger and food waste. SHCS-LMV Gardeners likewise were comfortable talking about race and ethnicity. They acknowledged that neighborhood access to food differs depending on the racial makeup of the neighborhood. They contrasted the wastefulness of American vs. Latin American cultures, and they emphasized a lack of health education in lower-income, less White neighborhoods. On the other hand, SHCS Pantry Volunteers, who had not been privy to the LMV curriculum, were largely unfamiliar with food justice. We suspect that SHCS Pantry Volunteer unfamiliarity with food justice, and their watered-down approaches to food waste, could be due to lack of education in food justice, satisfaction with a charity approach, higher average incomes, or other White privileges that could also influence their contributions to inflicting stigma upon food insecure populations and within emergency food assistance environments (de Soza, 2019). More broadly, External Urban Gardeners from various urban gardens throughout Silicon Valley had similar nuanced and complex understandings of food justice compared to SHCS-LMV Gardeners, and more than half of External Pantry Staff were unfamiliar or only slightly familiar with food justice based on their positionality in the emergency food assistance network.

Similarly for food waste, nearly all individuals and organizations have strategies for food waste reduction, but SHCS-LMV Gardeners and External Urban Gardeners were far more knowledgeable about food waste and likely to employ time-consuming and varied waste reduction strategies, ranging from prevention to composting. SHCS-LMV Gardeners and SHCS Pantry Volunteers noted consciously buying food and repurposing leftovers, but SHCS-LMV Gardeners take waste reduction a step further by composting and intentionally sharing produce with family, friends, and other urban gardeners. Likewise, while some External Pantries compost or consider feedback from clients, these strategies were far more common among External Urban Gardeners. External Urban Gardeners reported additional, innovative strategies, such as teaching clients how to compost at home, changing produce in food boxes, and

using donation-based systems, allowing them to reduce food waste more effectively at their organizations.

To what extent are the contrasting approaches to food justice and food waste of urban gardeners versus food pantry volunteers that we found in this Bay Area study generalizable to other places? While we do not know for certain, one way to begin answering this question is through our keyword search of the Web of Science and the VOSviewer visualization displayed in Figure 2. The visualization showed relatively strong connections linking terms, such as “urban gardening,” “composting,” and “food waste,” all of which were grouped together, as well as several studies bridging the cluster of urban gardening studies with the cluster that included food justice, a relationship we found in this study. Figure 2 also shows a dearth of studies linking food justice and food waste or food justice and food pantries, which is also consistent with our findings. Overall, the literature on these topics remains broadly segmented with only a handful of studies linking urban gardens to food pantries and often without a food justice approach, suggesting the need for more integrated research and implementation strategies.

Partner-Led Action Emerging From CB-PAR Methodology

When SHCS staff and the university-based research team negotiated this partnership within a broader CB-PAR framework, (Figure 3) the proposed action step focused on co-developing an educational and infrastructure intervention to contribute to transforming the SHCS Pantry into a food justice space and to support the urban garden by developing an on-site worm composting operation at the pantry. As in many CB-PAR partnerships, the local organization rather than the university is the leader for the critical action step (Juris et al., 2021). SHCS partnered with Santa Clara University to serve as the lead agency in a successful application for a CalEPA Environmental Justice grant (US\$50,000). First, our research team shared with SHCS staff preliminary findings” SHCS Pantry Volunteers’ and SHCS-LMV Gardeners’ differing demographics, approaches to food justice, and approaches to food waste. After consulting

with the food justice literature and setting up a system to track food waste in the SHCS pantry, SHCS staff and our research team have begun to co-create a training curriculum that aims to build on diverse experiences and combine them with best practices from the literature to develop a food justice approach to their food assistance work and establish an onsite vermicomposting program that diverts food waste from landfills and supports urban gardening.

The planned sequence of workshops includes: (1) two community-build days to install worm composting containers at the pantry and train participants in home composting; (2) diversity, equity, inclusion, and justice (DEIJ) and Sacred Heart’s approach to basic needs, antiracism, and structural change; (3) food justice testimonies and dialogue; (4) climate change, food waste, and food system transformation; (5) a community and food pantry compost and plant distribution celebration. The workshops start and conclude with hands-on community-building and include engaging a recently developed system that tracks the SHCS Pantry food waste. Importantly, the proposed times for the workshops intersect with when SHCS Pantry Volunteers are scheduled for their regular food distribution shifts and SHCS-LMV members are available.

SHCS-LMV Gardeners who experience food insecurity and visit the SHCS Food Pantry offer an especially valuable perspective for establishing a relationship between the SHCS Pantry and LMV. In a recent storytelling workshop that we co-organized as part of the workshop series, an elderly female Mexican immigrant, SHCS-LMV Gardener, and occasional Pantry visitor offered her testimony:

When we have excess food, we freeze it, distribute it, or eat it. In my country, Mexico, with my parents and grandparents, food waste did not exist. ... They taught me that food is not thrown away, much less is wasted and that we should eat everything we have for the day, whether it is a little or a lot. At that time, we ate what we had, because we had no other options. When I came to this country, I found a lot of delicious “junk food” that could now

be eaten, and this gave me diabetes. Fortunately, my husband and I had health insurance with Kaiser. A Hispanic nurse taught me the food pyramid, portions, and healthy eating.

When I received food boxes, sometimes [the SHCS Pantry and also Salvation Army Pantry] would include things that were not healthy for me to eat, as a diabetic, or I wouldn't know how to cook it. For example, they would include a lot of pumpkins, and so I would give some to my neighbors, or I would give them to Americans, who would use it to make pie ...

My ancestors didn't care about food security because there was hardly anything to eat. That's why I became an urban gardener. In my opinion, food justice is having options to eat healthy and share with the family. I believe that one way to not waste food is to know the portions, to have options for fruits, vegetables, and groceries that each family in their own culture likes to cook, eat, and enjoy. This way they won't throw it in the trash, because we like to enjoy our own food.

Her testimony underscores many of the themes SHCS-LMV Gardeners and External Urban Gardens reflected on throughout our research. It shows not only the way that she interprets relationships between food security, food waste, and food justice in a coherent and compelling way that may not strictly follow the accepted academic definitions for these terms, but it also contributes a culturally rooted food justice approach to food waste. Interestingly, this testimony does not mention rights-based (Horst et al., 2017) or explicitly anti-racist notions of food justice. It focuses more on the power of solidarity, sharing food, and access to culturally relevant food for all (Loh & Agyeman, 2019).

Drawing on this testimony and one author's participant observation with the respondent during the last two years, we find that this SHCS-LMV Gardener (and several others) explain their experience with confidence and without stigma regarding periodic food pantry visits. This is important, as stigma and shame among food pantry visitors are common (Bruckner et al., 2021; de Soza, 2019).

This narrative also shows a level of empowerment which is possibly attributable—at least in part—to several years of participation in SHCS-LMV's leadership program. Another study that interviewed senior food pantry clients, some of whom were also involved in a food security-focused community garden, found that accessing the food from the garden offered participants destigmatized “socially acceptable” food access, as compared to perceptions of stigma when accessing free food through other food assistance programs (Tims et al. 2021). However, in the case of SHCS-LMV Gardeners, they felt comfortable accessing the SHCS Pantry, as well as growing and sharing their own food.

In addition, External Pantry Staff expressed interest in implementing a similar curriculum in their own pantries. Following the SHCS and LMV implementation of the workshop curriculum, SHCS will produce playbooks for other pantries to use in developing their own food justice approaches to emergency assistance and waste. Therefore, we contend that this study is broadly relevant to tens of thousands of food pantries as well as other anti-hunger organizations, food recovery organizations, food waste reduction strategists, advocates, and policy makers working to develop a stronger food justice approach to emergency food assistance and food waste recovery and management in ways that integrate urban agriculture and build food sovereignty.

Conclusion

Our analysis of the interviews found similarities in the way that organized urban gardeners, including both SHCS-LMV Gardeners and the External Urban Gardeners engaged food justice and food waste compared to the SHCS Pantry Volunteers and External Pantry Staff. SHCS Pantry Volunteers' definitions of food justice were generally one-dimensional and less nuanced than SHCS-LMV Gardeners' definitions, which cited gardening and access to land as part of their definitions, and noted the importance of high quality, organic, culturally relevant food. SHCS Pantry Volunteers' comparably less nuanced definitions may be attributed to a higher percentage of White SHCS Pantry Volunteer interviewees than among SHCS-LMV Gardeners, as well as the Gardeners' expo-

sure to food justice trainings and advocacy work through LMV; however, in our comparison of common themes in the interviews, we found similar patterns in understandings among the External Pantries and External Urban Gardens.

The CB-PAR process is necessarily a work in progress. We have not yet proven that it is possible to change the large-scale food pantry into a space for food justice or to unleash the potential of composting food waste. However, these dual problems are intrinsic to the current emergency food assistance network and the lessons learned here are potentially useful for the more than 60,000 U.S. food pantries that should play a more important role in developing transformative strategies to meet basic food needs and reduce food waste today, while simultaneously developing a food justice approach to reduce hunger and food waste in the long-term.

If food pantries are to become educational and organizing spaces that advance food justice, pantry staff, volunteers, and partner organizations will need to assume new roles (Dixon, 2015). We argue that food pantries are important places to create “ethical and political response to welfare in the meantime,” building from “the austere conditions of the here and now,” (Cloke et al., 2016, p. 705), advocating for increased public support to secure a right to food, and moving toward more transformative alternatives to the dominant global system and charity-based emergency assistance.

Urban gardeners, many of whom already emphasize food justice through their organized networks (Dickmann et al., 2020; Horst et al., 2017), are key allies in this work, but few have relationships with pantries that reach beyond supplying fresh produce (Furness & Gallaher, 2018). We argue that community-university partnerships that include both organized groups of civic urban gardeners and food pantries are a useful starting point for developing educational programs as well as infrastructure investment plans to close the food waste loop through local composting efforts. These partnerships could help connect gardeners, pantry staff, volunteers and visitors as crucial parts of an expanding food justice coalition addressing root causes of food insecurity. 

Acknowledgments

We are very grateful to all of the Sacred Heart staff involved in this project, especially Fernando Fernandez Levia, Sofia Rocha, Veronica Suarez Hernandez, and Roberto Gil, as well as the Pantry Volunteers and LMV gardeners. Thanks also to Maria Eugenia Flores Gomez for research insights and student researchers including Isabelle Solorzano, Paulina Ursua Garcia, Wanyu “Mary” Xiang, Daniela Serrano, Ayla Flanagan, and Jane Walker. We are also grateful for helpful comments and suggestions from three anonymous reviewers, copy editors, and the journal’s editor.

References

- Alattar, M. A. (2021). Eating inequity: The injustice that brings us our food. *Journal of Agriculture, Food Systems, and Community Development*, 10(3), 17–30. <https://doi.org/10.5304/jafscd.2021.103.003>
- Alkon, A. H., Cadji, Y. J., & Moore, F. (2019). Subverting the new narrative: Food, gentrification and resistance in Oakland, California. *Agriculture and Human Values*, 36(4), 793–804. <https://doi.org/10.1007/s10460-019-09954-x>
- Alkon, A. H., & Guthman, J. (2017). Introduction. In A. H. Alkon & J. Guthman (Eds.), *The new food activism: Opposition, cooperation, and collective action* (pp. 1–27). University of California Press.
- Bacon, C. M., & Baker, G. A. (2017). The rise of food banks and the challenge of matching food assistance with potential need: Towards a spatially specific, rapid assessment approach. *Agriculture and Human Values*, 34(4), 899–919. <https://doi.org/10.1007/s10460-017-9783-y>
- Bacon, C. M., Sundstrom, W. A., Gómez, M. E. F., Méndez, V. E., Santos, R., Goldoftas, B., & Dougherty, I. (2014). Explaining the ‘hungry farmer paradox’: Smallholders and fair trade cooperatives navigate seasonality and change in Nicaragua’s corn and coffee markets. *Global Environmental Change*, 25, 133–149. <https://doi.org/10.1016/j.gloenvcha.2014.02.005>
- Balazs, C. L., & Morello-Frosch, R. (2013). The three R’s: How community-based participatory research strengthens the rigor, relevance and reach of science. *Environmental Justice*, 6(1), 9–16. <https://doi.org/10.1089/env.2012.0017>

- Bellemare, M. F., & Duseroth, V. (2020). Who participates in urban agriculture? An empirical analysis. *Applied Economic Perspectives and Policy*, 43(1), 430–442. <https://doi.org/10.1002/aep.13072>
- Block, D. R., Chávez, N., Allen, E., & Ramirez, D. (2012). Food sovereignty, urban food access, and food activism: Contemplating the connections through examples from Chicago. *Agriculture and Human Values*, 29(2), 203–215. <https://doi.org/10.1007/s10460-011-9336-8>
- Bowness E., & Wittman, H. (2021). Bringing the city to the country? Responsibility, privilege and urban agrarianism in Metro Vancouver. *The Journal of Peasant Studies*, 48(6), 1141–1166. <https://doi.org/10.1080/03066150.2020.1803842>
- Bräutigam, K.-R., Jörisen, J., & Priefer, C. (2014). The extent of food waste generation across EU-27: Different calculation methods and the reliability of their results. *Waste Management & Research*, 32(8), 683–694. <https://doi.org/10.1177/0734242X14545374>
- Broad Leib, E. M., Beckmann, J. S., Ardura, A., DeBodeau, S., Oto, T., Becker, J., & Hanel, N. (2022). *Opportunities to reduce food waste in the 2023 Farm Bill*. Harvard Law School Food Law & Policy Clinic, National Resources Defense Council, ReFED, World Wildlife Fund. <https://chlp.org/wp-content/uploads/2022/04/2023-Farm-Bill-Food-Waste.pdf>
- Bruckner, H. K., Westbrook, M., Loberg, L., Teig, E., & Schaeffbauer, C. (2021). “Free” food with a side of shame? Combating stigma in emergency food assistance programs in the quest for food justice. *Geoforum*, 123, 99–106. <https://doi.org/10.1016/j.geoforum.2021.04.021>
- CalRecycle. (n.d.). *California’s short-lived climate pollutant reduction strategy*. Retrieved February 2024 from <https://calrecycle.ca.gov/organics/slcp/>
- Cannon, C. (2020). Examining rural environmental injustice: An analysis of ruralness, class, race, and gender on the presence of landfills across the United States. *Journal of Rural and Community Development*, 15(1), 89–114. <https://journals.brandonu.ca/jrcd/article/view/1737/407>
- Carney, M. (2012). “Food security” and “food sovereignty”: What frameworks are best suited for social equity in food systems? *Journal of Agriculture, Food Systems, and Community Development*, 2(2), 71–87. <https://doi.org/10.5304/jafscd.2012.022.004>
- Casey, J. A., Cushing, L., Depsky, N., & Morello-Frosch, R. (2021). Climate justice and California’s methane superemitters: Environmental equity assessment of community proximity and exposure intensity. *Environmental Science & Technology*, 55(21), 14746–14757. <https://doi.org/10.1021/acs.est.1c04328>
- Chiarella, C., Lamoureux, Y., Pires, A.A.F., Surls, R., Bennaton, R., Kim, J. V. S., Grady, S., Ramos, T. M., Koundinya, V., & DiCaprio, E. (2023). A preliminary assessment of food policy obstacles in California’s produce recovery networks. *Agriculture and Human Values*, 40(3), 1239–1258. <https://doi.org/10.1007/s10460-022-10407-1>
- City of San Jose. (n.d.). *Community gardening*.
- Cloke, P., May, J., & Williams, A. 2016. The geographies of food banks in the meantime. *Progress in Human Geography*, 41(6), 703–726. <https://doi.org/10.1177/0309132516655881>
- Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2021). *Household Food Security in the United States in 2020* [ERS ERR-298]. U.S. Department of Agriculture, Economic Research Service. <https://www.ers.usda.gov/webdocs/publications/102076/err-298.pdf>
- Cooks, L. (2021). Food rescue networks and the food system. *Gastronomica*, 21(1), 83–85. <https://doi.org/10.1525/gfc.2021.21.1.83>
- Data USA. (2022). *Santa Clara County, CA*. <https://datausa.io/profile/geo/santa-clara-county-ca/>
- de Souza, R. (2019). *Feeding the other: Whiteness, privilege, and neoliberal stigma in food pantries*. MIT Press
- Diekmann, L., Algert, S., Gray, L., Hutcheson, J., Scheer, J., & Sponsler Clements, S. (2013). *Santa Clara County Food System Assessment: A practical tool for food system change*. Santa Clara County Food System Alliance, Ag Innovations Network.
- Diekmann, L. O., Gray, L. C., & Baker, G. A. (2020). Growing ‘good food’: Urban gardens, culturally acceptable produce and food security. *Renewable Agriculture and Food Systems*, 35(2), 169–181. <https://doi.org/10.1017/S1742170518000388>

- Dixon, B. A. (2015). Rewriting the call to charity: From food shelf volunteer to food justice advocate. *Journal of Agriculture, Food Systems, and Community Development*, 5(2), 71–79. <https://doi.org/10.5304/jafscd.2015.052.010>
- Escobar, M., Mendez, A. D., Encinas, M. R., Villagomez, S., & Wojcicki, J. M. (2021). High food insecurity in Latinx families and associated COVID-19 infection in the Greater Bay Area, California. *BMC Nutrition*, 7, Article 23. <https://doi.org/10.1186/s40795-021-00419-1>
- Feeding America. (2023a) Latest food bank survey finds majority of food banks reporting increased demand. <https://www.feedingamerica.org/about-us/press-room/latest-food-bank-survey-finds-majority-food-banks-reporting-increased-demand>
- Feeding America. (2023b). *Connecting health and food access*. <https://www.feedingamerica.org/our-work/nutrition-health>
- Fisher, A. (2017). *Big hunger: The unholy alliance between corporate America and anti-hunger groups*. MIT Press.
- Food and Agriculture Organization of the United Nations [FAO]. (2019). *The state of food and agriculture 2019: Moving forward on food loss and waste reduction*. <https://www.fao.org/documents/card/en?details=ca6030en>
- Furness, W. W., & Gallaher, C. M. (2018). Food access, food security and community gardens in Rockford, IL. *Local Environment*, 23(4), 414–430. <https://doi.org/10.1080/13549839.2018.1426561>
- García-Sempere, A., Morales, H., Hidalgo, M., Ferguson, B. G., Rosset, P., & Nazar-Beutelspacher, A. (2019). Food sovereignty in the city?: A methodological proposal for evaluating food sovereignty in urban settings. *Agroecology and Sustainable Food Systems*, 43(10), 1145–1173. <https://doi.org/10.1080/21683565.2019.1578719>
- Giraud, E. G., El-Sayed, S., & Opejin, A. (2021). Gardening for food well-being in the COVID-19 era. *Sustainability*, 13(17), 9687. <https://doi.org/10.3390/su13179687>
- Gray, L., Guzman, P., Glowa, K. M., & Drevno, A. G. (2014). Can home gardens scale up into movements for social change? The role of home gardens in providing food security and community change in San Jose, California. *Local Environment*, 19(2), 187–203. <https://doi.org/10.1080/13549839.2013.792048>
- Guitart, D., Pickering, C., & Byrne, J. (2012). Past results and future directions in urban community gardens research. *Urban Forestry & Urban Greening*, 11(4), 364–373. <https://doi.org/10.1016/j.ufug.2012.06.007>
- Hammelman, C., Levkoe, C. Z., Agyeman, J., Kharod, S., Moragues Faus, A., Munoz, E., Oliva, J., & Wilson, A. (2020). Integrated food systems governance: Scaling equitable and transformative food initiatives through scholar-activist engagement. *Journal of Agriculture, Food Systems, and Community Development*, 9(2), 71–86. <https://doi.org/10.5304/jafscd.2020.092.003>
- Hanson, C., Lipinski, B., Robertson, K., Dias, D., Gavilan, I., Gréverath, P., Ritter, S., Fonseca, J., van Otterdijke, R., Timmermans, T., Lomax, J., O'Connor, C., Dawe, A., Swannell, R., Berger, V., Reddy, M., & Somogyi, D. (2016). *Food loss and waste accounting and reporting standard*. World Resources Institute. https://files.wri.org/d8/s3fs-public/FLW_Standard_final_2016.pdf
- Hecht, A. A., & Neff, R. A. (2019). Food rescue intervention evaluations: A systematic review. *Sustainability*, 11(23), Article 6718. <https://doi.org/10.3390/su11236718>
- Hislop, R. S. (2014). *Reaping equity: A survey of food justice organizations in the U.S.A.* [Master's Thesis, University of California, Davis] (Publication 1590830). ProQuest. <https://pqdtopen.proquest.com/doc/1695282787.html?FMT=ABS>
- Hoover, B. (2013). White spaces in black and Latino places: Urban agriculture and food sovereignty. *Journal of Agriculture, Food Systems, and Community Development*, 3(4), 109–115. <https://doi.org/10.5304/jafscd.2013.034.014>
- Horst, M., McClintock, N., & Hoey, L. (2017) The intersection of planning, urban agriculture, and food justice: A review of the literature. *Journal of the American Planning Association*, 83(3), 277–295. <https://doi.org/10.1080/01944363.2017.1322914>
- Jayaraman, S., & De Master, K. (Eds.) (2020). *Bite back: People taking on corporate food and winning*. University of California Press.
- Joint Venture Silicon Valley. (2023). *Silicon Valley Index: People, economy, society, place, governance*. Institute for Regional Studies. <https://jointventure.org/images/stories/pdf/index2023.pdf>

- Juris, J., Scrivano, R. M., Speidel, E., Bailey, L., & Jarrott, S. E. (2021). The development of a satellite food pantry through community-based participatory action research. *International Journal of Research on Service-Learning and Community Engagement*, 9(1), Article 6. <https://doi.org/10.37333/001c.31304>
- Kingsley, J., Diekmann, L., Egerer, M. H., Lin, B. B., Ossola, A., & Marsh, P. (2022). Experiences of gardening during the early stages of the COVID-19 pandemic. *Health & Place*, 76, Article 102854. <https://doi.org/10.1016/j.healthplace.2022.102854>
- Krause, M., Kenny, S., Stephenson, J., & Singleton, A. (2023). Quantifying methane emissions from landfilled food waste. U.S. Environmental Protection Agency. https://www.epa.gov/system/files/documents/2023-10/food-waste-landfill-methane-10-8-23-final_508-compliant.pdf
- Lin, B. B., Philpott, S. M., & Jha, S. (2015). The future of urban agriculture and biodiversity-ecosystem services: Challenges and next steps. *Basic and Applied Ecology*, 16(3), 189–201. <https://doi.org/10.1016/j.baec.2015.01.005>
- Loh, P., & Agyeman, J. (2019). Urban food sharing and the emerging Boston food solidarity economy. *Geoforum*, 99, 213–222. <https://doi.org/10.1016/j.geoforum.2018.08.017>
- Lohnes, J. D. (2021). Regulating surplus: Charity and the legal geographies of food waste enclosure. *Agriculture and Human Values*, 38(2), 351–363. <https://doi.org/10.1007/s10460-020-10150-5>
- Maiter, S., Simich, L., Jacobson, N., & Wise, J. (2008). Reciprocity: An ethic for community-based participatory action research. *Action Research*, 6(3), 305–325. <https://doi.org/10.1177/1476750307083720>
- Marya, R., & Patel, R. (2021) *Inflamed: Deep medicine and the anatomy of injustice*. Farrar, Straus and Giroux.
- McClintock, N., Miewald, C., & McCann, E. (2018). The politics of urban agriculture: Sustainability, governance, and contestation. In K. Ward, A. E. G. Jonas, B. Miller, & D. Wilson (Eds.), *The Routledge Handbook on Spaces of Urban Politics* (pp. 361–374). Routledge.
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass.
- Mourad, M. (2016). Recycling, recovering and preventing “food waste”: Competing solutions for food systems sustainability in the United States and France. *Journal of Cleaner Production*, 126, 461–477. <https://doi.org/10.1016/j.jclepro.2016.03.084>
- Noll, S., & Murdock, E. G. (2020). Whose justice is it anyway? Mitigating the tensions between food security and food sovereignty. *Journal of Agricultural and Environmental Ethics*, 33(1), 1–14. <https://doi.org/10.1007/s10806-019-09809-9>
- Patel, R. (2009). Food sovereignty. *The Journal of Peasant Studies*, 36(3), 663–706. <https://doi.org/10.1080/03066150903143079>
- Pellow, D., & Park, L. S.-H. (2002). *The Silicon Valley of dreams: Environmental injustice, immigrant workers, and the high-tech global economy*. NYU Press.
- Porter, C. M. (2018). Triple-rigorous storytelling: A PI’s reflections on devising case study methods with five community-based food justice organizations. *Journal of Agriculture, Food Systems, and Community Development*, 8(A), 37–61. <https://doi.org/10.5304/jafscd.2018.08A.008>
- Poulsen, M. N. (2017). Cultivating citizenship, equity, and social inclusion? Putting civic agriculture into practice through urban farming. *Agriculture and Human Values*, 34(1), 135–148. <https://doi.org/10.1007/s10460-016-9699-y>
- Practical Answers. (2020). *How to make vermicomposting*. <https://answers.practicalaction.org/our-resources/item/how-to-make-vermicomposting/>
- Pudup, M. B. (2008). It takes a garden: Cultivating citizen-subjects in organized garden projects. *Geoforum*, 39(3), 1228–1240. <https://doi.org/10.1016/j.geoforum.2007.06.012>
- ReFED. (2023). *Insights Engine: Food Waste Monitor*. <https://refed.org/>
- Sacred Heart Community Service. (2022). *Report 2020–2021*. <https://static1.squarespace.com/static/60c6c5e5586f0c2b0071eef5/t/61c39ad76dca2c1c42764742/1640209128997/SHCS-Annual-Report-2021.pdf>
- San Francisco Recreation & Parks. (n.d.). *Community Gardens*. <https://sfrecpark.org/1403/Community-Gardens>
- Second Harvest of Silicon Valley. (2021). *Responding to COVID-19: Give what matters* [Video]. YouTube. www.youtube.com/watch?v=ampanT7hZTA&feature=youtu.be

- Spring, C., Garthwaite, K., & Fisher, A. (2022). Containing hunger, contesting injustice? Exploring the transnational growth of foodbanking—and counter-responses—before and during the COVID-19 pandemic. *Food Ethics*, 7, Article 6. <https://doi.org/10.1007/s41055-022-00099-y>
- Tims, K., Haggerty, M., Jemison, J., Ladenheim, M., Mullis, S., & Damon, E. (2021). Gardening for change: Community giving gardens and senior food insecurity. *Journal of Agriculture, Food Systems, and Community Development*, 10(4), 85–101. <https://doi.org/10.5304/jafscd.2021.104.030>
- Tursunova, Z., Ramraj, C., Fulford, S., Cyr, M., & Thompson, S. (2020). Pathways towards food sovereignty: Reconnecting individuals, food, nature and community in the inner city in Winnipeg, Manitoba. *Canadian Journal of Urban Research*, 29(2), 102–116.
- United Nations Environment Programme. (2021). *Food Waste Index Report 2021*. <https://wedocs.unep.org/20.500.11822/35280>
- U.S. Census Bureau. (2022). *QuickFacts: Santa Clara County, CA; Santa Clara City, CA*. <https://www.census.gov/quickfacts/fact/table/santaclaracountycalifornia,santaclaracitycalifornia/PST045222>
- U.S. Department of Agriculture Economic Research Service. (2023). *Food and consumers*. <https://www.ers.usda.gov/covid-19/food-and-consumers/>
- U.S. Environmental Protection Agency. (n.d.). *Composting at Home*. <https://www.epa.gov/recycle/composting-home>
- University of California Cooperative Extension. (2021). *County of Santa Clara Food System Workplan: An assessment and roadmap for the development of a comprehensive Food, Restaurants, Agriculture, and Health Access Initiative*. UCCE, County of Santa Clara Department of Agriculture and Environmental Management, University of California Natural Resources. <https://sustainability.sccgov.org/sites/g/files/exjcpb976/files/documents/Food%20Systems%20Workplan.pdf>
- van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>
- Vitiello, D., Grisso, J. A., Whiteside, K. L., & Fischman, R. (2015). From commodity surplus to food justice: Food banks and local agriculture in the United States. *Agriculture and Human Values*, 32(3), 419–430. <https://doi.org/10.1007/s10460-014-9563-x>
- Williams, M. J. (2022). Care-full food justice. *Geoforum*, 137, 42–51. <https://doi.org/10.1016/j.geoforum.2022.10.008>
- World Forum for Food Sovereignty. (2007). *Declaration of Nyéléni*. <https://nyeleni.org/IMG/pdf/DeclNyeleni-en.pdf>
- Yu, Y., & Jaenicke, E. C. (2020). Estimating food waste as household production inefficiency. *American Journal of Agricultural Economics*, 102(2), 525–547. <https://doi.org/10.1002/ajae.12036>

Food democracy as food security strategy: The case of a Costa Rican tourism town

Mary Little ^{a *}

Center for Ecological Resilience Studies

Taylor Horn ^b

Miami University

Madeline Sit ^c

University of San Diego

Submitted June 25, 2023 / Revised October 2 and December 2, 2023, and February 9
and February 18, 2024 / Accepted February 19, 2024 / Published online May 7, 2024

Citation: Little, M., Horn, T., & Sit, M. (2024). Food democracy as food security strategy:
The case of a Costa Rican tourism town. *Journal of Agriculture, Food Systems, and Community
Development*, 13(3), 199–216. <https://doi.org/10.5304/jafscd.2024.133.019>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

Tourism communities such as Monteverde, Costa Rica, the site of this study, have been profoundly impacted by the loss of tourism revenue during COVID-19. Faced with intensified food insecurity caused by the cascading impacts of this pandemic, the community has organized initiatives to stimulate local, sustainable food production to increase food security during the COVID-19 economic recovery. This paper adopts a food democracy framework to analyze restaurants' regional food

purchases, barriers to local purchasing, and tourists' interest in and ability to identify local food products. Our findings show that nearly all restaurant owners identified benefits of purchasing regional food but reported multiple barriers to buying locally. Tourists reported high interest in eating locally produced food but do not have enough information to identify farm-to-fork options. Local food initiative stakeholder interviews show that emergent strategies demonstrate a move toward food democracy actions by promoting communication and co-learning between restaurants, food producers, and tourists to reinforce principles of food democracy. Based on our findings, we recommend (a) strengthening producer-to-restaurant networks, (b) enhancing communication of local food production benefits and responsibilities to restaurants, and (c) promoting the locally made certification for restaurants to strengthen localized food networks and direct tourists to transformative food strategies underway in Monteverde.

^{a *} *Corresponding author:* Mary Little, LL.M, PhD Candidate, University for Peace, Costa Rica, and Associate Professor, Center for Ecological Resilience Studies, Atenas, Alajuelas, Costa Rica; +1-978-741-3567;  <https://orcid.org/0000-0002-8273-7190>; mlittle@fieldstudies.org

^b Taylor Horn, Master's in Economics Candidate, Miami University, Ohio, USA; horntn@miamioh.edu

^c Madeline Sit, University of San Diego, and MPH Candidate, Environmental Health Sciences, University of California Berkeley, California, USA; msit@san Diego.edu

Keywords

food security, food citizenship, farmer-to-farmer knowledge-sharing, community-based tourism, Monteverde, Costa Rica

Introduction

Agriculture is one of the most ancient and essential economic sectors, while tourism is one of the newest and most rapidly growing. Research has shown that agriculture and tourism vie for the same resources (Torres & Momsen, 2005). Land is frequently transitioned from agriculture to tourist accommodations and attractions. Extractive globalized tourism often delivers uneven economic benefits among those who can invest in tourism by purchasing land and those who work as laborers (Higgins-Desbiolles & Bigby, 2022). The unequal distribution of economic benefits from tourism impacts local food access and nutrition (Himmelgreen et al., 2006). Tourism scholars have reported that tourism has not only outcompeted agriculture for limited labor, land, and water resources but can also drive up food prices (Berno, 2011; Brown, 2013; Pirani & Arafat, 2016). The tourism industry's reliance on imported food can significantly affect the social and economic impacts of tourism, resulting in loss of earnings for local producers while contributing to changes in local diet (Hansen et al., 2023). As part of the neoliberal economic model, commercial tourism seeks low-wage labor and cheap natural resources to sustain profits (Patel & Moore, 2018), including importing food, which reduces the chances to expand local food production and direct farm-to-fork restaurant sales. Asiedu and Gbedema (2011) noted that tourism does have the potential to positively influence the production of some agricultural products to harness the benefits in tourism areas, if properly planned.

Bianchi (2020) observed that COVID, despite some scattered progress, is unlikely to create a real paradigm shift toward more sustainable and equitable forms of tourism, which remain inconsistent and “hindered by the relentless pursuit of growth” (p. 1, 619). Issues of farmland conversion to hotels, unmanaged waste, and water contamination indicate that unbalanced economic reliance on tourism is highly precarious (Norberg-Hodge, 2023).

Tomassini and Cavagnaro (2020) noted that a historical movement toward social and environmental justice involves a deeper connection to our spaces, relationships and communities and more democratic, just, and balanced power relationships. Instead of returning to “normality,” communities will need to actively restructure the return of tourism to serve community interests and harness the tools of democratic structures for just outcomes.

The extensive field of literature addressing community food strategies (Hawkins et al., 2022; McCullum et al., 2005; Raja et al., 2021) is complemented by scholarship on the impacts of COVID-19 on food security in tourism areas (Bianchi, 2020; Burke, 2021; Mtapuri et al., 2021). Recent community food system adaptations to responsible tourism initiatives still need in-depth examination. This paper adds to the field by focusing on the relationship between the democratization of the local food system and ways to actively involve restaurants and tourists in the economic and ecological benefits of responsible tourism.

Retaining tourism benefits and avoiding economic leakage depends on local communities having a voice and vote in decision-making. Sustainable tourism development has been promoted as an instrument for fighting poverty, enhancing responsible production and consumption, safeguarding the environment and its inhabitants, providing equal employment opportunities, and improving peace (Hall, 2019). To underscore sustainable tourism's significance in development planning and promotion, the United Nations (UN) officially celebrated 2017 as the UN International Year of Sustainable Tourism for Development (Hall, 2019). The UN Environmental Programme (UNEP) described “tourism's potential for creating employment, supporting livelihoods, and enabling sustainable development due to [tourism] as a source of foreign income” (UNEP, 2011). More complex dialogue models have emerged to establish whether and how tourism fits with a community's values and ecosystem limits (Isla, 2016).

As interest in supporting localized tourism grows, concerns about economic leakage, agrochemicals, and scale must be assessed. Food experiences continue to attract more tourists and comprise a large part of tourists' budgets. Despite the

reliance on food imports in many tourism areas, through responsible gastronomy travel, more tourists are seeking authentic food products that benefit the community (Dimara & Skuras, 2003; Sims, 2009). Eight out of 10 visitors are influenced by culinary attractions when choosing a destination, and food purchases account for 40% of the world's tourism expenditure (Europa Press Turismo, 2019). Fusté-Forné and Jamal (2020) recognized slow food tourism as an example of a paradigm shift created by the slow movement (slow foods, slow cities, slow travel, and slow tourism) to address modern hyperconsumption. Slow food tourism is based on embodying an ethic of slow, sustainable, and secure action to facilitate diversity, commonality, sociality, and citizen democracy (Yeoman & McMahon-Beattie, 2016). Those who apply these values in their daily lives can support these principles in other communities with their tourist expenditures.

Some communities actively bring visitors into their sustainable food efforts to become food citizens, which Wilkins (2005) defined as people “engaging in food-related behaviours that support, rather than threaten, the development of a democratic, socially and economically just, and environmentally sustainable food system” (p. 271). The question remains whether the responsibilities and contributions of food citizenship can be extended to tourists when they travel.

Currently, academics and community organizers are questioning the extent to which tourism can positively influence human and non-human well-being and give back to the hosting destinations (Becken & Kaur, 2021). Regenerative tourism surpasses the aims of sustainable tourism by promoting tourism innovations that embed tourism practices within local communities and promoting ecological processes that elevate human and non-human well-being (Bellato & Cheer, 2021). In this regenerative tourism model, when they visit a destination, tourists acquire responsibilities, or temporary civic duties, including responsible consumption (Phi & Dredge, 2019). For this contract to function, tourism communities must find ways to convey tourists' responsibilities and facilitate accountable actions for tourists, such as supporting local businesses and buying local products

(Higgins-Desbiolles, 2010). First though, in order for tourists to support them, there must be responsible local food production networks such as the local food production and distribution networks being formed in Monteverde.

Study Site

Monteverde is located 4,790 ft (1,460 m) above sea level in the Tilarán Mountain Range, northwest of San José, the capital city of Costa Rica (Harwood & Zapata, 2006). Ecological and economic factors have shifted Monteverde's primary economic focus from agriculture to ecotourism, which has grown exponentially in the region. In 1972, there were less than 100 visitors to the Monteverde Cloud Forest Reserve. In 1999, nearly 60,000 visitors entered the reserve (Weinberg, 2002). There were an estimated 230,000 annual visitors in 2019. Since Monteverde reopened to tourism in 2021, visitors have returned to pre-COVID numbers. Many community members have identified tourism reliance as a threat to long-term prosperity after multiple crises have interrupted tourism, including the 2008 economic downturn, the impacts of a devastating storm that closed off the community for weeks, and the COVID-19 pandemic.

The area referred to collectively as Monteverde is a 2.7 mi² (7 km²). The district of Monteverde had a population of approximately 4,155 residents in 2010 (INEC, 2011). However, it is difficult to determine the actual population due to continued growth and development in the region that includes long- and short-term international residents and service workers (Cantor, 2016). The area includes three nature reserves that attract tourists and biological researchers. Traditionally, the area relied on subsistence farming and coffee production and later a dairy cooperative, a form of democratized local production with profit sharing (Gudmundson, 2018). Coffee, the main export crop, was also sold and processed by a cooperative south of Monteverde. Monteverde's distance from central political power combined with the democratizing practices of cooperative structures are factors that promote the citizen involvement and collaboration needed to support food democracy movements. Some tourism that features regionals foods such as coffee, artisanal cheeses, dairy, and a

diverse selection of vegetables has emerged. However, incorporating these regional foods into local restaurants has been limited by the lack of an effective distribution network between the local producers, restaurants, and cafés.

Statement of Purpose

We propose that more demand for local food by tourists provides a more diverse customer base for producers to help ensure that local production is more profitable and available for everyone. Ideally, more economic opportunities for local farmers will strengthen decision-making about locally appropriate means of sustainable food production and distribution. Specifically, this study explored the relationship between restaurants and local production in the region of Monteverde, Costa Rica, by assessing:

1. restaurants' use of local food products,
2. restaurants' interest in purchasing more local food products, and
3. the challenges restaurants perceive in using local food products.

Additionally, we evaluate tourists' interest in:

1. eating local food,
2. their stated willingness to pay to eat local food, and
3. their ability to access local food.

We then apply the four dimensions of the food democracy framework to evaluate whether local food initiatives address these challenges and facilitate transformative food systems.

Literature Review

Food democracy movements and regenerative tourism share the core principles of diversifying and sharing prosperity among all community members without degrading the natural environment that sustains them. Hassanein's (2008) definition of food democracy emphasizes "production networks that create solutions to ecological, social, and economic problems in the dominant food system, determined socially and politically through meaningful civic participation and political engagement

by an informed citizenry" (p. 289). In comparison, the term *regenerative tourism* was coined to underline the need to assess not only tourism in terms of cost-benefit analysis but also the myriad human and non-human values underpinning tourism (Cave et al., 2022). The supply of local food to hotels is one channel by which agriculture–tourism linkages can be facilitated. Thomas-Francois et al. (2016) showed that for decades, farmers and hotel supply chain relationships have been weak, resulting in economic leakages due to high food importation to support the tourism sector. Creating a mutual purpose among residents and visitors provides an opportunity to encourage greater supply and demand for locally produced food. Boluk et al. (2022) explained that "purposeful tourism is about creating sustainable places to live, work, and visit, based on co-creating values with communities that are focused on localization and more than the pursuit of profit" (p. 16). However, if tourism is to contribute to the well-being of residents, it is important to consider how to reduce local economic leakages and increase local production. Research by Mtapuri et al. (2021) documented that community-based tourism approaches can improve the local economic development of communities by reducing economic leakages from the tourism industry. Despite the challenges in transmitting the benefits of tourism to local food producers, research has shown that surplus food production and the use of local food by the tourism industry can shift tourism relations from conflict to symbiosis (Muangasame & Park, 2019). Ferreira et al. (2021) pointed out the benefits of host community–driven food systems such as the one Monteverde is working toward. Ferreira et al. called for the "the formal tourism sector to embrace the sociocultural characteristics of the host community and grassroots business development strategies ... to align local microentrepreneurs with expected business opportunities generated by big tourism investments" (2021, p. 165).

Linking tourists to local goods and services can potentially decrease economic leakage and increase economic benefits, yet localizing agriculture does not inevitably mean more sustainable food systems. The particular social, economic, and ecological impacts of rescaling should be critically assessed.

Born and Purcell (2006) warned of the “local trap,” or “the tendency of food activists and researchers to assume something inherent about the local scale” (p. 195). They pointed out the biased belief that larger scales are associated with the harms of capitalist production systems while the “alternative food networks” are necessarily local and preferable (Born & Purcell, 2006, p. 199). Yet, carrying on with conventional agriculture as usual, which involves high levels of agrochemical application, does bring risks. Costa Rican academics and agricultural workers have been calling for bans and restrictions on agrochemicals for decades. In 2022, the UN Development Program contributed to these calls to reduce agrochemicals due to high rates of cancer among farm workers and communities (Alvarado-Prado et al., 2022). Produce that does not meet strict export requirements for the US and Europe is likely to be directed to the national Costa Rican market, increasing health risks from the production and consumption of conventionally grown monoculture crops (Galt, 2017).

Despite Costa Rica’s “green” image, less than 2% of agricultural land is used for organic cultivation (Organisation for Economic Co-operation and Development [OECD], 2017). The Ministry of Agriculture does promote some sustainable practices, but support is inconsistent, and extension education services often depend on the knowledge and interest of local field officers (Sylvester & Little, 2020). Agroecological farmers have been working individually or in small collectives to extricate themselves from agro-industrial systems. In Monteverde, for example, LIFE Monteverde Coffee Farm shares knowledge with interested local producers through workshops on composting, efficient production of beneficial microorganisms, and other agroecological practices. The Monteverde Institute¹ has begun a *campesino-a-campesino* (farmer-to-farmer) agroecological training program to promote knowledge-sharing among agroecological farmers. This, and a history of farmers sharing sustainable production methods, signals the willingness and available network to ensure local production is increasingly sustainable production. For scholars like Shiva (2005; 2008),

relocalization is a return to localized practices that rely on the construction of decentralized, biodiversity-based organic food and energy systems operating based on grassroots democracy and local economies. Actions to reverse the environmental destruction and economic inequality of ever-expanding growth models call for reconnection with each other and with the more-than-human world to share the burdens and benefits of production. The relocalization of food presents an opportunity for a diversified economy with a strong communal base (Gibson-Graham, 2006; Gibson-Graham et al., 2013). Relocalization, in this context, is not solely about rescaling but about a movement to change the mentality behind farming from extractive to regenerative.

Food democracy refers to how people can control access to healthy food, creating local economic opportunities and making decision-making roles available to all citizens (Hamilton, 2005). It explores the interconnections between people, power, politics, and food systems so individuals, communities, and societies can be empowered to grow, access, and eat healthy food. This is accomplished by actively making decisions about food production and distribution and community food sharing and being involved in food citizenship, including the construction of alternative purchasing systems, such as short supply chains (Singer & Mason, 2009; Booth & Coveney, 2015). These mechanisms include community supported agriculture, solidarity, and collaborative processes in the community and provide knowledge about food, food production, and agricultural skills (Bornewald & Weiland, 2019; Renting et al., 2012). Many of the local food initiatives in Monteverde embody these principles. We aimed to better understand how local communities can use the key dimensions of food democracy—communication, community care, co-learning, and efficiency (Hassanein, 2008)—to link producers with restaurants and create a way for tourists to identify local foods and understand the benefits of buying local. In tourism communities, a dual-purpose initiative is needed to engage the local producers and food citizens while also reaching out to travelers as temporary

¹ <https://monteverde-institute.org/about-us/>

participants in the local food system. Therefore, we also evaluated food democracy as a means of bringing tourists into responsible food strategies via local restaurants.

Food democracy can function as a conceptual tool for actors to regain democratic control over the food system to enable sustainable transformation (Hassanein, 2003; Lang, 1999). This study focused on strengthening relationships between local farmers and restaurants to transform the food system toward food democracy. Our analysis was based on Hassanein's (2008) key dimensions of food democracy. We applied these key food democracy dimensions to assess whether the relationship between food producers and restaurants promotes food democracy principles and which dimensions have not currently manifested. The first dimension is *communication* between actors. Communication includes opportunities for innovation, learning about each other, and increasing actors' participation in the local food system (Hassanein, 2003; 2008). The second dimension is *good community practices*, also known as caring practices that involve fair prices and access to food for all (Hassanein, 2008). The third dimension is *co-learning*, where citizens and actors in the food system share knowledge, including various perspectives of the food system (Hassanein, 2008). The fourth dimension is *efficiency*, the ability to determine and produce desired results that contribute to food system sustainability (Hassanein, 2008). Enhancing these four dimensions provides a pathway to boost local food production, thus improving sustainable agricultural livelihoods and local food security by decreasing reliance on imported goods. We assessed whether and how food democracy dimensions are present in local food initiatives and in strengthening local food production and distribution bonds.

Materials and Methods

We selected a mixed methods approach to utilize the strengths of both qualitative and quantitative research (Creswell & Creswell, 2018). Our research goal was to collect primary data on whether tourism businesses in the Monteverde region of Costa Rica currently use and are interested in purchasing local foods to enhance democratic control and pro-

mote a sustainable transition toward food democracy. Combining qualitative and quantitative research approaches allowed for a more comprehensive understanding of local food security, an exploration of the local context and the complexities, and the inclusion of the perspective of local stakeholders, such as restaurant owners and actors promoting local food production.

We conducted two field surveys to examine both sides of an important social phenomena: restaurants' willingness to purchase local food and tourists' willingness to purchase local food. Three criteria determined businesses' inclusion in the survey:

1. The businesses were located in the central tourism area, including Monteverde, Santa Elena, Los Llanos, Cerro Plano, and Perro Negro.
2. The businesses prepared and served food. These businesses included restaurants, cafés, and hotels (collectively referred to as "restaurants" for the purpose of this study).
3. A person familiar with food purchasing at the restaurant was available to complete the survey.

We defined buying locally as purchasing a product that was produced in the Monteverde region. This region includes Monteverde, Guacimal, La Cruz, Canitas, Santa Elena, San Luis, and Los Llanos and was delineated with our local partner, the Monteverde Institute, according to farm distribution routes and community connections. Survey questions were created in collaboration with the Monteverde Institute, a nonprofit educational organization established to guide increased tourism in a positive and productive manner for the benefit of the visitors and the local community. Data were collected by means of a questionnaire. Most of these questions were binary or multiple choice. The survey questions centered around (a) current use of products produced in the six nearest towns, (b) interest in using more local food products, (c) benefits of purchasing food locally, and (d) challenges purchasing food locally.

In April 2022, we requested all known restaurants in the study area complete the in-person survey. We had a participation rate of 64%. A total of

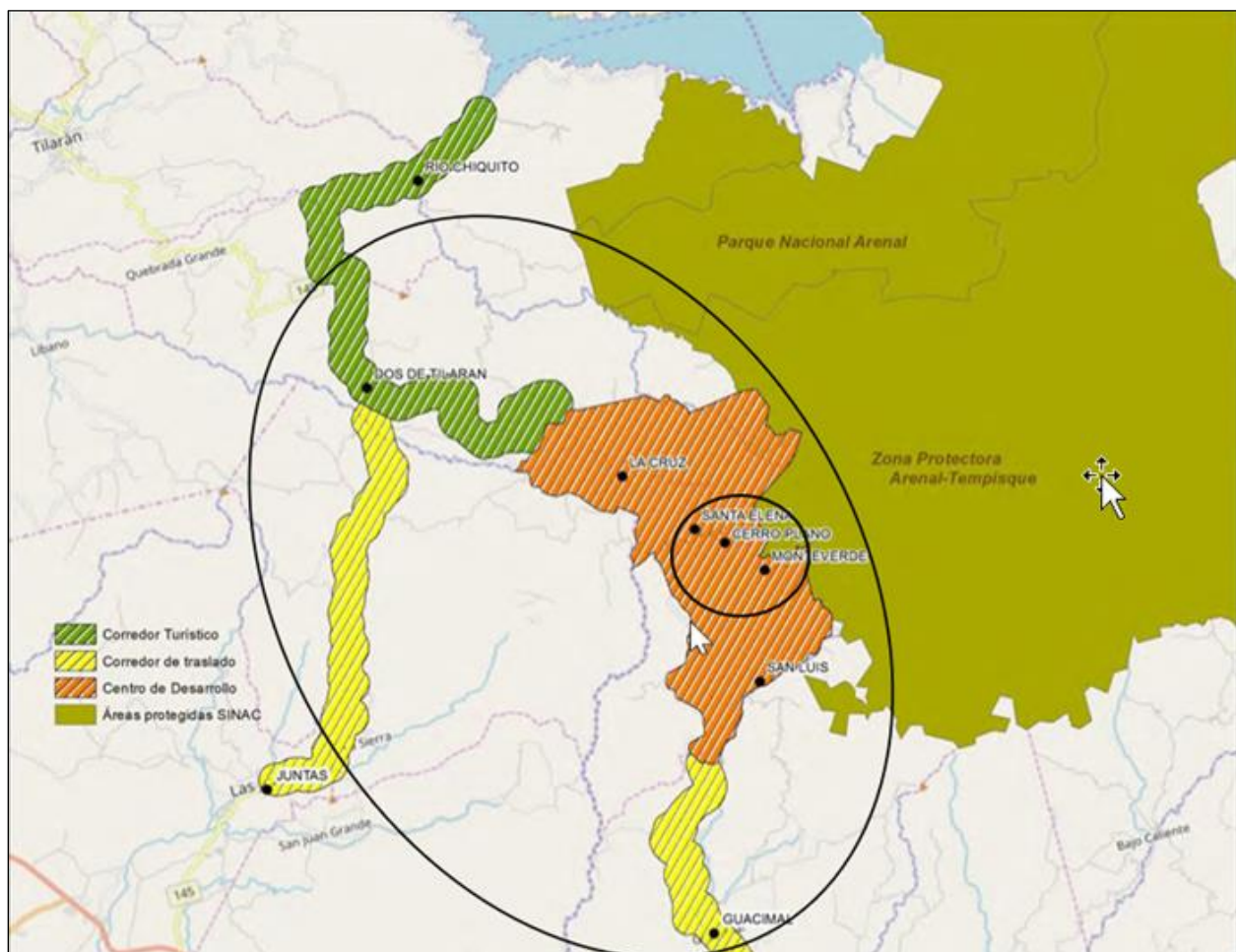
52 of the 80 local restaurants completed the survey; 26 of the restaurants were in the Santa Elena neighborhood, 14 in Cerro Plano, nine in Monteverde, and three in Los Llanos (see Figure 1). Of these establishments, 28 were restaurants, 16 were restaurants in hotels that generally provide meals to guests, and seven were cafés or bakeries. All restaurants had been open for at least one year.

To better understand tourists' interest in eating local foods and willingness to purchase local food, we conducted an additional survey of visitors ($n = 124$). Surveys were conducted at a grocery store and a restaurant in each of the three tourism centers of Santa Elena, Monteverde, and Cerro Plano. Only tourists who had been in the Monteverde

region for at least 24 hours were surveyed to ensure some familiarity with the local food options. Participants reported staying in the Monteverde region between one and 10 days with an average stay of four days. All participants were 18 years or older, with an age range between 18 and 68 years, and included 64 females and 60 males. Only foreign tourists were included in this survey. The tourist sample consisted of 47 Europeans, 34 North Americans, 28 Latin Americans, and 15 Asians. Tourist surveys addressed a) interest in eating locally produced food while visiting the Monteverde area, b) willingness to pay for local products, and c) ability to identify the local origin of food products. All survey data was compiled using

Figure 1. Monteverde Regional Map

The interior ring indicates the study site, and the external ring indicates the regional production area defined as “local” for this study.



Source: Instituto Costarricense de Turismo (2022).

Excel. Survey participants were provided with a verbal description of the research project and informed that the information would only be used in our academic research and gave verbal consent to participate in the survey.

Additionally, information was gathered by conducting semi-structured interviews with individuals from three organizations promoting local food production and community engagement: the director of the farmer-to-farmer knowledge-sharing initiative, the lead facilitator of the Hecho en Monteverde² local certification project, and an individual from Econexiones, a direct delivery online platform to order food from local farmers. All interview participants were provided with a written and verbal description of our research and signed a consent form before participating. Interviews lasted 30 minutes to one hour and were conducted face-to-face. We used the information from the interviews to identify active strategies for increasing local food production and distribution. We used theoretical thematic analysis to individually code actions that relate to the four food democracy dimensions. Interviewees' descriptions of the initiatives were used to align the initiative with the four food democracy dimensions and related factors. We conducted comparative analysis of our coding results to enhance the credibility, dependability, and confirmability of the themes. Further, the challenges that restaurant and tourist survey participants faced when trying to purchase local food were linked with initiatives to identify which projects could act as potential solutions to these issues.

Results

Restaurants and Local Food Use

Of the 52 restaurants surveyed, 58% reported pur-

chasing at least some products locally (Table 1). We specified six local community production zones nearest to Monteverde, which included slightly warmer areas where a wider variety of crops can be grown. However, many respondents described food products that do not grow in the region as "locally purchased," such as pineapples. We suspect that these respondents included area sellers, as well as area producers, in the term "local." We excluded products that cannot be produced locally from the results.

The fact that over half of the restaurants included in this study bought some local products should not obscure the reality that most products are imported from outside the region. Restaurants reported buying these products locally as often as possible. However, restaurants also reported they purchase items imported from other regions or countries when local items are not accessible. Additional obstacles included the high price of products (30%), availability and variety of foods (30%), consistency and quality of foods (17%), distribution issues (17%), and lack of communication between restaurants and farmers (8%).

Nearly all restaurants (96%) reported the benefits of buying locally and articulated at least one of those benefits: supporting the local economy, supporting the community, purchasing fresher or higher-quality products, and being better for the environment. Some respondents explained that a shorter delivery distance meant less pollution and that many local farmers are farming more sustainably in comparison to non-local farmers, which is beneficial for the environment. Despite being aware of some of the benefits of buying locally, all restaurants reported obstacles to buying local food.

Table 1. Number and Percentage of Restaurants (*n* = 52) that Report Purchasing Locally Produced Agricultural Products When Available, Displayed by Product

	Eggs	Cheese	Milk	Lettuce	Cilantro	Onions	Papaya	Tomatoes
Restaurants buying products locally	28	26	14	14	9	8	8	8
% of restaurants buying products locally	54.88%	50.96%	27.44%	27.44%	17.64%	15.68%	15.68%	15.68%

² <https://www.hechoenmonteverde.com>

Tourists and Local Food Consumption

In the second survey, tourists were asked about their interest in eating local food while in the Monteverde area and their willingness to pay more for local food. Tourists demonstrated a high level of interest in consuming local foods. There was an average score of 4.4 on a scale of 0–5, where 0 represents no interest and 5 represents the highest level of interest in local foods. All but two of the respondents reported they would be willing to pay more to cover any additional costs of buying local food. Since it may be difficult for tourists to specify an exact amount they would be willing to pay in a country they are visiting, we selected the more generalized indicators of “slightly more” or “as much as needed” to determine the increased willingness to spend more on local food. Fifty-six percent of participants responded that they were willing to pay slightly more and 40% were willing to pay as much as was necessary. Even though 95% of the tourists were interested in learning more about the origin of local foods produced in Monteverde, 82% reported they had not found enough information to determine whether prepared food was locally produced.

Community Food Security Initiatives

The COVID-19 pandemic raised concerns about overreliance on tourism and motivated collaboration on alternative models to support local livelihoods. Recognizing tourism overreliance as a danger to well-being, community members have questioned how to best share abundance and reduce scarcity to ensure that all members’ basic needs are met, particularly during tourism downturns. Residents have responded with several food security initiatives informed by the results of an unpublished 2020 initial community needs assessment survey conducted by the Monteverde Institute and the community development organization Comisión Enlace Monteverde. These initiatives include the creation of a centralized community garden, the development of a community currency (Little, 2022), initiatives to connect farmers to residents and business customers, farmer-to-farmer knowledge-sharing permaculture lessons to increase product variety and meet local demands sustainably, and the *Hecho in Monteverde*

local-origin certification. We outline how these initiatives help restaurants and tourists participate in local food systems that promote food democracy. Further evaluation is key to monitoring the initiatives’ effectiveness and evolution as they expand to include tourists and tourism businesses.

The Monteverde Institute (MVI) was established in 1985 to advance sustainable living at the local and global level through place-based education, applied research, and programs that benefit the wider community. To address food security issues that arose during the pandemic, the MVI has collaborated on food initiatives driven by community needs and objectives. The MVI identified a mismatch between what local producers are growing and the demand from local restaurants. To address the demand for more variety, the MVI has created a farmer-to-farmer knowledge-sharing course for local farmers who want to meet the product demand of restaurants and residents.

Hecho en Monteverde (Made in Monteverde) is a newly developed local-origins certification to elevate Monteverde’s position as an environmentally and culturally responsible destination. *Hecho in Monteverde* aims to diversify the economy to generate more responsible local production and consumption (Daniel Vargas, interview, June 22, 2022). Economic diversification promotes the circular economic model to elevate regenerative production, minimize extractive practices, and reduce waste. The certification will help residents and tourists identify local products and services including artisans, shops, galleries, tourism and cultural experiences, and food experiences.

Econexiones was founded in 2020 to act as a local produce distributor in Monteverde. Econexiones delivery service help farmers benefit from this platform by advertising local foods and connecting farmers with local buyers while their products are delivered by area drivers, which also creates jobs. Most restaurants did not have easy access to local products, and local producers were losing sales to outside food services. Econexiones’s mission is to provide Monteverde residents and businesses with local food that is produced under principles of social reciprocity and reaping mutual benefits. Farmers benefit from this platform by advertising and connecting with local buyers. Their

products are delivered by area drivers, which also creates jobs.

Table 2 links the four food democracy dimensions (communication between actors, good community practices, co-learning, and efficiency) to specific participant challenges and ways community actions such as farmer knowledge-share courses, *Hecho en Monteverde*, and Econexiones help address these challenges.

Discussion

Food democracy has become central to discussions and theories about food politics. Even so, food democracy principles are seldom applied in practice. This study applied food democracy as a useful conceptual tool to assess how food initiatives shape local food systems. To this end, we evaluated whether food democracy principles could be extended to include tourism businesses

and travelers in tourism areas. The Monteverde community has created a number of initiatives to promote local production and facilitate citizen participation in a more sustainable food democracy system, including community gardens, a community currency, a green market, and agroecological knowledge-sharing opportunities for local farmers. Still, restaurants face challenges receiving consistent deliveries from local farmers. Furthermore, while tourists demonstrate interest in supporting local farmers and participating in authentic local experiences, they face challenges identifying which products are local. In this section, we use Hassanein's (2008) four food democracy dimensions (communication between actors, food community practices, co-learning, and efficiency) to assess the shape these dimensions take in Monteverde. Then we use the four dimensions to assess the strengths and obstacles of

Table 2. Ways Food Democracy (FD) Dimensions Apply to the Challenges Businesses and Tourists Face and the Corresponding Community Solutions in Monteverde

FD Dimension	Description of FD Factor	FD Challenges by Participant	FD Promotion Community Actions
Communication between actors	• Innovate • Learn from one another • Increase actors' participation	<i>Businesses:</i> • Lack of information about products • Difficulty communicating with farmers <i>Tourists:</i> • Lack of knowledge about source of food	• Multi-farmer product listing • Local food delivery system • <i>Hecho en Monteverde</i> local certification
Good community practices	• Support fair prices • Access to food for all	<i>Businesses:</i> • Higher cost of local food <i>Tourists:</i> • Higher demand, which could create competition for locally produced food	• External price comparison • Local green market for businesses and residents • Higher demand, which encourages farmer to produce more food
Co-learning	Enable knowledge sharing	<i>Businesses:</i> • Few chances for businesses to interact with farmers <i>Tourists:</i> • Lack of clarity about ways to learn about local products	• Farmer-to-farmer training • Farm-to-fork chef demonstrations • <i>Hecho en Monteverde</i> local product and experience certification
Efficiency	Contribute to sustainable food production	<i>Businesses:</i> • Product price, availability, consistency <i>Tourists:</i> • Time necessary to investigate food origin	• More local producers, availability from broader producer base • New green market • Tourists, who provide additional customer base • <i>Hecho en Monteverde</i> information on local products and experiences

connecting tourists with local food and make recommendations for enhancing businesses' role as intermediaries between producers and tourists as food citizens.

Our research is connected to localized tourism defined and implemented by the local community (Higgins-Desbiolles & Bigby, 2023). We aim to contribute to these actions by demonstrating how residents can invite tourists to support localizing food efforts.

Community efforts to spread knowledge about human and environmental benefits of local, sustainable food production generate a relatively high level of engagement in the communication food democracy dimension. Nearly all of restaurants reported the benefits of buying locally and articulated at least one of those benefits, demonstrating a keen awareness of the benefits of local production. Some respondents identified the environmental benefits of shorter delivery distances. Hassanein (2008) pointed out that knowledge about the food systems is crucial to the development of food democracy (Hassanein, 2008). Restaurant owners' awareness of the environmental benefits of local production could be a communication pathway to encourage them to increase local food purchases, identified as good community practices in the food democracy framework. Buying locally provides benefits for restaurants as they can serve fresher, higher-quality products while circulating earnings locally. The high level of awareness indicates information about good community practices is already penetrating local business owners' consciousness and shows a foundation has been laid that can result in successful food democracy practices if challenges are addressed. However, many restaurants reported that they choose the cheapest alternative when purchasing food due to budget constraints. The availability of foods, particularly fruits, was mentioned by multiple restaurants as an essential part of their menu. While some foods can never be grown in the Monteverde climate, others can only be grown during certain seasons, resulting in products being imported during the off season. Restaurants owners stated that tourists demand certain fruits, but we questioned whether tourists would demand those specific products if the availability of local and/or agro-

chemical options were communicated to them. Seasonal eating is gaining popularity so restaurants could communicate region and seasonal variety as a unique feature of visiting Monteverde.

Restaurants' acknowledgment of benefits should not lead to the assumption that restaurants are full participants in community food democracy strategies. Distribution was a key barrier contributing to restaurants' inability to support their local producers, as transportation of products from farms to restaurants can be difficult to coordinate, particularly with the high delivery frequency that restaurants require. Price is another key issue for all businesses. Restaurants reported that local food was more expensive than imported fresh foods. Farmers expressed concerns that restaurants often do not conduct a complete or equivalent price comparison of imported and local produce or include the negative externalities of transportation emissions.

Farmers have all been working with Econexiones, a local distributor, to improve efficiency and allow farmers to focus on farming instead of orders and deliveries. Econexiones and the Monteverde Institute are developing workshops bringing together local producers, chefs, and agroecological farmers to increase food variety, quality, and consistency. While there have been some efforts to increase communication and co-learning between farmers and restaurant owners, there is little evidence that there has been significant movement toward food democracy to this point. Similarly to what Hassanein (2008) found in her work on food democracy between student farm workers and food bank participants, communication about and growing interest in local and fresh food does not always translate into reorientation.

Currently, there is a gap between some restaurants' practices and tourists' support for the economic, social, and cultural benefits of food democracy principles. Most tourists in our survey reported that they were willing to pay somewhat more or as much as needed to cover costs incurred by restaurants sourcing more local food. It is easy for participants to report a willingness to pay when they do not face an actual economic impact. Research has shown that participants may indicate a higher willingness to pay for sustainable activities

and are likely more price sensitive than they report (Stangl, 2020). However, this self-reporting is an indicator of preference and understanding about the benefits of investing resources to support local, sustainable producers. Linking tourists with local goods and services, including local, sustainable agriculture, increases the benefits of tourism to the local population (Rhiney, 2008). However, there must be strategies to address what Birch and Memery (2020) identified as a common gap between intention and behavior regarding tourists' interests in and actual consumption of local food (2020). Berno (2011), for example, analyzed the challenges and strengths of "farm-to-fork" tourism in a Fijian agricultural village practicing mostly traditional farming practices. Employing a localization strategy there has increased local production and diversification to higher-income crops, year-round growing seasons, and primarily sustainable production methods. Challenges include some chefs' lack of confidence in serving tourists local dishes and tourists' unfamiliarity with traditional cooking methods and ingredients (Berno, 2006). Cohen and Avieli's (2004) work supports our findings on the significance of communication gaps between tourists and restaurant owners and tourists' limited knowledge concerning the local cuisine in limiting uptake of local food options. Monteverde has the potential for a year-round growing season, but restaurants are hesitant to substitute local fruits and vegetables. Further research on Monteverde's farm-to-fork tourism movement would serve to create a more complete strategy to diminish challenges through local strengths.

Attracting tourists that support food democracy actions and relaying the benefits of local dining to all visitors is key. The Belmar Hotel in Monteverde has created an onsite agroecological farm that closes the loop between food production and the hotel restaurant (R. Morales, personal communication, April 21, 2022). The hotel supports sustainable food efforts by providing agroecology workshops to local farmers and seasonal-cooking workshops to local chefs. Many visitors report being attracted to Belmar's farm-to-fork concept, supporting sustainable agriculture by dining at the restaurant and paying an additional fee to take the farm tour. This indicates some tourists' commit-

ment to assuming the responsibility of caring for the economy and ecology of their host community. The Belmar family, who owns one of the local hotels, does not use chemical-based pesticides to control insects. Because hotel guests complained about the insects that are attracted to the crops, they instead use a chrysanthemum-based product that kills harmful insects and have installed window screens in guest rooms (Reed & Palich, 2017). Teng and Chang's (2014) research suggests that hotels should focus on communicating the benefits of sustainable practices and involve tourists in sustainable actions by requesting tourist commitment to support hotels' environmental actions. The *Hecho en Monteverde* local certification is a tool to fill that information gap about local sustainable production tourists face and create a path for their active participation in projects that support the local economy.

Understanding the challenges and opportunities created by the intersection of tourism and farming makes collaborative responses possible. Three local efforts to implement initiatives to address the obstacles of linking local food producers to restaurants and increasing tourists' participation in the localization process are detailed below. Table 2 connects the four food democracy dimensions with local challenges and community actions to overcome these barriers.

Econexiones aims to recruit farmers who are implementing and expanding sustainable practices since there is high demand for these products and these practices provide ecological benefits for the whole community. MVI has created a farmer-to-farmer knowledge-sharing course for local farmers and acts as a space for the exchange of ideas to coordinate and promote other food security actions, including community gardens, a local producers guide created by Corclima, and the community currency Verdes (Little, 2022). The certification has the potential to address the difficulty tourists reported identifying local producers and products and encourage more regional production to enhance food security. This effort was driven by collaborative community workshops to create responsible tourism initiatives that capture revenue, diversify local skills, and create job opportunities. The creation of this certification is a tool to apply

the food democracy principles of communication and generate direct transformation.

The Monteverde community is exercising strategies to reclaim control and enhance a food system so more benefits can accumulate within the community. These efforts support the localization of tourism, defined and implemented by the local community (Higgins-Desbiolles & Bigby, 2022). Food democracy offers an avenue for residents to invite tourists to support local-food efforts. Community-designed systems place local benefits at the fore so that the economic, ecological, and social benefits collect within the community instead of being siphoned off by third parties. Long-term organizational efforts such as agricultural cooperatives and the Monteverde Institute's community development programs have laid the groundwork for a community that has experience with economic benefits through collaborative action. More recent organization efforts in reaction to COVID-19 have focused on relocalization efforts. Knowledge sharing by *campesino-a-campesino* teaching increases the amount of locally produced food available. A new green market for local producers and a local food delivery service increases efficient access for residents and restaurants. The *Hecho en Monteverde* local certification enables tourists to identify and support businesses buying locally. Implementing food democracy principles has created more opportunities for local farmers and strengthened decision-making regarding locally appropriate means of sustainable food production and distribution.

Recommendations

Based on our findings from restaurant surveys and interviews with local food production organizers, we highlight the following recommendations to support and strengthen food democracy efforts:

1. *Strengthen producer-to-restaurant networks.* Many restaurants know about the benefits of buying locally but perceive high barriers to purchasing local food. Communication between producers and restaurants is limited but is key to raising producers' awareness of restaurants' needs and enabling restaurants to learn about fair prices, seasonal production, and the benefits of investing in local food production. Harwood and Zapata's (2006) research on the community planning process in Monteverde showed that validating local knowledge in formal planning discourse can create future practice partnerships. A farm-to-table social media chat could use a popular method of communication to enhance connections. The existing guide of local producers developed during the pandemic could also be shared with restaurants to ensure they are aware of local food purchasing options.
2. *Enhance communication about local food production benefits and responsibilities.* Key actors in the local food movement have focused on making local food available to residents. These organizations actively communicate the environmental benefits of sustainable production and the socio-economic benefits of a circular economic model through social chat forums, workshops, community gardens, and a green market. Restaurants purchase more food than residents during the peak tourism season yet are often excluded from discussions on local purchasing because they are perceived to be more interested in their own economic outcomes than in supporting local food efforts. It may be useful to recenter restaurants as community members that can influence food democracy outcomes due to their purchasing power and role as intermediaries to tourists, who spend up to one third of their travel budget on food (MacLaurin et al., 2007; Torres, 2002). In 2024, Monteverde becomes a *canton* (an administrative district with its own municipal government), which many residents hope will increase autonomy over local policies. The newly empowered local government can consider measures such as taxes for imported fresh food or tax rebates for restaurants that source locally.
3. *Promote the Hecho en Monteverde certification for restaurants.* Tourists are keen to support local producers but currently cannot identify which food is locally grown. Consumers' willingness to buy a local product is tied to the information exchange between producers and consumers, and trusted local certifications can increase local

purchases (Polenzani et al., 2020). Protected geographical indication label strategies have been criticized as a neoliberal product scarcity tactic (Guthman, 2007). Local certifications created by communities can communicate the link between product and place, between local knowledge and local culture, and have been reported to successfully increase local product sales among residents and tourists (Fonte, 2010). The newly launched *Hecho en Monteverde* local-product certification is a community-created certification with the aim to help consumers find regional products and support the local economy. Fonte's (2010) work suggests that this certification presents consumers with information about local origin and ownership and increases sales of local goods. This certification should be extended to restaurants, though as the creators of the *Hecho en Monteverde* initiative explain, determining how to provide restaurant certification has been more challenging than certifying a single product as locally made. Restaurant certification options include a certain portion of overall products offered at the establishment being locally sourced or certifying seasonal plates featuring local products.

Limitations and Further Research

Previous research conducted in Monteverde helped familiarize us with democratic food strategies in the region (Cantor, 2016; Himmelgreen, et al., 2006). Due to time constraints and the early state of some initiatives, we were unable to analyze the portion of local crops that are produced using agroecological methods. A more nuanced study of specific production methods could help determine what concrete ecological benefits localized food production creates. Working with our partners at the MVI made it possible to build trust with community members and conduct surveys at most restaurants. However, the voices of smaller vendors, which may include more women and young people, could have been unintentionally excluded from this study. Finally, a more complete assessment of tourists' roles in local sustainable food movements, particularly their willingness and ability to participate, is needed for a complete assessment of food democracy movements in tourism areas.

Conclusions and Recommendations

As tourism rapidly returns to Monteverde after COVID-19's peak, the community is restructuring food systems to responsibly feed tourists and enhance local food democracy principles. Diversifying tourism offerings to include locally produced food can strengthen local production and thus diversify food economies. There is also the potential to enhance tourists' culinary experiences by highlighting local products and extending the role of food citizens to tourists while they visit. A localized economy is a central link in the interconnected networks of humans and other-than-human beings that sustain life in mutual relations (Spice, 2018). This research demonstrates that restaurants can articulate the economic, social, and environmental benefits of purchasing local food, which creates a strong foundation for food democracy principles. Tourists are seeking local food and are willing to support local farmers. However, obstacles for restaurants buying local food may be more profound than the market issues of price reported by many restaurants. Building strong participatory food democracies requires avenues for multiple actors to communicate challenges and concerns to inform cohesive action plans.

Food democracy efforts should avoid the local trap, which assumes rescaling will bring about positive change. Instead, the community must continue to evaluate whether local production and distribution strategies support ecological and economic aims. An explicit understanding of the food democracy dimensions of collaboration, community good, co-learning, and efficiency can help community members direct tourism in ways that benefit more community members and the local ecosystems. Several initiatives promote knowledge-sharing among restaurants, food producers, and residents to cultivate the mutual benefits of a food democracy. The Monteverde Institute provides community spaces to connect producers with customers and teach local food preparation while training farmers on permaculture methods. A local distributor has begun to bridge the gap between restaurants and local farms. To further these collaboration efforts, we recommend (a) strengthening producer-to-restaurant networks, (b) enhancing communi-

cation about local food production benefits and responsibilities to restaurants, and (c) promoting the locally made certification for restaurants. The lessons learned and next steps to growing food democracy in Monteverde can help tourist towns multiply the benefits of localizing tourism. 

Acknowledgments

The authors are deeply thankful to the community of Monteverde for generously sharing their time

and insights during our research. We also thank the Monteverde Institute for collaborating to develop research questions and guiding our data collection efforts. We are appreciative to the School for Field Studies for supporting our data collection efforts and our fellow researchers Abbie Beckmann, Sarina Asher, Ian Chamberlain, and Ken Atlas. We would also like to thank the anonymous JAFSCD reviewers for their time and invaluable feedback.

References

- Alvarado-Prado, R., Salazar-Ugalde, M., Montero-Chaves, Y., & Fallas-Valencia, I. (2022). *Diagnóstico de afectación a la salud por uso de plaguicidas en Costa Rica* [Diagnosis of health effects due to the use of pesticides in Costa Rica]. United Nations Development Programme (UNDP). <https://impactoplaguicidas.cr/repositorio/diagnostico-de-afectacion-a-la-salud-por-uso-de-agroquimicos-en-costa-rica/>
- Asiedu, A.B., & Gbedema, T. K. (2011). The nexus between agriculture and tourism in Ghana: a case of underexploited development potential. In R. Torres & J. Momsen (Eds.), *Tourism and agriculture: New geographies of consumption, production and rural restructuring* (pp. 19–24). Routledge. <https://doi.org/10.4324/9780203834404>
- Becken, S., & Kaur, J. (2021). Anchoring “tourism value” within a regenerative tourism paradigm – A government perspective. *Journal of Sustainable Tourism*, 30(1), 52–68. <https://doi.org/10.1080/09669582.2021.1990305>
- Bellato, L., & Cheer, J. M. (2021). Inclusive and regenerative urban tourism: Capacity development perspectives. *International Journal of Tourism Cities*, 7(4). <https://doi.org/10.1108/IJTC-08-2020-0167>
- Berno, T. (2006). Bridging sustainable agriculture and sustainable tourism to enhance sustainability. In G. Mudacumura, D. Mebratu, & M. S. Haque. M. (Eds.), *Sustainable development policy and administration* (pp. 208–223). Taylor & Francis.
- Berno, T. (2011). Sustainability on a plate: Linking agriculture and food on the Fiji Islands tourism industry. In R. M. Torres & J. H. Momsen (Eds.), *Tourism and agriculture: New geographies of consumption, production and rural restructuring* (pp. 87–103). Routledge.
- Bianchi, R. (2020). Covid-19 and the radical transformation of tourism? *ATLAS Tourism and Leisure Review*, 2020(2).
- Birch, D., & Memery, J. (2020). Tourists, local food and the intention-behaviour gap. *Journal of Hospitality and Tourism Management*, 43, 53–61. <https://doi.org/10.1016/j.jhtm.2020.02.006>
- Boluk, K.A., Herzog, C., Åberg K.G., & Freund, D. (2022). Re-purposing tourism: Engaging our radical in tourism education. *Journal of Teaching in Travel & Tourism*, 22(1), 1–5. <https://doi.org/10.1080/15313220.2022.2030851>
- Booth, S., & Coveney, J. (2015). *Food democracy: From consumer to food citizen*. Springer.
- Born, B., & Purcell, M. (2006). Avoiding the local trap scale and food systems in planning research. *Journal of Planning Education and Research*, 26, 195–207. <https://doi.org/10.1177/0739456X06291389>
- Bornemann, B., & Weiland, S. (2019). Empowering people—Democratising the food system? Exploring the democratic potential of food-related empowerment forms. *Politics and Governance*, 7(4). <https://doi.org/10.17645/pag.v7i4.2190>
- Brown, R. M. (2013). “They come, but they don’t spend as much money”: *Livelihoods, dietary diversity, food security, and nutritional status in two Roatan communities in the wake of global crises in food prices and finance* [Ph.D. dissertation, University of South Florida]. USF Tampa Graduate Theses and Dissertations. <https://digitalcommons.usf.edu/etd/4447/>
- Burke, A. (2021). The Crossroads of ecotourism dependency, food security and a global pandemic in Galápagos, Ecuador. *Sustainability*, 13(23), Article 13094. <https://doi.org/10.3390/su132313094>
- Cantor, A. R. (2016). *Costumbres, creencias, y “lo normal”: A biocultural study on changing prenatal dietary practices in a rural tourism community in Costa Rica* [Ph.D. dissertation, University of South Florida]. USF Tampa Graduate Theses and Dissertations. <http://scholarcommons.usf.edu/etd/6199>

- Cave, J., Dredge, D., van't Hullenaar, C., Koens Waddilove, A., Lebski, S., Mathieu, O., Mills, M., Parajuli, P., Pecto, M., Peeters, N., Ricaurte-Quijano, C., Rohl, C., Steele, J., Trauer, B., & Zanet, B. (2022). Regenerative tourism: The challenge of transformational leadership. *Journal of Tourism Futures*, 8(3), 298–311. <https://doi.org/10.1108/JTF-02-2022-0036>
- Cohen, E., & Avieli, N. (2004). Food in tourism: Attraction and impediment, *Annals of Tourism Research*, 31(4), 755–778. <https://doi.org/10.1016/j.annals.2004.02.003>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches* (5th ed.). SAGE.
- Dimara, E., & Skuras, D. (2003). Consumer evaluations of product certification, geographic association and traceability in Greece. *European Journal of Marketing*, 37(5/6), 690–705. <https://doi.org/10.1108/03090560310465099>
- Europa Press Turismo (2019, February 13). *El 40% del gasto turístico se destina a gastronomía* [40% of tourist spending goes to gastronomy]. Europa Press. <https://www.europapress.es/turismo/nacional/noticia-40-gasto-turistico-destina-gastronomia-20190213085935>
- Ferreira, B. S., Morais, D. B., Brothers, G. L., Brookins, C., & Jakes, S. (2021). Conceptualizing permatourism. In D. B. Morais (Ed.), *Tourism microentrepreneurship: Bridging tourism theory and practice* (vol. 12, pp. 165–179). Emerald Publishing Limited. <https://doi.org/10.1108/S2042-144320210000012013>
- Fonte, M. (2010). Introduction: Food relocalisation and knowledge dynamics for sustainability in rural areas. In M. Fonte & A. G. Papadopoulos (Eds.), *Naming food after places: Food relocalisation and knowledge dynamics in rural development* (pp. 1–35). Ashgate Publishing.
- Fusté-Forné, F., & Jamal, T. (2020). Slow food tourism: An ethical microtrend for the Anthropocene. *Journal of Tourism Futures*, 6(3), 227–232. <https://doi.org/10.1108/JTF-10-2019-0120>
- Galt, R. E. (2017). *Food systems in an unequal world: Pesticides, vegetables, and agrarian capitalism in Costa Rica*. University of Arizona Press.
- Gibson-Graham, J. K. (2006). *A postcapitalist politics*. University of Minnesota Press.
- Gibson-Graham, J. K., Cameron J., & Healy, S. (2013). *Take back the economy: An ethical guide for transforming our communities*. University of Minnesota Press.
- Gudmundson, L. (2018). *Costa Rica después del café* [Costa Rica after coffee]. Universidad Estatal a Distancia.
- Guthman, J. (2007). The Polanyian way? Voluntary food labels as neoliberal governance. *Antipode*, 39(3), 456–478. <https://doi.org/10.1111/j.1467-8330.2007.00535.x>
- Hall, C. M. (2019). Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *Journal of Sustainable Tourism*, 27(7), 1044–1060. <https://doi.org/10.1080/09669582.2018.1560456>
- Harwood, A. S., & Zapata, M. (2006). Preparing to plan: Collaborative planning in Monteverde, Costa Rica. *International Planning Studies*, 11(3–4), 187–207. <https://doi.org/10.1080/13563470601097311>
- Hansen, A., Pitkänen, O., & Nguyen, B. (2023). Feeding a tourism boom: Changing food practices and systems of provision in Hoi An, Vietnam. *Food, Culture & Society*, 27(1), 94–112. <https://doi.org/10.1080/15528014.2023.2263986>
- Hassanein, N. (2003) Practicing food democracy: a pragmatic politics of transformation. *Journal of Rural Studies*, 19(1), 77–86. [https://doi.org/10.1016/S0743-0167\(02\)00041-4](https://doi.org/10.1016/S0743-0167(02)00041-4)
- Hassanein, N. (2008) Locating food democracy: Theoretical and practical ingredients. *Journal of Hunger & Environmental Nutrition*, 3(2–3), 286–308. <https://doi.org/10.1080/19320240802244215>
- Hawkins, M., Clermont, M., Wells, D., Alston, M., McClave, R., & Snelling, A. (2022). Food Security Challenges and Resilience during the COVID-19 Pandemic: Corner store communities in Washington, D.C. *Nutrients*, 14(15), 3028. <http://dx.doi.org/10.3390/nu14153028>
- Higgins-Desbiolles, F. (2010). The elusiveness of sustainability in tourism: The culture-ideology of consumerism and its implications. *Tourism and Hospitality Research*, 10(2), 116–129. <https://doi.org/10.1057/thr.2009.31>

- Higgins-Desbiolles, F., & Bigby, B. C. (2022). Introduction: Embracing the local turn in tourism to empower communities. In F. Higgins Desbiolles & B. C. Bigby (Eds.), *The local turn in tourism: Empowering communities* (pp. 1–27). Channel View.
- Himmelgreen, D. A., Romero Daza, N., Vega, M., Brenes Cambrenero, H., & Amador, E. (2006). “The tourist season goes down but not the prices.” Tourism and food insecurity in rural Costa Rica. *Ecology of Food and Nutrition*, 45(4), 295–321. <https://doi.org/10.5430/ijfr.v10n5p241>
- Hinrichs, C. C. (2003). The practice and politics of food system localization. *Journal of Rural Studies*, 19. [https://doi.org/10.1016/S0743-0167\(02\)00040-2](https://doi.org/10.1016/S0743-0167(02)00040-2)
- INEC Costa Rica. (2011). *Población total por sexo según provincia, cantón y distrito, censo 2011* [Total population by sex according to province, canton and district, 2011 census]. <https://inec.cr/estadisticas-fuentes/censos/censo-2011>
- Isla, A. (2016). *The “greening” of Costa Rica: Women, peasants, Indigenous peoples and the remaking of nature*. University of Toronto Press.
- Lang, T. (1999). Food policy for the 21st century: Can it be both radical and reasonable? In M. Koc, R. MacRae, L. J. A. Mougeot, & J. Welsh (Eds.), *For hunger-proof cities: Sustainable urban food systems* (pp. 216–224). International Development Research Centre.
- Little, M. (2022). Enhanced food security through localised community crypto-currency: experiences of a Costa Rica tourism town. In F. Higgins Desbiolles & B. C. Bigby (Eds.) *The local turn in tourism: Empowering communities* (pp. 11–129). Channel View Press.
- MacLaurin, T., Blose, J., & Mack, R. (2007). *Marketing segmentation of culinary tourists*. 7th Global Conference on Business and Economics, Rome, Italy.
- McCullum, C., Desjardins, E., Kraak, V. I., Ladipo, P., & Costello, H. (2005). Evidence-based strategies to build community food security. *Journal of the American Dietetic Association*, 105(2), 278–283. <https://doi.org/10.1016/j.jada.2004.12.015>
- Mtapuri, O., Camilleri, M. A., & Dłuzewska, A. (2021). Advancing community-based tourism approaches for the sustainable development of destinations. *Sustainable Development*, 30(3), 423–432. <https://doi.org/10.1002/sd.2257>
- Muangasame, K., & Park, E. (2019). Food tourism, policy and sustainability: Behind the popularity of Thai food. In E. Park, S. Kim, & I. Yeoman (Eds.), *Food tourism in Asia* (pp. 123–142). Springer.
- Norberg-Hodge, H. (2023). Foreword. In F. Higgins Desbiolles & B. Bigby (Eds.) *The local turn in tourism* (pp. xxv–xxix). Channel View Press.
- Organisation for Economic Co-operation and Development [OECD]. (2017). *Agricultural policies in Costa Rica*. OECD Publishing.
- Patel, R., & Moore, J. W. (2018). *A history of the world in seven cheap things: A guide to capitalism, nature, and the future of the planet*. University of California Press.
- Phi, G., & Dredge, D. (2019). Critical issues in tourism co-creation. *Tourism Recreation Research*, 44(3), 281–283. <https://doi.org/10.1080/02508281.2019.1640492>
- Pirani, S. I., & Arafat, H. A. (2016). Interplay of food security, agriculture and tourism within GCC countries. *Global Food Security*, 9, 1–9. <https://doi.org/10.1016/j.gfs.2016.05.002>
- Polenzani, B., Riganelli, C., & Marchini, A. (2020). Sustainability perception of local extra virgin olive oil and consumers’ attitude: A new Italian perspective. *Sustainability*, 12(3), 920. <https://doi.org/10.3390/su12030920>
- Raja, S., Sweeney, E., Mui, Y., & Frimpong Boamah, E. (2021). *Local government planning for community food systems*. FAO Publishing.
- Reed, M., & Palich L. (2017). Hotel Belmar: Analytical review of the challenges facing an eco-hotel in Costa Rica. *Case Studies in the Environment*, 1(1), 1–7. <https://doi.org/10.1525/cse.2017.sc.456243>
- Renting, H., Schermer, M., & Rossi, A. (2012). Building food democracy: Exploring civic food networks and newly emerging forms of food citizenship. *International Journal of Sociology of Agriculture and Food*, 19(3), 289–307. <https://doi.org/10.48416/ijisaf.v19i3.206>

- Rhiney, K. (2008). Towards a new model for improved tourism-agriculture linkages? The case of two farmers' co-operatives in Jamaica. *Caribbean Geography*, 15(2), 142–159.
- Shiva, V. (2005). *Earth democracy*. South End Press.
- Shiva, V. (2008). *Soil, not oil: Environmental justice in an age of climate crisis*. South End Press.
- Sims, R. (2009). Food, place and authenticity: Local food and the sustainable tourism experience. *Journal of Sustainable Tourism*, 17(3), 321–336. <https://doi.org/10.1080/09669580802359293>
- Spice, A. (2018). Indigenous resurgence, decolonization, and movements for environmental justice. *Environment and Society*, 9(1), 40–56. <https://doi.org/10.3167/ares.2018.090101>
- Singer, P., & Mason, J. (2009). *Somos lo que comemos. La importancia de los alimentos que decidimos consumir* [We are what we eat. The importance of food that we decide to consume] (Spanish ed.). Ediciones Paidós.
- Stangl, B., Prayag, G. & Polster, L. (2020). Segmenting visitors' motivation, price perceptions, willingness to pay and price sensitivity in a collaborative destination marketing effort, *Current Issues in Tourism*, 23(21), 2666–2682. <https://doi.org/10.1080/13683500.2019.1662380>
- Sylvester, O., & Little, M. (2020). “I came all this way to receive training, and now I am going to be taught by a woman”: Factors that support and hinder women's participation in agroecology in Costa Rica. *Agroecology and Sustainable Food Systems*, 45(7), <https://doi.org/10.1080/21683565.2020.1811830>
- Teng, C.-C., & Chang, J.-H. (2014). Effects of temporal distance and related strategies on enhancing customer participation intention for hotel eco-friendly programs. *International Journal of Hospitality Management*, 40, 92–99. <https://doi.org/10.1016/j.ijhm.2014.03.012>
- Thomas-Francois, K., Von Massow, M., & Joppe, M. (2016). Strengthening farmer–hotel supply chain relationships: A service management approach. *Tourism Planning & Development*, 14(2), 198–219. <https://doi.org/10.1080/21568316.2016.1204359>
- Tomassini, L., & Cavagnaro, E. (2020). The novel spaces and power-geometries in tourism and hospitality after 2020 will belong to the “local.” *Tourism Geographies*, 22(3), 713–719. <https://doi.org/10.1080/14616688.2020.1757747>
- Torres, R. (2002). Toward a better understanding of tourism and agriculture linkages in the Yucatan: Tourist food consumption and preferences. *Tourism Geographies*, 4(3), 282–306. <https://doi.org/10.1080/14616680210147436>
- Torres, R. M., & Momsen, J. D. (2005). Gringolandia: The construction of a new tourist space in Mexico. *Annals of the Association of American Geographers*, 95(2), 314–335. <https://doi.org/10.1111/j.1467-8306.2005.00462.x>
- United Nations Environment Programme [UNEP]. (2011). *Towards a green economy: Pathways to sustainable development and poverty eradication – A synthesis for policy makers*. https://sustainabledevelopment.un.org/content/documents/126GER_synthesis_en.pdf
- Yeoman, I., & McMahon-Beatte, U. (2016). The future of food tourism. *Journal of Tourism Futures*, 2(1), 95–98. <https://doi.org/10.1108/JTF-12-2015-0051>

Online tools helped direct market farmers during the COVID-19 pandemic, but resources are needed for equitable adoption

Sasha Pesci^{a*}

Hofstra University

Jennie Durant,^b Gwyneth M. Manser,^c Ryan E. Galt,^d Lauren Asprooth,^e
and Natalia Pinzón^f

University of California, Davis

Submitted December 4, 2023 / Revised January 30 and March 2, 2024 / Accepted March 3, 2024 /
Published online May 7, 2024

Citation: Pesci, S., Durant, J., Manser, G. M., Galt, R. E., Asprooth, L., & Pinzón, N. (2024). Online tools helped direct market farmers during the COVID-19 pandemic, but resources are needed for equitable adoption. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 217–236.
<https://doi.org/10.5304/jafscd.2024.133.020>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

This paper examines the use by California's direct market farmers (DMFs) of online sales and market-
ing during the early onset of the COVID-19 pan-

demic in the United States, from March through
December 2020. The pandemic caused market dis-
ruptions that accelerated the trend toward market
digitalization. This paper reports quantitative find-
ings based on 364 responses to an online survey of

^{a*} *Corresponding author:* Sasha Pesci, Ph.D. Candidate,
Geography Graduate Group, University of California, Davis,
CA, USA.

Sasha Pesci is now an Assistant Professor in the
Department of Geology, Environment, and Sustainability at
Hofstra University, Hempstead, NY, USA;
 <https://orcid.org/0000-0003-4598-8449>;
sasha.pesci@hofstra.edu

^b Jennie Durant, Research Affiliate, Department of Human
Ecology, University of California, Davis, CA, USA;
 <https://orcid.org/0000-0003-1580-0417>;
jenniedurant@berkeley.edu

^c Gwyneth M. Manser, Ph.D. Candidate, Geography Graduate
Group, University of California, Davis, CA, USA.

Gwyneth M. Manser is now a Postdoctoral Research
Associate in the Department of Crop and Soil Sciences,
Washington State University, Pullman, WA, USA;
 <https://orcid.org/0000-0001-8304-7581>;
gwyneth.manser@wsu.edu

^d Ryan E. Galt, Professor, Department of Human Ecology,
and Director, Agriculture Sustainability Institute, University of
California, Davis, CA, USA;  <https://orcid.org/0000-0002-0243-5636>; regalt@ucdavis.edu

^e Lauren Asprooth, Ph.D. Candidate, Geography Graduate
Group, University of California, Davis, CA, USA;
 <https://orcid.org/0000-0002-9802-9252>;
asprooth@wisc.edu

Lauren Asprooth is now a Research Scientist at the UW-
Madison Center for Integrated Agricultural Systems,
University of Wisconsin, Madison, WI, and a postdoctoral
researcher in the Department of Horticulture and Landscape
Architecture, Purdue University, West Lafayette, IN, USA.

^f Natalia Pinzón, Ph.D. Candidate, Geography Graduate
Group, University of California, Davis, CA, USA;
 <https://orcid.org/0000-0002-2610-9552>;
npinzon@ucdavis.edu

DMFs in California and qualitative findings from participant observation and 33 semi-structured interviews with DMFs and technical assistance providers. We found that online sales and marketing tools, such as social media and websites, were important for withstanding economic disruptions associated with the pandemic, and farmers who had an online presence were more likely to increase their sales and profitability during its early onset. However, we also found that many farmers lacked the necessary resources to access these tools and use them effectively, and that technical assistance providers experienced challenges in helping farmers with online technology use. We argue that DMFs need reliable access to the internet, as well as advice, resources, and training to access and benefit from online sales and marketing tools. These resources must be available in languages other than English (e.g., Spanish). Research-informed programs and policies can help DMFs navigate market digitalization and strengthen their resilience to future economic disruptions.

Keywords

food systems, direct market farmers, COVID-19, pandemic, online technology, digital markets, sustainability, resilience, California, technical assistance

Author Note

The findings presented in this article are part of Sasha Pesci's doctoral dissertation. This article also presents findings from a broader research study about direct market farmers' experience of the COVID-19 pandemic, implemented by the Food Systems and Sustainability lab (Ryan Galt's lab) at the University of California, Davis.

Funding Disclosure

This work was supported by a small grant from the UC Sustainable Agriculture Research and Education Program; Dr. Sasha Pesci's Annie's Sustainable Agriculture Scholarship and Jastro-Shields graduate research award from the College of Agriculture and Environmental Sciences at the University of California, Davis; Dr. Jennie Durant's USDA National Institute of Food and Agriculture NIFA-AFRI Fellowship [Project #1019243]; and Dr. Ryan Galt's MacArthur Foundation Endowed Chair funding.

Acronyms and Abbreviations

CAFF	Community Alliance with Family Farmers
DMFs	Direct market farmers
KTA	Kitchen Table Advisors
Online tools	Online sales and marketing
Tech Hub	CAFF Small Farm Tech Hub

Introduction

The COVID-19 pandemic led to numerous economic disruptions in the agri-food system and accelerated the trend toward market digitalization in the U.S. In this paper, we examine how direct market farmers in California used online sales and marketing tools during the early months of the COVID-19 pandemic, from March through December 2020. We define direct market farmers (DMFs) as farmers who sell at least some of their products through direct-to-consumer markets (e.g., at farmers markets, community supported agriculture programs¹ [CSAs], or farm stands), directly to retailers (e.g., supermarkets and restaurants), or directly to institutions (e.g., hospitals and schools) (U.S. Department of Agriculture National Agricultural Statistics Service [USDA NASS], 2016). Many farmers leveraged their use of online sales and marketing tools during the early onset of the pandemic to continue selling their products when market channels were disrupted. However, not all farmers had equal access to or interest in using these tools.

Consumers increasingly use the internet to find information about products and buy groceries. In the U.S., this trend accelerated with the onset of the COVID-19 pandemic, when consumers' concerns over food safety and personal health led them to avoid grocery stores and prioritize online shopping instead (Keyes, 2021; Thilmany et al., 2021b). Many DMFs built on these trends during the pandemic by increasing their use of online sales and marketing. We refer to online sales and marketing tools (henceforth "online tools") as internet-based communication and information technologies that farmers can use to advertise their products, communicate with customers, sell products,

¹ CSA is a type of direct marketing that "consists of a community of individuals who pledge support to a farm operation so that the farmland becomes, either legally or spiritually, the community's farm. The growers and consumers provide mutual support and share the risks and benefits of food production" (U.S. Department of Agriculture [USDA], n.d., para. 1).

and manage CSA subscriptions. Examples of online tools include social media, websites, and online sales platforms.

Recent research revealed that DMFs who increased their online sales and marketing use were more resilient to market disruptions caused by the pandemic (Bachman et al., 2021; Durant et al., 2023; Liang & Tarpeh, 2021; Schreiber et al., 2022; Thilmany et al., 2021a). Specifically, DMFs who used online tools in 2020 were statistically significantly more likely to increase their sales and profitability from March through December 2020 than those who did not (Pesci et al., 2023).

Despite the competitive advantages of using online tools, some farmers lacked the resources or interest to use them. Previous research has found disparities in the use of these tools based on farmer demographics, farm characteristics, and available resources (Durant et al., 2023; Pesci et al., 2023; Schreiber et al., 2022). For example, research using the same dataset as this paper found that DMFs with an owner or manager who identified as white, female, and under 55 years old were more likely to have an online presence (Pesci et al., 2023). In addition, DMFs with higher annual gross incomes and those not growing vegetables were more likely to sell products online (Pesci et al., 2023). Because of these disparities, we wanted to further understand the barriers and challenges that DMFs, particularly those who are marginalized (non-white and non-English speakers), experience in using online tools. We also wanted to understand which factors might determine whether online tools are appropriate for DMFs.

To this end, this article explores the following questions: (1) To what extent did the context of the pandemic change DMFs' use of online tools? (2) Which online tools were associated with changes in gross farm sales and profitability for DMFs during the first 10 months of the pandemic? (3) What challenges did DMFs, particularly those who are monolingual Spanish speakers, experience in adopting and using online tools? (4) What resources do DMFs need to access and effectively use online tools, or to determine if online tools are a fit for their farm? Considering the growing consumer trend toward online shopping and the likelihood of future market disruptions, documenting

farmers' experiences with online technologies during economic disruptions like the pandemic can help government agencies, nonprofit organizations, and extension agents develop adequate strategies to support them.

Research Methods

This article reports findings from a mixed-methods research project implemented by members of the Food Systems and Sustainability Lab (Galt Lab) at the University of California, Davis. This section provides an overview of the data collection and analysis methods.

Data collection

Data collection for this research involved four methods: (1) an online survey, (2) semi-structured interviews with farmers and technical assistance providers, (3) participant observation at farmer workshops and one-on-one technical assistance meetings, and (4) review of secondary sources.

We first administered an online Qualtrics survey from January to April 2021 (see Appendix A for a detailed description of our survey data collection). Sampling focused on agricultural producers in California who sold at least some of their products through direct-to-consumer or direct-to-institution market channels. The survey questions focused on DMFs' experiences during the COVID-19 pandemic and how they responded to its disruptions from March to December 2020. The survey had a total response rate of 16.1% ($n = 364$), out of which 360 responses were in English and 4 in Spanish. The geographic representativeness of our survey is shown in Figure 1. Looking at the maps together highlights areas that were oversampled (including Marin and San Diego counties) and undersampled (including Fresno and Tulare), based on data from the 2017 census of agriculture.

To add depth and context to our survey findings, we conducted 28 semi-structured interviews with the owner-operator, owning partner, or hired managers of direct market farms in California. Interviews were conducted via Zoom or phone between September 2021 and February 2023. Interviewees were identified through three sources: (1) respondents of the online survey who indicated

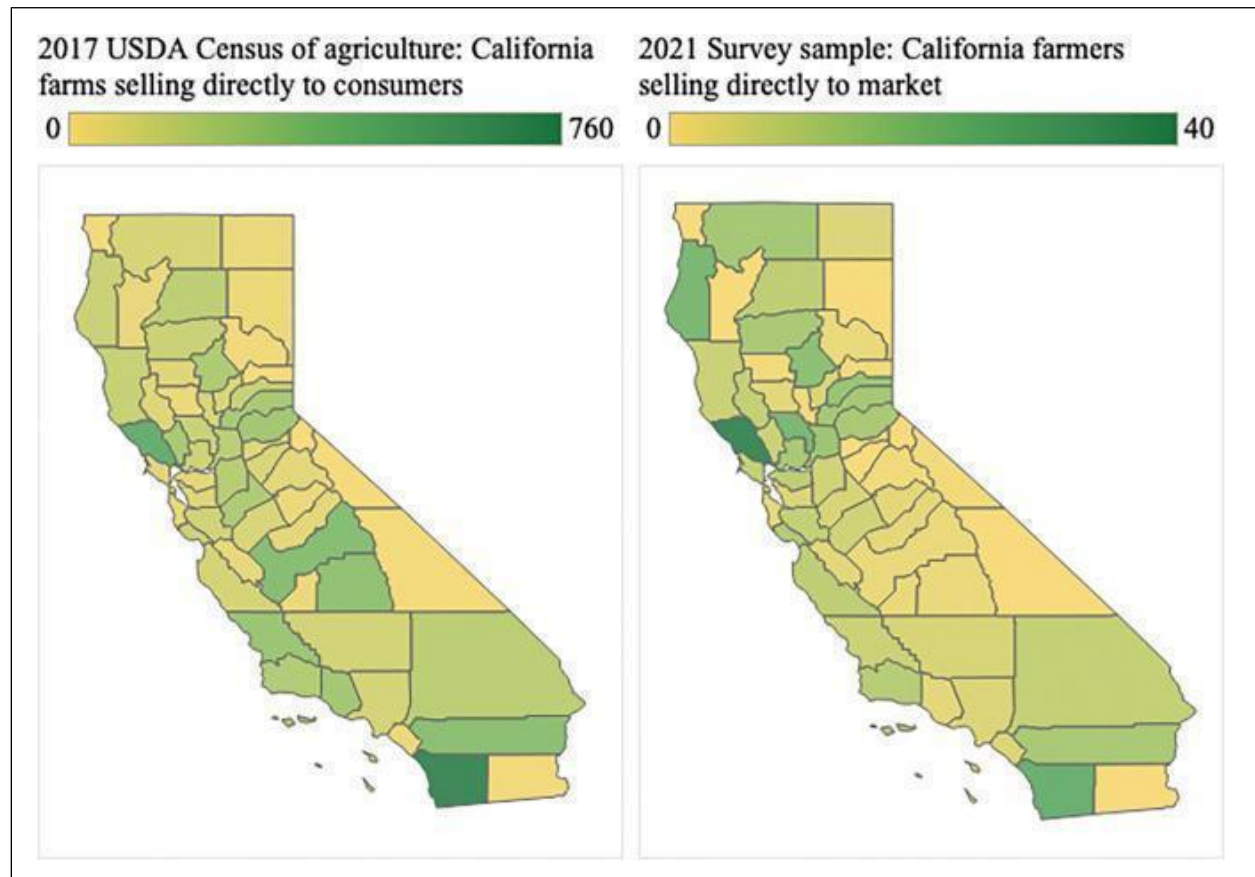
they would be interested in participating in a follow-up interview; (2) California nonprofit organizations that work with small-scale farmers: Community Alliance with Family Farmers (CAFF) and Kitchen Table Advisors (KTA); and (3) the California Certified Organic Farmers (CCOF) directory. (See Appendix B, Tables B1–B3 for demographic breakdowns of the survey and interview samples.)

We also interviewed five technical assistance providers who support family farmers or small-scale farmers in California (which includes the sample population for this research). This included two individuals who work at the CAFF Small Farm Tech Hub (hereafter referred to as the “Tech Hub”), one sustainable agriculture coordinator at the University of California Agriculture and Natural Resources (UC ANR), and two small-farm

advisors at UC ANR. We conducted these five interviews to validate the data and analysis from the farmer interviews, and through them, we were able to understand some of the gaps in farmer support services and triangulate findings from farmer interviews (Given, 2008).

In addition to surveys and interviews, we used participant observation to inform and provide context to our research. From April 2022 through March 2023, one of the authors (Pesci) worked as a contractor at the Tech Hub, which provides small-scale farmers in California with technical assistance and training related to online tools. Through participant observation at program meetings, one-on-one technical assistance meetings with farmers, and farmer workshops, we were able to better understand (1) how the different online tools can be used by DMFs, (2) the main challenges and

Figure 1. Geographic Distribution of Direct Market Farmers in the 2017 USDA Census of Agriculture (Left) Compared to the Distribution of our Research Sample (Right)



Source: Authors' data and USDA NASS (2017) (Durant et al., 2023).

barriers DMFs face in adopting or using these tools, and (3) the main challenges that technical assistance providers face in supporting DMFs with these tools.

Finally, we used the Young Farmer Coalition's *Farmer's Guide to Direct Sales Platforms* (National Young Farmers Coalition, 2020), MyDigitalFarmer website and newsletters (MyDigitalFarmer, n.d.), and the CSA Innovation Network's Farmer-to-Farmer Exchange eCommerce Platforms Report (Strader et al., 2020) to gather qualitative data that helped contextualize our survey and interview results. These internet-based research sources provided information about the different online tools available for DMFs and how they use these tools. Internet-based research also informed the findings of Table 2.

Data analysis

In this section, we first provide an overview of our quantitative analysis methods, including the dependent and independent variables used and then we describe our qualitative analysis methods.

Quantitative analysis

The quantitative analysis results reported in this paper are based on descriptive statistics and correlation tests of our survey data. Specifically, we used Spearman's test of correlation because it is a non-parametric measure of rank correlation, which is appropriate for analyzing statistical association with ordinal dependent variables in a sample that does not necessarily follow a normal distribution. In other words, this type of correlation test is the most appropriate for the types of dependent variables we have, which are based on ranked categories (e.g., decreased, no change, increased). We analyzed the quantitative data using R software (version 2022.02.3). Below, we describe the dependent and independent variables used.

We used the **dependent variables** *change in profitability* and *change in gross farm income* to assess how the use of different online tools (Table 1) interacted with farmers' sales and profitability from March through December 2020. These variables were based on farmers' responses to the question: "From March 2020 through December 2020, how

did the following change overall?" This question listed statements related to the farm's overall profitability and annual gross farm income. For each statement, the farmer had three Likert-scale options: "decreased," "no change," and "increased." We coded these responses as 1, 2, and 3, respectively.

To identify if survey takers had an online presence, we asked: "Did your farming operation use online sales and/or have an online presence in 2020?" This variable was binary, where farmers who responded "yes" were coded as 1, and farmers who responded "no" were coded as 0. We created the **independent variable** *having an online presence* based on these responses. Another question in the survey asked, "Which market channels did you use at any time in 2020 (including the months before the pandemic)? Select all that apply." This question included a list of options for various market channels that farmers might use, including "online sales." We used the responses to this question to create another binary independent variable for *use of online sales*.

We also created independent variables for each of the online tools farmers used so that we could identify which tools were most associated with changes in sales and profitability. These were individual binary variables (used = 1, did not use = 0) based on farmers' responses to the question: "Which of the following online sales and marketing tools did your operation use at any point from March 2020 through December 2020? Select all that apply." This question included the following list of options, which became our independent variables: Online sales platform for farms (e.g., Harvie, WhatsGood); a website built through a farm-specific platform (e.g., CSAware, Farmigo); a website built through a non-farm-specific platform (e.g., Squarespace, Wix, WordPress); Facebook; Instagram; email listserv; a LocalHarvest listing; aggregator delivery services (e.g., Farm Fresh to You); and other. These options were selected through the review of secondary sources conducted during September–December 2020.

Different types of online tools can serve distinct purposes and uses for farmers. We grouped online tools that DMFs utilize into seven categories (Table 2) based on our participant observation and

review of secondary sources. Below, we define these tools and specify the names of the independent variables used.

We use the variable *online sales platform for farms* for websites where a farm, usually for a fee, can set up a profile for sales or CSA subscriptions. In most cases, the platform managers provide technical support and assist farmers with customer service.

We distinguish between websites built through software specifically designed for farmers with the variable *farm-specific website*, and websites built through programs or software that are not specifically for farmers with the variable *generic website*. Several companies provide website design services that cater to DMFs. In addition to web hosting fees, these sites often take a percentage of sales

generated through their platform (for example, via an online storefront or CSA subscription). In contrast, generic websites are typically cheaper but do not have as many farm-specific features. Some of these sites include options for sales, but they are often used by farmers for nonsales marketing functions, e.g., to showcase and provide information about their farms and, in some cases, to promote farm events.

DMFs use social media and email listservs for information sharing, advertising, and sales. Common uses include updating customers on current crops and farm events, and providing education related to farming. In our analysis, we used *Social media: Facebook* and *Social Media: Instagram* as separate independent variables to test the differences

Table 1. Dependent and Independent Variables

Variable	Type	Description and coding	
Change in profitability	Dependent / ordinal	Farm's change in profitability from March through December 2020.	1 = "decreased" 2 = "no change" 3 = "increased"
Change in gross farm income	Dependent / ordinal	Farm's change in gross farm income from March through December 2020.	1 = "decreased" 2 = "no change" 3 = "increased"
Having an online presence	Independent / binary	Whether a farm had an online presence in 2020.	1 = "yes" 0 = "no"
Use of online sales	Independent / binary	Whether a farm used online sales as a market channel from March through December 2020.	1 = "yes" 0 = "no"
Online sales platform for farms	Independent / binary	Whether a farm used an online sales platform for farms from March through December 2020.	1 = "used" 0 = "did not use"
Farm-specific website	Independent / binary	Whether a farm used a farm-specific website from March through December 2020.	1 = "used" 0 = "did not use"
Generic website	Independent / binary	Whether a farm used a generic website from March through December 2020.	1 = "used" 0 = "did not use"
Social media: Facebook	Independent / binary	Whether a farm used Facebook for sales or marketing from March through December 2020.	1 = "used" 0 = "did not use"
Social media: Instagram	Independent / binary	Whether a farm used Instagram for sales or marketing from March through December 2020.	1 = "used" 0 = "did not use"
Email listserv	Independent / binary	Whether a farm used an email listserv from March through December 2020.	1 = "used" 0 = "did not use"
Online farm directory: LocalHarvest	Independent / binary	Whether a farm was listed on LocalHarvest from March through December 2020.	1 = "used" 0 = "did not use"
Virtual food hub / aggregator	Independent / binary	Whether a farm sold products through a virtual food hub or aggregator from March through December 2020.	1 = "used" 0 = "did not use"
Other	Independent / binary	Whether a farm used another online sales platform for farms from March through December 2020.	1 = "used" 0 = "did not use"

between these two social media sites. We also made *email listserv* an independent variable, since some farmers use online mailing platforms for outreach and sales purposes.

DMFs may add a listing to an online farm directory, most of which are free for farmers, to increase their farm's online visibility. Several online farm directories include direct market farms in California or the U.S. We listed *LocalHarvest* as an option in the survey and used it as a separate independent variable because it is one of the most comprehensive online directories for DMFs and farmers markets in the U.S. (Galt, 2011). In addition, we wanted to track the responses of *LocalHarvest* users, since it was used as one of our

outreach strategies for data collection.

Virtual food hubs or aggregators, another independent variable, are farm sale websites that combine products from multiple farms and typically provide home delivery services. Finally, we created the independent variable *other* to capture online tools not listed in our survey. Through write-in responses and follow-up interviews, we learned of several additional tools used by DMFs, including public e-commerce, classified advertisement sites, and social networking platforms. These platforms help farmers post items for sale without needing to set up a website or profile for their farm or deal with additional fees.

Table 2. Categories of Online Sales and Marketing Tools (Online Tools) for Direct Market Farmers

Category	Description	Examples
Online sales platform for farms	Direct market farms display a profile on the website, and customers can choose from various farms.	1000Ecofarms Food4all Harvie WhatsGood
Farm-specific website	Companies that design websites specifically for direct farm sales or CSA subscriptions.	Barn2door Cropolis CSAware (By LocalHarvest) EatFromFarms Farmers Web Farmigo Grazecart Grownby Harvesthand Local Food Marketplace Local Line Local Orbit MyRealFoods Open Food Network Online Farm Markets
Generic website	Companies that offer website building (not specific for farms).	Squarespace Wix WordPress (and WordPress plugins such as WooCommerce)
Social media	Social media-based sales and marketing through pages or groups.	Instagram Facebook (page, groups, marketplace) Reko (consumer buying club online that uses Facebook groups) Twitter
Email listserv	Direct market farmers use email listservs and email marketing platforms for customer outreach.	Mailchimp SendinBlue GetResponse
Online farm directory	Online directories of direct market farms.	LocalHarvest CAFF Farm directory (California) USDA Local Food Directories
Virtual food hub or aggregator	An online product delivery service that combines products from multiple farms to sell directly to consumers.	Good Eggs Farm Fresh to You
Other	Includes e-commerce or classified advertisement sites or apps where direct market farmers can post items for sale or announcements without needing to set up a website or profile.	eBay Craigslist Nextdoor App

Qualitative analysis

The data collected from interviews and participant observation activities were analyzed using a grounded theory approach (Given, 2008), including coding and memoing to identify recurring themes and patterns. The grounded theory approach to data analysis involves coding the data based on emerging themes, rather than using pre-existing codes based on theory (Given, 2008). This approach was helpful because there is little existing literature on this research subject. By coding with emerging themes, we developed theoretical conclusions based on our novel data. We used MAXQDA software version 12 for coding.

Results and Discussion

In this section, we report results from quantitative analyses of survey data and qualitative analysis of interviews and participant observation. The first five sections primarily focus on quantitative findings and use qualitative findings to contextualize and analyze these quantitative findings, while the sixth and seventh sections exclusively report qualitative findings. We combine the results and discussion section because we use qualitative data to contextualize and make sense of survey and interview findings throughout the results section.

A note about terms: farmers with an **online presence** used internet-based tools listed in Table 2 to promote their farms, do outreach to customers, provide information, or conduct sales. Farmers who used **online sales** conducted sales transactions through the internet, which can include home deliveries, deliveries to neighborhood pick-up spots, shipping, or a pre-order system. The majority (74%) of DMFs in our sample who

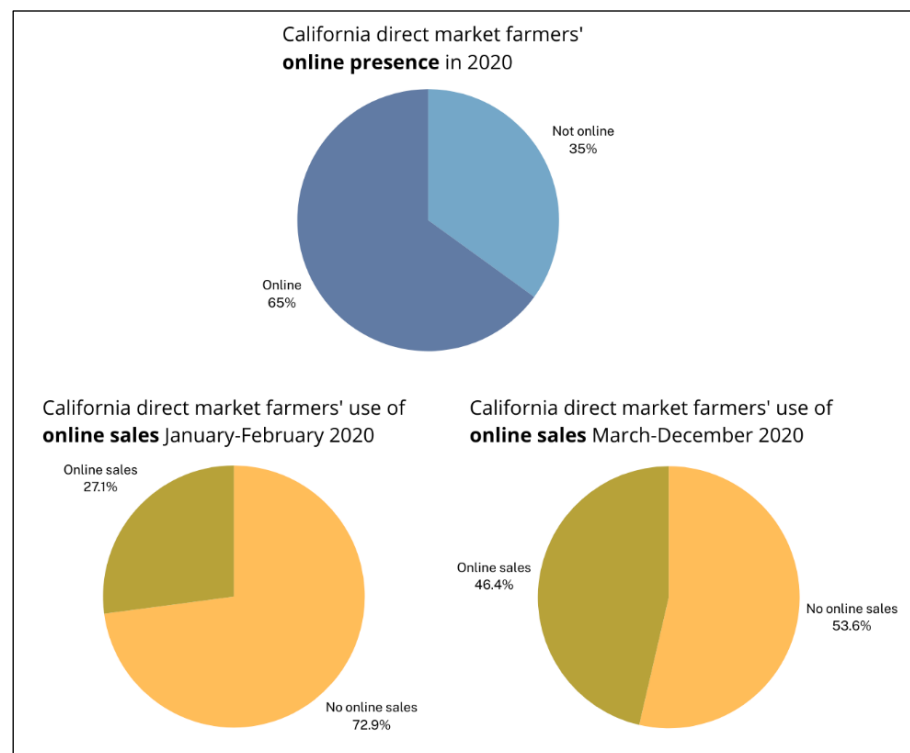
had an online presence also used online sales from March through December 2020.

California's direct market farmers' online presence and use of online sales in 2020

Out of the total survey responses ($N = 364$), 65% ($n = 225$) of farmers indicated that they had an online presence at some point in 2020, and 46% ($n = 166$) of farmers used online sales as one of their market channels sometime in 2020 (Figure 2).

Figure 3 provides a breakdown of specific tool use among online tool users. The most popular tools were social media, including Facebook (66% of users, $n = 146$) and Instagram (60% of users, $n = 133$), followed by a generic website (60% of users, $n = 134$). The other online tools that farmers used include a listing on the LocalHarvest directory (24%, $n = 54$), an online sales platform ($n = 34$, 15%), a website built through farm-specific software (11%, $n = 24$), and aggregator delivery services (6%, $n = 14$). Farmers who selected "other," used Craigslist ($n = 4$), eBay ($n = 1$), Nextdoor ($n = 1$), or other platforms (unspecified).

Figure 2. California Direct Market Farmers' Online Presence and Their Use of Online Sales in 2020 ($N = 364$)



Direct market farmers increased their use of online tools after the onset of the COVID-19 pandemic

Of the total number of DMFs with an **online presence** in 2020 ($N = 225$), the majority (60%, $n = 135$) reported in the survey that they increased their use of online tools after March 2020, and 84% ($n = 114$) attributed this increase to the pandemic. Among farmers who had an online presence in 2020, 34% ($n = 77$) indicated that they did not change their use of online tools after March 2020. Only 6% ($n = 13$ out of 225) of farmers who had an online presence decreased their use of online tools during March–December 2020.

Among **online sales** users ($n = 166$), the majority (55%, $n = 91$) already used online sales prior to March 2020 and continued using them at least until they completed the survey. On the other hand, 42% ($n = 69$) started using online sales after March 2020. Of the group that started using online sales after March 2020, 26% ($n = 18$) indicated that they started using online sales specifically due to the pandemic. In other words, many farmers started using online sales after the onset of the pandemic, some of whom attributed their adoption of

online tools to the pandemic. Only three farmers reported that they stopped using online sales between March and December 2020, out of which two were “temporary” losses and the other was “indefinite.”

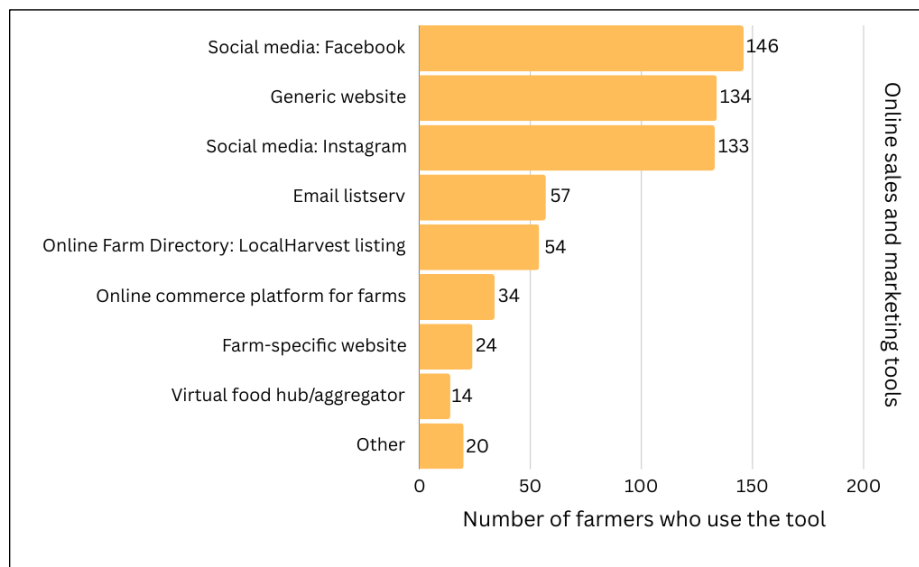
Our findings align with media reports of an overall increase in the use of online tools among DMFs prompted, in part, by market disruptions associated with the pandemic (Held, 2020; Kean, 2020). Online tools such as websites, social media, and online sales platforms became key intermediaries between farmers and consumers when other market channels were shut down (Lamb, 2020).

Having an online presence helped some farmers increase sales and profitability during the pandemic

To better understand which online tools were most helpful during the early onset of the pandemic, we analyzed how specific online tools changed a farming operation’s gross income and profitability. We created a subset of our sample that included only farmers who had an online presence in 2020 ($n = 225$).

We found that no specific tools were associ-

Figure 3. Online Tools Used by Direct Market Farmers in March–December 2020



ated with an increase in profitability; rather, just having an online presence was statistically significantly associated with increased profitability (Table 3). In contrast, an increase in gross sales between March and December 2020 was statistically significantly associated with having an online presence generally ($p = 0.001$), as well as with the use of Instagram ($p = 0.001$) and Facebook ($p = 0.04$),² which

² It is important to note that not all DMFs who used social media and a generic website were necessarily using them for sales. Within the group of farmers who used Facebook, 68% ($n = 99$) used online sales; among those who used Instagram, 73% ($n = 133$) used online sales; and among the group who used a generic website, 65% ($n = 134$) used online sales. However, we were not able to

Table 3. Online Tools Used by Direct Market Farmers, as a Percentage of Total Users, and the Statistical Association (Spearman's Correlation, ρ) Between Each Tool and Change in Profitability and Gross Sales ^a

Variable	n	% of total farmers with online presence (n = 225)	Change in profitability (March-December 2020)			Change in gross income (March-December 2020)		
			Spearman's ρ	S	p-value	Spearman's ρ	S	p-value
Total farmers with an online presence	225		0.18	5663793	0.00	0.21	5474956	0.00
Social media: Facebook	146	66%	0.05	1798229	0.43	0.13	1642767	0.04
Generic website	134	60%	0.05	1803519	0.46	0.12	1669247	0.07
Social media: Instagram	133	60%	0.10	1706567	0.13	0.22	1486319	0.00
Email listserv	57	26%	0.01	1882149	0.90	0.08	1755943	0.26
Online farm directory: LocalHarvest listing	54	24%	0.01	1881850	0.90	0.03	1837872	0.63
Online sales platform for farms	34	15%	0.06	1776316	0.34	0.05	1811513	0.49
Farm-specific website	24	11%	0.00	1888972	0.94	0.13	1658548	0.06
Virtual food hub or aggregator	14	6%	0.03	1849920	0.70	0.01	1884441	0.91
Other	20	9%	-0.05	1991903	0.46	-0.07	2029719	0.30

^a The percentages do not total 100 as the categories were not exclusive.

were among the most used online tools during this time (Figure 3). These quantitative findings align with our findings from interviews, which suggested that social media helped farmers attract customers to their in-person farm stands or booths during the pandemic from March through December 2020.

No other online tools were statistically significantly associated with an increase in gross farm sales. However, using generic websites and farm-specific websites was associated with an increase in gross farm sales at an almost statistically significant level ($p = 0.07$ and $p = 0.06$, respectively). This suggests that having an online presence through a website was likely helpful in increasing gross sales in 2020, which aligns with interview data and other research that found websites to be helpful outreach tools (Kalaitzandonakes et al., 2020).

Having a social media presence and a stable internet connection helped farmers access online tools in 2020

Survey participants who indicated they had an

online presence in 2020 ($N = 225$) were asked what helped them access online tools (Figure 4). Most importantly, a stable internet connection (50%, $n = 112$) and a pre-existing online presence (50%, $n = 111$) enabled farmers to access and use online tools. Following this, many farmers indicated that having knowledge of online tools (39%, $n = 87$) and having someone able to manage online tools (29%, $n = 65$) were also helpful resources.

Data from interviews with 28 DMFs revealed similar themes to the survey data discussed above with respect to what helped them access online tools. Half of the farmers interviewed identified their skills and knowledge of online tools as helpful resources ($n = 14$). Of these, 50% ($n = 7$) attributed their skills and knowledge to having a professional background in technology, communications, or related fields, while 29% ($n = 4$) attributed their skills and knowledge to their age, and 21% ($n = 3$) attributed their skills and knowledge to being “tech-savvy.”

ascertain whether the farmers who were both using social media and doing online sales were specifically using these or other sites for sales. Addressing this issue with more granular data (exactly what each site is used for) could help future studies determine the impacts of each tool on sales and profitability.

Of the farmers interviewed ($N = 28$), 30% ($n = 9$) identified having reliable access to internet connection as the second-most important resource. The third most identified resource was receiving help from a younger relative, their partner, or an organization (28%, $n = 8$). Finally, one farmer

identified being able to hire someone to create a website for them as an enabling factor.

Farmers experienced barriers that prevented them from having an online presence and using online sales

Through interviews, we found that lacking an online presence or not using online sales caused farmers to miss market opportunities during the COVID-19 pandemic. This section gives an overview of the main reasons farmers did not use online tools in 2020 and the barriers that farmers experienced.

In the online survey, farmers who indicated that they did not have an online presence in 2020 (33%, $n = 121$) were asked, “which of the following statements best describe the reasons your operation did not use online sales and marketing in 2020? Select all that apply” (Figure 5).³ Among those farmers ($N = 121$), the most common response (46%, $n = 56$) was that they had no interest in using online tools (Figure 5). Some of

these farmers commented in the open-text response option that they did not have enough product volume to sell online ($n = 6$); that their product was too perishable for it ($n = 1$); that they were “focused on local customers” ($n = 1$); or that they did not think it was profitable ($n = 1$). Based on interviews ($N = 28$), we found that some farmers were not interested in expanding their online presence ($n = 4$) or adopting online sales ($n = 6$) because they highly valued in-person relationships and did not want to replace them with online transactions. Additionally, uncertainty about whether an online tool was worth the time and monetary investment may have led some farmers to be uninterested in adopting it.

Figure 4. Direct Market Farmer-Reported Factors that Helped Them Access Online Sales and Marketing Tools in 2020 (Survey Responses, $N = 225$)

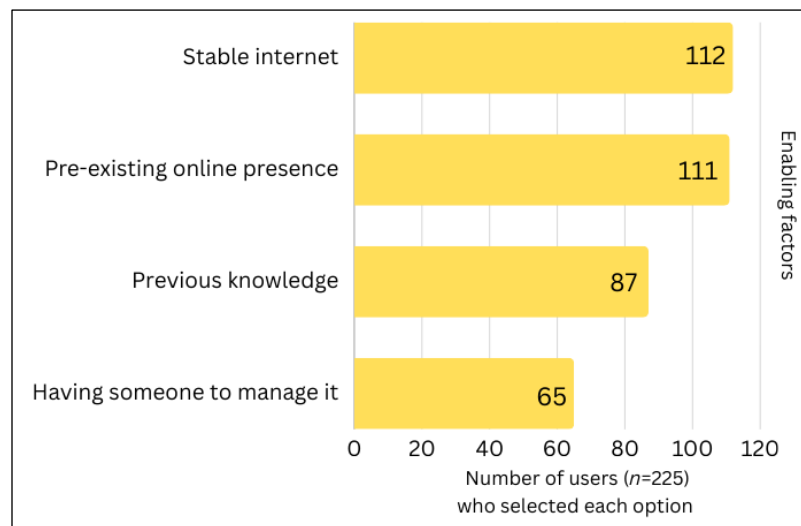
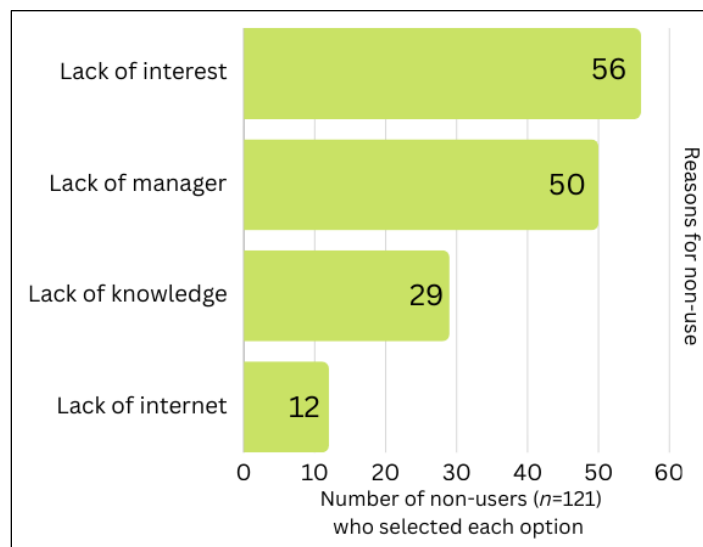


Figure 5. Farmer-Reported Reasons for Not Using Online Sales and Marketing in 2020 (Survey Responses, $N = 121$)



³ This was a multiple-answer question, so some respondents indicated that they lacked interest and also selected additional answers relating to lack of resources.

The second most common reason farmers did not use online tools was that they lacked someone to manage them (41%, $n = 50$) (Figure 5). This suggests that non-users are more likely to perceive online tools as labor-intensive, particularly if they lack knowledge about those tools. Interestingly, only 29% of online tool users ($N = 225$) indicated that “having someone to manage [the online tool]” was a helpful resource (Figure 4). This could indicate that many farm owners and managers take responsibility for this work instead of delegating it to someone else in their operation.

The third most frequently cited reason farmers did not use online tools was due to a lack of the knowledge and skills necessary to use online tools (24%, $n = 29$) (Figure 5). Choosing which tools to use requires the knowledge of at least one available tool that fits their business model, as well as the resources and capacity to learn and effectively integrate this tool. There are over 20 platforms that U.S. farmers can choose from, with varying services and fees. Interview and participant observation data suggest that farmers often get overwhelmed by the number of choices, and identifying the right platform for their business can take considerable time and energy.

Lacking technological literacy may be a substantial barrier for farmers who are older, less formally educated or trained, or non-English speaking. Many monolingual Spanish speaking farmers at online technology workshops facilitated by Pesci ($N = 11$) had low technological literacy and a low level of comfort with using online tools.⁴ For example, in one of these online technology workshops for Spanish-speaking farmers, nine of the 11 participants had never heard of the Venmo app⁵ (many farmers use Venmo and other online payment systems to collect payments at farmers markets when customers do not have cash).

Finally, some farmers who did not use online tools reported that they did not have a stable inter-

net connection (9%, $n = 12$). Lack of available broadband or the financial resources to have reliable internet service on the farm, at home, or on their cell phones structurally prevents farmers from accessing online tools. This issue is particularly acute for farmers in rural areas and historically marginalized communities. In California, for example, Black or African American, Latinx, Native American, and low-income households have lower access to broadband internet (Hayes et al., 2024; Howard & Morris, 2019).

While only 12 survey respondents indicated that lacking a stable internet connection was a barrier to having an online presence, it is likely that farmers who lack regular access to the internet also missed or did not receive our survey outreach email and thus are not well represented in this data set. For this reason, the proportion of farmers facing this barrier may be considerably higher.

Challenges that direct market farmers experienced using online sales and marketing tools

Through interviews with farmers ($N = 28$), we gathered in-depth data on the main challenges that farmers faced in adopting and using online tools. While the above section addresses the barriers preventing farmers from adopting online tools, this section describes the challenges farmers experienced using online tools. Additionally, while previous sections report quantitative findings, this section and the next exclusively report findings from qualitative analysis of interviews and participant observation.

The majority of interviewed farmers (64%, $n = 18$) expressed challenges related to how time-consuming learning about, establishing, and maintaining online tools for their farms can be. Some of these farmers shared that it is difficult to prioritize updating their online presence and posting on social media given how much time and energy they must put into farming.

⁴ While working as a contractor at CAFF's Tech Hub, Pesci facilitated three workshops in collaboration with another California non-profit organization, Kitchen Table Advisors (KTA). These workshops were designed and facilitated in Spanish by Pesci in Salinas, California, for Spanish-speaking farmers of Mexican origin. The participants were identified through KTA since the farmers receive KTA's services. KTA supports “farmers and ranchers who use regenerative agricultural practices and are leaders for social and environmental change within the food system” (Kitchen Table Advisors, n.d., “Who do we serve,” para. 1; see also Bachman et al., 2021).

⁵ Venmo is a mobile payment system based on an app, through which individuals can send payments directly to others. This app was created and is commonly used in the U.S.

The second most mentioned challenge for farmers in using online tools was lacking the appropriate knowledge and skills (54%, $n = 15$). One of the interviewed farmers, Farmer 5, attributed this lack of skill to their age: “Someone who is younger than I, with the same kind of talents that I have, could do even better because they would do Instagram or they would do some kind of Twitter thing.” Because online technologies change much faster than on-farm technologies, it is difficult for farmers to keep up with these changes.

Lacking English fluency can also be a challenge in using online tools. For example, writing posts and messages in English is a substantial challenge for non-English speakers. Interview and participant observation data showed that what often enables monolingual Spanish-speaking farmers to have a website or social media presence is having an English-speaking relative who helps them. Lacking English fluency can also make using online sales platforms more challenging. Even when a farmer has the funds and capacity to start an online store for their farm, it can be very difficult to navigate and effectively use the different platforms without being able to speak fluent English. Online sales platforms offer customer support to set up and maintain an online store. However, through participant observation at the Tech Hub, we found that many of these platforms exclusively offer customer support in English.

Just over half of the interviewed farmers shared that managing online tools can be very tedious, stressful, and exhausting for them (54%, $n = 15$). When it comes to social media, some farmers felt that they must post consistently to do it well, which requires a lot of additional effort and time spent on the platform. Two farmers noted that their dislike of social media made it challenging to spend time on those platforms. Other challenges associated with using social media included dealing with inappropriate or offensive comments on posts and sorting through spam messages.

Farmers who have a farm website through a generic platform (e.g., Wix or Squarespace) expressed challenges associated with technical glitches. Farmers “hack,” or modify, web templates to create ordering and payment systems that meet their needs. Navigating these website-building plat-

forms and editing them can be very stressful. One of the farmers, Farmer 27, shared that he would rather be working outside in the field than getting stressed out trying to figure out how to build or update a website.

A quarter of the interviewed farmers ($n = 7$), particularly those who use websites or other online platforms for sales, discussed the challenges associated with having to pay fees. Farmers who offer shipping or deliveries must deal with associated expenses, including the cost of packaging, shipping, and fuel. Some online platforms charge fees to host the farm’s online store, in addition to collecting a percentage of each transaction. Several farmers ($n = 5$) shared their dislike for such fees, considering they often also must pay for credit card payments or other payment app transactions. Farmer 10 shared, “One thing that I’m not too happy about is all the fees. Every time you turn around, there’s a fee, and it’s easy to forget all those when you’re doing your cost estimates.”

One of the farmers shared that an online sales platform for farms (“Barn2Door”) reached out to them in 2020 and convinced them to try the site for their sales. Although they saw an increased demand during the first months of the pandemic in 2020, after several months of using the platform, demand for their online products dropped and the farm had to pay more fees than what they were making from sales. Because it is so difficult to switch platforms, the farmer did not have the capacity to leave the platform and continued to pay for the fees at least until the interview took place in January 2022 (approximately 10 months), losing money as a result.

Challenges faced by technical assistance providers

In California, several programs from nonprofit organizations aim to support small-scale and family farmers by providing direct technical assistance. Many of these programs support farmers with business-related concerns and ways to increase business resilience, such as identifying appropriate market channels. One program, CAFF’s Tech Hub, supports farmers by identifying right-fit technologies, navigating technological resources, and expanding market opportunities. The Tech Hub focuses on on-farm and digital technology and is

part of a nonprofit organization that supports family farmers' various needs (e.g., policy advocacy, ecological farming practices). There are other initiatives that support farmers with online marketing and farm technology, but most are private for-profit companies.

The University of California Cooperative Extension also supports California's farmers with business development. Small farm advisors focus on supporting small-scale farmers in California. Although their role is not specifically focused on supporting farmers with online technologies, small farm advisors often find themselves teaching farmers how to use specific online tools or helping farmers identify online tools to expand their market opportunities.

Through interviews with technical assistance providers ($N = 5$), we identified several challenges these programs face in supporting farmers with online technologies. First, some technical assistance providers ($n = 3$) reported that they did not identify themselves as "experts" in online technologies or indicated that they may not have all the answers for farmers who have questions about online tools. As Technical Assistance Provider 3 said, "I have to admit ... I don't have an encyclopedic knowledge of these things ... Certainly not enough to say, 'you should really use Square as your processor as opposed to PayPal.'" With so many options available, it is very difficult for technical assistance providers to be sufficiently familiar with all of them enough to confidently help a farmer make the best decision. This lack of expertise among technical assistance providers makes providing support to farmers more difficult.

Second, teaching people how to use online tools—especially when their level of technological literacy is limited—can be challenging. Some of the farmers they work with have flip phones (as opposed to smart phones) and they often have difficulty using Google Docs and Adobe Reader, which limits their ability to fill out and sign forms. A small farm advisor (Technical Assistance Provider 5) suggested that some farmers are embarrassed about their lack of knowledge, which prevents them from asking for help or being more willing to learn. Two of the technical assistance providers posited that this is particularly true for

some of the farmers who are older and did not grow up with online technologies. To illustrate this challenge, a small farm advisor (Technical Assistance Provider 5) shared, "It's like me supporting my parents. So sometimes I laugh, but sometimes I cry a little bit inside. ... Even if you show them, sometimes they will forget."

Another challenge that Technical Assistance Provider 1 mentioned was related to farmer retention in support programs. In some cases, farmers request support from a program but they do not necessarily follow up and accomplish the goals they set out initially. Since farmers are generally more likely to prioritize their agricultural production, they are less likely to prioritize their marketing efforts, which makes it challenging for technical assistance programs to see their support come to a fruitful result.

Finally, although some programs, such as CAFF's Tech Hub, have resources and support available in Spanish, the availability of Spanish resources and Spanish-speaking technical assistance staff could be improved. A lack of English fluency can be a prominent barrier for farmers to access support and informational resources to help them navigate online technologies. As Technical Assistance Provider 2 shared, "I think that we could do a better job maybe in what's available to farmers and ... being more inclusive of farmers whose English is not their first language ... I feel like the online tech world can do better, but I think also [our program] could do better to be more inclusive."

Conclusion and Recommendations

Online sales and marketing tools present an opportunity for DMFs to increase efficiencies and sales, particularly during market disruptions such as those caused by the COVID-19 pandemic. However, certain online tools may contribute to enhancing sales more than others and, for some farmers, there are significant barriers to adoption. Our study found that (1) an online presence and the use of specific social media (Instagram and Facebook) helped DMFs increase their gross farm sales; however, (2) the type of online presence a DMF has may not make a difference in their profitability (i.e., their net income). This suggests that

DMFs who already have an online presence can continue using whatever tools work best for them.

These findings are directly applicable to DMFs, nonprofit organizations, extension agents, and private companies that develop online sales tools for DMFs. Our findings can help online sales platforms and farm-specific website designers understand some of the main difficulties that their users experience with their tools and use this knowledge to design more user-friendly and accessible products. Technical assistance providers can also use these findings to identify which support areas to prioritize.

Given this broad applicability, we provide five recommendations for technical assistance providers and others aiming to help farmers adopt and use online tools:

1. Because DMFs require diverse types of online tools for sales and marketing, technical assistance providers should advise farmers on factors to consider (e.g., budget, goals, and time investment) to determine whether an online tool is appropriate for them. Informational resources, such as flowcharts or diagrams, could help farmers assess whether certain sales platforms are appropriate for their operation.
2. When planning a workshop or training session, facilitators should first assess participants' technological literacy. In some cases, it might make sense to divide farmers into different groups according to their skill levels. These varied levels could be considered when deciding on the modality of the workshop. While some farmers can learn how to use online tools through a virtual webinar on Zoom, many farmers require direct support in person. In addition, some workshops might require a high ratio of facilitators to farmers so that participants can receive direct support from facilitators when they fall behind.
3. Along these lines, technical assistance providers should ensure that farmers have the technical literacy to maintain an online tool. For example, many farmers, particularly family farmers and DMFs, do not own or use computers and some do not own or know how to use smartphones.

Some DMFs also lack basic knowledge of digital technology or English fluency, making learning how to use online tools more challenging. This is often the case for DMFs who are older or of lower educational attainment, and immigrant farmers who are not English speakers. If a farmer lacks the necessary technical literacy, technical assistance providers could confirm that the farmer has a relative, employee, or organization that will help them on an ongoing basis. Alternatively, they could implement a plan to train the farmer on how to use this tool. Another possible solution could be to help the farmer set up a website or social media page that requires minimal updating (excluding prices and sales locations).

4. Given farmers' varied levels of knowledge, peer-to-peer learning opportunities where more knowledgeable farmers teach online technology skills to novice farmers can be very effective. For example, the Tech Hub has organized webinars and conference presentations in which farmers share their experiences with specific online tools (e.g., online sales platforms) and how they use them.
5. Technical assistance programs should consider expanding the availability of resources in languages in addition to English and hiring staff who are able to support farmers in different languages. In California, Spanish is especially important because, after English, it is the second most commonly spoken language among farmers of color and female farmers (California Department of Food and Agriculture, 2020). In addition, online sales platform companies should consider offering customer support services in languages other than English.

In closing, research-informed resources and programs that help DMFs utilize online tools can strengthen DMFs' resilience to future economic disruptions. Because California DMFs represent 10% of the total DMFs in the U.S., our findings and recommendations can guide programs working to strengthen the sustainability and resilience of regional food systems in California and beyond. 

Acknowledgments

This research and manuscript were produced primarily on lands that are the home of the Patwin people, which includes three federally recognized tribes: Cachil DeHe Band of Wintun Indians of the Colusa Indian Community, Kletsel Dehe Wintun Nation, and Yocha Dehe Wintun Nation. The Patwin people have stewarded this land for many centuries, and we are grateful to be guests on their traditional lands. This work is the result of a collaborative research project in the Food and Sustainability (Galt) Lab at the University of California, Davis. Our team would like to thank those who made this study possible: LocalHarvest for helping

distribute our survey; members of Galt Lab who gave feedback, particularly Dr. Jen Sedell and Alicia Baddorf; and, most importantly, all the farmers and technical assistance providers who took the time to participate in the survey and interviews. We also want to thank Dr. Mark Cooper and Dr. Clare Cannon for their feedback on the analyses performed in this manuscript, Emily Reyes for her helpful insights, members of the COVID-19 and regional food systems working group for providing a space for us to exchange ideas and share research updates, Elizabeth Vaughan and members of the Tech Hub for their contributions, and our families and friends for their support.

References

- Bachman, G., Lupolt, S., Strauss, M., Kennedy, R., & Nachman, K. (2021). An examination of adaptations of direct marketing channels and practices by Maryland fruit and vegetable farmers during the COVID-19 pandemic. *Journal of Agriculture, Food Systems, and Community Development*, 10(4), 283–301. <https://doi.org/10.5304/jafscd.2021.104.010>
- California Department of Food and Agriculture. (2020). *2020 Report to the California Legislature on the Farmer Equity Act*. <https://www.cdffa.ca.gov/farmerresources/pdfs/2020FarmerEquityReport.pdf>
- Durant, J. L., Asprooth, L., Galt, R. E., Schmulevich, S. P., Manser, G. M., & Pinzón, N. (2023). Farm resilience during the COVID-19 pandemic: The case of California direct market farmers. *Agricultural Systems*, 204, Article 103532. <https://doi.org/10.1016/j.agsy.2022.103532>
- Galt, R. E. (2011). Counting and mapping Community Supported Agriculture (CSA) in the United States and California: Contributions from critical cartography/GIS. *ACME: An International Journal for Critical Geographies*, 10(2), 131–162. <https://acme-journal.org/index.php/acme/article/view/892>
- Given, L. M. (2008). *The SAGE encyclopedia of qualitative research methods*. Sage Publications. <https://doi.org/10.4135/9781412963909>
- Hayes, J., Assan, E., & Gao, N. (2024). *California's digital divide*. Public Policy Institute of California. <https://www.ppic.org/publication/californias-digital-divide/>
- Held, L. (2020, April 2). *The local food revolution goes online — for now*. Eater. <https://www.eater.com/2020/4/2/21203608/farmers-markets-small-farms-offer-online-orders-because-of-coronavirus>
- Howard, B., & Morris, T. (2019). *Tribal technology assessment: The state of internet service on tribal lands*. Arizona State University, American Indian Policy Institute. https://aipi.asu.edu/sites/default/files/tribal_tech_assessment_compressed.pdf
- Kalaitzandonakes, M., Ellison, B., Guarino, J., Endres, R., & Endres, B. (2020). Pumpkin patches during the pandemic: How agritourism operations in Illinois are coping with Covid-19. *Farmdoc Daily*, 10(200). <https://farmdocdaily.illinois.edu/2020/11/pumpkin-patches-during-the-pandemic-how-agritourism-operations-in-illinois-are-coping-with-covid-19.html>
- Kean, K. (2020, March 27). Online sales of farm produce increases during COVID-19 crisis. *ClarksvilleNow*. <https://clarksvillenow.com/local/online-sales-of-farm-produce-increases-during-covid-19-crisis/>
- Keyes, D. (2021, February 3). The online grocery report: Coronavirus is accelerating US online grocery shopping adoption. *Business Insider*. <https://web.archive.org/web/20210322033430/https://www.businessinsider.com/online-grocery-report-2020>
- Kitchen Table Advisors. (n.d.). *About Us*. Retrieved June 10, 2023, from <https://www.kitchentableadvisors.org/about-us>

- Lamb, C. (2020, April 1). Harvie's customizable D2C farm sales platform could help local growers survive. *The Spoon*. <https://thespoon.tech/harvies-customizeable-d2c-farm-sales-platform-could-help-local-growers-survive/>
- Liang, C.-L., & Tarpeh, G. (2021). *Grasping impacts of COVID-19 on diversified farming operations: Perspectives of farmers and Cooperative Extension Agents*. AgEcon Search. <https://doi.org/10.22004/ag.econ.313350>
- MyDigitalFarmer. (n.d.). *About*. Retrieved June 9, 2023, from <https://mydigitalfarmer.com/about/>
- National Young Farmers Coalition. (2020). *Farmers guide to direct sales software platforms*. <https://www.youngfarmers.org/wp-content/uploads/2020/04/Farmers-Guide-to-Direct-Sales-Software-Platforms.pdf>
- Pesci, S., Galt, R. E., Durant, J. L., Manser, G. M., Asprooth, L., & Pinzón, N. (2023). A digital divide in direct market farmers' online sales and marketing: Early pandemic evidence from California. *Journal of Rural Studies*, 101, Article 103038. <https://doi.org/10.1016/j.jrurstud.2023.103038>
- Schreiber, K., Soubry, B., Dove-McFalls, C., & MacDonald, G. K. (2022). Diverse adaptation strategies helped local food producers cope with initial challenges of the Covid-19 pandemic: Lessons from Québec, Canada. *Journal of Rural Studies*, 90, 124–133. <https://doi.org/10.1016/j.jrurstud.2022.02.002>
- Strader, C., Wyler, M., Alfaro, B., & Bench, C. (2020). *Farmer to farmer exchange: Ecommerce platforms report*. CSA Innovation Network. <https://www.csainnovationnetwork.org/ecommerce-report>
- Thilmany, D., Brislen, L., Edmondson, H., Gill, M., Jablonski, B. B. R., Rossi, J., Woods, T., & Schaffstall, S. (2021a). Novel methods for an interesting time: Exploring U.S. local food systems' impacts and initiatives to respond to COVID. *Australian Journal of Agricultural and Resource Economics*, 65(4), 848–877. <https://doi.org/10.1111/1467-8489.12456>
- Thilmany, D., Canales, E., Low, S. A., & Boys, K. (2021b). Local food supply chain dynamics and resilience during COVID-19. *Applied Economic Perspectives and Policy*, 43(1), 86–104. <https://doi.org/10.1002/aepp.13121>
- U.S. Department of Agriculture [USDA]. (n.d.). *AskUSDA: What is community supported agriculture and how do I find one?* Retrieved December 2023 from <https://ask.usda.gov/s/article/what-is-community-supported-agriculture-csa-how-do-i-find-a-csa>
- USDA National Agricultural Statistics Service [USDA NASS]. (2016). *Direct farm sales of food: Results from the 2015 Local Food Marketing Practices Survey* (Report No. ACH12-35). https://www.nass.usda.gov/Publications/Highlights/2016/LocalFoodsMarketingPractices_Highlights.pdf

Appendix A. Detailed Description of Survey Data Collection

We administered our online survey on the Qualtrics.com platform. Sampling for the survey focused on agricultural producers in California who sold at least some of their products through direct-to-consumer or direct-to-institution market channels. The questionnaire was available in both English and Spanish, and we offered a US\$20 e-gift certificate incentive to participants. The survey collected responses from January through April 2021. We received a total of 364 complete responses that met the inclusion criteria.

The survey questions were focused on farmers' experiences of the COVID-19 pandemic and how they responded to its disruptions during the first 10 months (March–December 2020). The survey gathered data on farmer demographic characteristics (e.g., age, race and ethnicity, gender), farm operation characteristics (e.g., size, type of production, market channels used), responses to the impacts of the COVID-19 pandemic (e.g., changes in market channels and production), and factors that enabled and constrained their response to the pandemic (e.g., institutional or community support). A section of the survey focused on farmers' use of online sales and marketing, which is the focus of this paper's analysis. Analyses of other portions of the data have been discussed by Durant et al. (2023) and Pesci et al. (2023).

To reach prospective participants, we used email addresses obtained via three sources: the California Department of Food and Agriculture's (CDFA) list of Certified Farmers Market Producers; a list of direct-market farmers who are certified organic by the nonprofit California Certified Organic Farmers (CCOF); and California-based farmers with a profile on LocalHarvest, an online directory of direct-market farmers. We sent out an email to members of the CDFA and CCOF listservs with a direct link to our survey (1,693 contacts), and LocalHarvest disseminated our link internally via its listserv (1,700 contacts).

We had a total response rate of 16.1% ($n = 364$), out of which 360 responses were in English and 4 in Spanish. The ethnic-racial characteristics of survey respondents generally reflected the larger population of direct market farmers in California. Among direct market producers in California, 88.4% identify as White (non-Hispanic), 18.1% as Latino or Hispanic, 7.9% as Asian, 3.9% as American Indian and Alaska Native, 1.1% as Black or African American, and 0.9% as Native Hawaiian and Other Pacific Islander.

These percentages were calculated based on the proportion of the total number of California farmers by race and ethnicity who "sell directly to consumers" (USDA NASS, 2016). White (non-Hispanic) numbers were calculated from the overall California data (13,148 Latino and Hispanic producers identify as white racially; these were calculated as a proportion of the 113,717 white-identifying producers in California [11.6%]); 845 taken out of the original 7,308 = 6,463. Durant et al. (2023) and Pesci et al. (2023) provide detailed information about our sample's representativeness and demographic breakdown.

Appendix B. Demographic Breakdown of Survey Participants and Interview Participants (Farmers) in Relation to Their Use of Online Tools

Table B1. Breakdown of Direct Market Farmers who had an *Online Presence* in Each Demographic Group, Categorized by National Origin, Race/Ethnicity, Age, and Gender

Demographic group	Total (n)	Users (n)	% Of group	Non-users (n)	% of group
Total of sample	346 ^a	225	65%	121	35%
U.S. national origin	303	203	67%	100	33%
Non-U.S. national origin	36	16	44%	20	56%
American Indian and Alaska Native	13	9	69%	4	31%
Asian	19	11	58%	8	42%
Black or African American	6	3	50%	3	50%
Latino or Hispanic	39	21	54%	18	46%
Native Hawaiian and Other Pacific Islander	1	1	100%	0	0%
White	263	177	67%	86	33%
Under 55 years old	185	126	68%	59	32%
Age 55 or older	149	90	60%	59	40%
Female	182	127	70%	55	30%
Male	157	92	59%	65	41%
Other gender (non-binary, trans, "other")	2	1	50%	1	50%

^a The total sample was 364, but 346 participants responded to this question.

Table B2. Breakdown of *Online Sales Users and Non-Users* in Demographic Groups Categorized by National Origin, Race/Ethnicity, Age, and Gender

Demographic group	Total (n)	Users (n)	% Of group	Non-users (n)	% of group
Total of sample	358 ^a	166	46%	192	54%
U.S. national origin	303	144	48%	159	52%
Non-U.S. national origin	36	13	36%	23	64%
American Indian and Alaska Native	13	8	62%	5	38%
Asian	19	7	37%	12	63%
Black or African American	6	2	33%	4	67%
Latino or Hispanic	39	18	46%	21	54%
Native Hawaiian and Other Pacific Islander	1	0	0%	1	100%
White	263	128	49%	135	51%
Under 55 years old	185	87	47%	98	53%
Age 55 or older	149	68	46%	81	54%
Female	182	89	49%	93	51%
Male	157	68	43%	89	57%
Other gender (non-binary, trans, "other")	2	0	0%	2	100%

^a The total sample was 364, but 358 participants responded to this question.

Table B3. Farmer Interview Sample Descriptive Statistics

Farm and farmer characteristics	<i>n</i>	% of sample	Online sales	No online sales	Social media user	Website user
<i>Total farmers</i>	28		12	16	22	18
Age under 55	19	68%	9	10	17	14
Age over 55	9	32%	3	6	5	4
U.S.-origin	21	75%	10	11	16	14
Non-U.S. origin	7	25%	2	5	6	4
White (non-Hispanic)	17	61%	8	9	13	15
Non-white (BIPOC)	9	32%	4	5	8	3
Female	12	43%	4	8	8	7
Male	16	57%	8	8	14	11
Crop producer	25	89%	10	15	19	4
Livestock producer	5	18%	2	3	5	3
Acreage ≥ 6	13	46%	5	8	10	8
Acreage < 6	15	54%	7	8	12	10

Care, agency, and social reproduction in the H-2A program: A case study from Ohio

Anisa Kline *

The Ohio State University

Submitted June 15, 2023 / Revised January 8 and March 22, 2024 / Accepted April 1, 2024 /
Published online June 5, 2024

Citation: Kline, A. (2024). Case, agency, and social reproduction in the H-2A program: A case study from Ohio. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 237–253.
<https://doi.org/10.5304/jafscd.2024.133.026>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

This paper uses the qualitative results of a survey of 285 H-2A workers in Ohio to explore questions of care, social reproduction, and agency within agricultural guestwork. Drawing on frameworks developed in labor and feminist geography, it examines how H-2A workers create community and develop skills of social reproduction during their time in the United States. Countering the common narratives of H-2A worker as victims or stoic, long suffering laborers, the research draws attention to the relational and emotional lives of the men who do this work. By highlighting affective and social dimensions of the guestworker

experience, it argues for an approach to questions of agricultural labor that emphasizes the agency, range of experiences, and humanity of the people who participate in the H-2A program.

Keywords

H-2A program, labor geography, care ethics, agricultural labor

Author Note

The work presented here was part of my PhD research and dissertation (Kline, 2023).

Funding Disclosure

This research was supported by The Conference of Latin American Geographers, the Horowitz Foundation, the Society of Woman Geographers, and The Great Plains Center for Agricultural Health. It was also supported in part by grant number U54OH007548 from CDC-NIOSH. Its contents are solely the responsibility of the authors and do not necessarily represent the views of the CDC, NIOSH, or the Great Plains Center for Agricultural Health. At the Ohio State University, the research was supported by the Department of Geography, the Center for Ethnic Studies, and the Global Arts and Humanities Discovery Theme.

* Anisa Kline, The Ohio State University; 1088 Sunny Hill Drive; Columbus, Ohio 43221 USA; +1-937-219-3588;  <https://orcid.org/0000-0002-0987-4068>; kline.285@osu.edu

Anisa Kline is now a research associate at STAR (Saving Tomorrow's Agricultural Resources) in Champaign, Illinois, USA.

Introduction

In December 2022, the 117th Congress ended without passing any kind of agricultural labor reform bill. Stakeholders had hoped that as it was a lame duck session, the House's Farm Workforce Modernization Act (FWMA) or the Senate's Affordable and Secure Food Act would be taken up and approved by the other chamber (Rose, 2022). Originally passing the House with strong bipartisan support in 2021, the FWMA was considered a reasonable compromise by growers associations and farmworker advocacy groups alike (Farmworker Justice, 2021; *Vegetable Growers News*, 2021). Among other things, the bill lowered H-2A wages but piloted a portable version of the visa, included H-2A workers in the Agricultural Worker Protection Act, and provided a lengthy pathway to citizenship for undocumented farmworkers (Farmworker Justice, 2021). While some advocacy groups and academics criticized it for not doing enough to improve the circumstances of undocumented farmworkers, the bill was viewed by many as a step in the right direction (Aspenson, 2020; Zoodma et al., 2022).

Meanwhile, the labor crisis in agriculture becomes ever more acute. Partly due to an aging workforce, and largely due to the increased immigrant enforcement of the past decade, certain sources of farm labor have dwindled and guestworkers, also known from their designated visa as H-2A workers, have taken their place. More expensive and theoretically more regulated than other sources of labor, employers tend to see the program as an option of last resort, while advocacy organizations frame it as modern-day slavery (Bauer & Stewart, 2013).

The U.S. is thus in a situation in which the "best" option for addressing the labor shortage is also highly controversial. The work itself, which includes long hours, heat exposure, and physically demanding labor, and the conditions of the non-portable visa, which require family separation and a reliance on employer-provided transportation and housing, creates a vulnerable population. Research has responded by focusing on this vulnerability, through analyzing the macroscale implications of the program in terms of immigration policy and labor, or highlighting cases of abuse and human

trafficking in an attempt to improve employer accountability and worker protections (Bauer & Perales Sanchez, 2020; Bauer & Stewart, 2013; Feldman, 2020; Smith-Nonini, 2002; Strauss & McGrath, 2017; Weiler et al., 2020). Due to these emphases, and because accessing the workers is time-consuming and sometimes impossible, relatively little attention has been paid to what workers who are not in crisis say about their conditions of work on and off the job.

This study addresses that gap by discussing results from a mixed-methods survey of 285 male, Spanish-speaking H-2A workers in Ohio. By focusing on the everyday microscale of the individuals and the farms where they live, I bring nuance and specificity to conversations on guestworker programs and agricultural labor. The H-2A program is often treated as a monolithic structure, but this does not reflect the empirical reality. Although everyone is subject to the same basic labor constraints, how the program *actually manifests in a person's lived experience* varies dramatically across space and time. When we attend to questions such as a person's financial resources before joining the program, the length of their contract, or whether or not they are a parent, a more complex picture emerges. While this picture still includes the unjust and exploitative nature of the program, it also allows for the dynamism of human relationships.

The H-2A Program

Labor geography has contributed to guestworker scholarship by identifying how immigration policies interact with labor policy to create the precarity of the guestworker experience (Buckley et al., 2017; Strauss & McGrath, 2017). Focusing on the idea of unfree labor relations, labor geography highlights how labor arrangements do not need to meet the legal or popular definition of slavery to create an immobile and vulnerable workforce (Strauss & McGrath, 2017; Yea, 2017).

This is especially true for the H-2A visa, which brings migrant agricultural guestworkers to work on farms for contracts ranging from six weeks to ten months. Although the program was established in the 1950s, the visa has only become widely used in the past 15 years, largely due to the immigration policies of the Obama and Trump Administrations

(Feldman, 2020; Wozniacka, 2019). Because worker return each season is entirely contingent on their employer's invitation, employers can "black-list" less productive or compliant workers and replace them the following season with no legal consequences (Palacios, 2010). Moreover, H-2A visa holders are excluded from the Agricultural Workers Protection Act and the visa is not transferable among farms. If a boss is abusive or dishonest, workers must choose between staying in a harmful situation or returning to their home countries with no earnings for the season (Costa & Rosenbaum, 2017). The men are not permitted to bring their families and they are required to pay taxes. Although their housing is provided free by the employer, no fees are required to enter the program, and the employer covers worker transportation costs to and from their hometowns (Costa & Rosenbaum, 2017), research has shown that the workers are often charged fees by recruiters in their home countries, not reimbursed by their employer in the U.S., and the quality of the housing provided, which is supposed to be inspected, varies widely (Bauer & Perales Sanchez, 2020).

The H-2A program and its Canadian cousin the SAWP have been analyzed both structurally (Beltran, 2018; Lee, 2017; McLaughlin, 2017; Minkoff-Zern et al., 2022; Zoodsma et al., 2022) and ethnographically (Binford, 2013; Morales, 2021; Palacios, 2010; Smith-Nonini, 2002). The conclusions are consistent: The non-portability of the visa, the lack of a pathway to citizenship or increased job security, the family separation, and the physical and social isolation create a precarious and vulnerable workforce. This approach by the government to labor migration "functions by legally constructing groups of racialized workers as unfree, precarious and deportable" (Weiler et al., 2022, p. 157) and creates a host of problems, from wage theft and unsafe housing to human trafficking (McLaughlin, 2017; Palacios, 2010).

The nature of guestworker programs also creates significant methodological challenges for researchers and advocates alike. The men are hidden and dispersed throughout rural landscapes. Most lack driver's licenses and cars, rendering them immobile, and because they are often housed on their employers' property, to access them entails

negotiating a potentially fraught relationship with the employer. As a result, North American scholarship often focuses on small groups of workers, clustered in one area or farm, where the researchers managed to develop relationships (Basok, 2002; Binford, 2013; Preibisch, 2004; Smith-Nonini, 2002) or the population only becomes visible when the conditions are so egregious that legal remedies are pursued (Bauer & Stewart, 2013; Favakeh, 2022).

Therefore, the problems of guestworker programs and the way they create a disposable labor force are well established. Within this critical framework, however, many questions remain about who these people actually are: In addition to being guestworkers in the U.S. and Canada, the men in the program are also fathers, sons, and brothers. They are tattoo artists, shop owners, school bus and uber drivers, and farmers of their own land. But the terms of the program require the men to suppress these social identities because they are only present on the farm to work and are only valued as productive workers. All other aspects of their selves or experiences are essentially considered irrelevant. Consequently, guestworker scholarship to date has mirrored this splitting of the self. Even when discussing the affective dimensions of the guest worker experience—the emotional toll of family separation, for example, or the social exclusion by their hosting communities, the social life and social reproduction in the labor camps themselves are minimally discussed or ignored (Horgan & Liinamaa, 2017; Locke, 2017). (See Campos-Flores & Martin (2023) for a recent exception in Canada.)

This research begins to address that oversight. Utilizing concepts from labor geography, and specifically feminist labor geography, I highlight other aspects of these men's identities and experiences. I share findings that bring attention to their other selves, and in doing so emphasize the relational and social dimensions of their experiences. Attending to these aspects of their lives is important because it restores their humanity. When we only discuss their conditions of labor or only narrate them as laboring bodies, we rob them of their subjectivity and the multifaceted, complex, and often contradictory experience of being human. As Laura

Agustín has noted, “To pay attention only to the jobs migrants do is to essentialize them as workers and deny the diversity of their hopes and experiences” (2003, p. 391).

Conceptual Framework: Social Reproduction, Care Ethics, and Agency

Social reproduction, which I am defining as “activities necessary to maintain and reproduce life daily and intergenerationally at both the individual and social scale” (Winders & Smith, 2019, p. 872) is usually discussed in terms of the invisible work of running a household, most often done by women. Global householding refers to the transnational version of this, in which migrants—usually women—work in homes in the Global North in order to support their families in the Global South.

A related concept is care ethics, which “begins with a social ontology of connection: foregrounding social relationships of mutuality and trust (rather than dependence)” (Lawson, 2007, p. 3). Centering an ethics of care in research allows us to see how people connect and support each other—thus enabling social reproduction—within oppressive and otherwise challenging structures. Again, this kind of focus often takes up relationships between women, often in the roles of factory workers, nannies, or maids (Pratt, 2012). My work expands these lines of inquiry by exploring the social reproduction undertaken by male migrants during their time abroad. By centering an ethics of care within an entirely male community, I broaden the scope of feminist scholarship on these topics, encouraging us to see men’s capacity for care beyond their role as fathers and husbands.

I also continue the frames of inquiry identified by Madhumita Dutta in her ethnographic study of female factory workers in Chennai, India. Identifying a multitude of dynamics in the workplace, she observes that this complexity “challenges the idea that workers’ agentic behaviours can be clearly identified as either compliance with or resistance to neoliberal labour pressures...the workplace becomes neither a site of pure resistance nor one of worker co-optation. Rather, the workplace is rendered far more capacious for worker agency, which can be seen to emanate from other social relations of labour, feelings and emotions that

recreate conditions and possibilities for women to live” (2020, p. 1368). My exploration within the circumscribed world of H-2A labor camps identifies similar relations and interactions, allowing us to see the possibilities within these places and the ways in which agency and humanity are always present in labor arrangements.

Finally, looking at social reproduction and care ethics at the microscale of these labor camps allows me to identify moments of agency that might otherwise be missed. The question of agency is central to labor geography, as scholars seek to understand it “not only as forms of resistance but also as resilience and reworking” (Raj-Reichert, 2023, p. 188; see also Coe & Jordhus-Lier, 2011) and to identify how it exists “through every-day and informal acts and practices exercised both within and beyond the workplace” (Carswell & De Neve, 2013). For the purposes of this paper, I use Rogaly’s definition of agency as “both the intention and the practice of taking action for one’s own self-interest or the interests of others” (Rogaly, 2009, p. 1975). I contribute to this body of work by examining how agency plays out in the highly constrained and precarious context of guestworker labor.

Without seeing these moments, we risk a kind of theoretical closure and paralysis of action: it is clear that guestworker programs involve dehumanizing, dangerous work and create a vulnerable and precarious workforce that is essentially treated as disposable labor. It is also clear, as discussed in my introduction, that political interventions at the macroscale of national policies are unlikely to be the solution in the foreseeable future. This fact leaves us in an uncomfortable position: either we can simply restate the problem, again and again, or we can approach the phenomenon from a different angle. The structure that shapes this workforce is powerful, but it is not all-powerful, and it is in attending to the microscale of each man’s experience across many farms that we begin to see the fissures. They are tiny, to be sure, but they are openings; and if we follow, they can help us to see these men otherwise, and if we can see them otherwise, perhaps we can begin to envision spaces, moments—however fleeting—of intervention. The research on the H-2A program and the literature in labor geography inspired the following three

research questions: how the tasks of social reproduction are managed in an all-male environment, how the guestworker arrangement impacts the social ties and emotional bonds among the men, and how the men employ agency within the program.

Methodology

Survey Design

To gather both population-level data, such as age, educational attainment, and years in the H-2A program, and more subjective information about H-2A workers' experiences and labor arrangements, I designed a semi-structured interview that contained both open-ended and closed questions. The survey contained 155 fields and included general demographic information (such as age and marital status), questions regarding the recruitment process in Mexico, labor and living conditions at the farm, their social networks within the camp and in Ohio, and a section on occupational health and safety and healthcare access. This latter section used questions from the National Agricultural Worker Survey for the years 2000, 2010, and 2017. The survey instrument itself was designed as an ethnosurvey (Massey, 1999), combining qualitative and quantitative approaches. Other than the NAWS section, questions were asked in an open-ended format, and the instrument allowed for follow-up questions, as appropriate. For the NAWS section we followed a specific script. Generally speaking, the entire process lasted about 20 minutes, which varied depending on the participant's interest and enthusiasm.

Sampling Frame

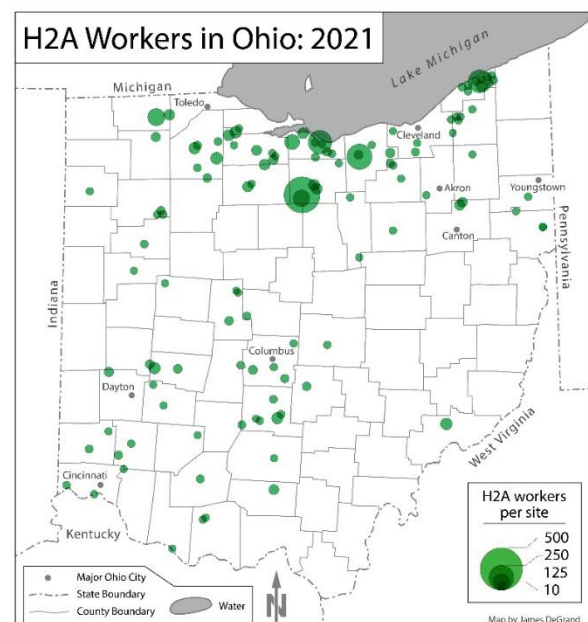
I created the sampling frame, consisting of any male H-2A worker in Ohio who was from Mexico or Central America, by making a database from Department of Labor data, which records, among other information, the addresses where the men live and work, the dates they are to be in Ohio, and the number of people living at each site. Although the Department of Labor does not include country of origin by worksite, nationally over 94% of H-2A workers are from Mexico or Central America and virtually all are male (Martin, 2022). I knew how to access the data and had firsthand experience of the

broad demographic makeup of this population from spending a summer as a migrant outreach worker with Advocates for Basic Legal Equality, a nonprofit with offices throughout Ohio. Ohio was chosen as the fieldwork site because of this prior experience.

Data Collection Design

To recruit a cross-section of workers at different kinds of farms, I divided the farms by location and by farm size. For location, I divided the state into southern Ohio and northern Ohio. Everything in Franklin County, where Columbus is located, and south of it, was considered southern Ohio. Everything north was categorized as northern Ohio. The geographic division was based on farm locations and where they are generally clustered in the state (Figure 1). Small farms had 1–15 workers, medium ones had 16–70, and large operations had more than 70. I created target numbers for each category, which, when totaled, would equal 375—a representative sample of the 3,686 workers present from the 2021 applications (Table 1). The target number of people was proportional to the number of people in that category when looking at the entire sample. There were no large farms in the south, so that strata was left empty. I also made a

Figure 1. Distribution of H-2A Workers in Ohio, 2021



rule that we would not interview more than 15 people at a medium farm or 50 people at a large farm, to ensure that my final sample would include a number of different farms.

Originally, I planned to do a randomized sample by randomly generating the order of farm names within each strata and then visiting them in the order of the random sample. However, after one week in the field, it became clear this would not be feasible. Due to the distances between farms, it would take too long to visit locations in a random order. Instead, I organized trips by county and timing of H-2A worker arrival. Once most of the workers in a general area had arrived, we went to as many farms as possible in that county or region, a process described in more detail below. The limitation of this approach was that the results are not random and, to some extent, responses could be influenced by season. That is, some places were only visited in the spring or the summer, which have different weather patterns.

Our sampling was essentially a convenience method. We determined which places to visit using a combination of timing and location. H-2A entries are staggered throughout the growing season, so we timed our trips to a specific county to coincide with the time in the season when the majority of

the workers in that county would be present. We then mapped the addresses and went to them one by one. If there were multiple farms within a county that had workers present at the same time, I would prioritize the farms that were in the strata where I most needed to add participants in order to reach my survey goals. Table 2 presents our final numbers by strata. I did not end up using either stratum, north/south or farm size, in the analysis phase.

Since some counties contain only one or two H-2A employers, I do not share county participation data. However, the Figure 1 map shows the distribution of H-2A workers in the state and thus gives a general idea of where I conducted fieldwork.

Fieldwork Logistics

From April to August 2022, one female research assistant and I conducted fieldwork, on Sundays and after working hours Mondays, Tuesdays, and Thursdays. After arriving at an address, we would knock on the door and wait for someone to respond. If someone answered, and we confirmed they were an H-2A worker, we invited them to participate in our survey using an IRB- approved script and offered a \$20 cash incentive for their time. If they consented verbally, we set up folding chairs and tables outside or occasionally interviewed inside during inclement weather. At large camps we repeated the process, knocking on all the doors or relying on a very loose snowball method, in which one worker, after being interviewed, would go find other men to participate. We returned to the very large camps multiple times, where it was impossible to recruit or interview everyone in one visit, but this was the exception. If no one was home, and it was possible for us to return, we would visit the address again at a later date. Using this method, we located workers at 48% of the addresses we visited, and our response rate was 74%. By the season's end, we had visited 82% of all H-2A employers in the state and driven over 10,000 miles within Ohio.

Unless the employer was physically on the site when we arrived, we did not ask their permission to visit a property, nor did we alert them to our presence or otherwise share worker participation

Table 1. Original Sample Goals

Farm Size	Region of Ohio		
	South	North	Total
Small	50	50	100
Medium	50	75	125
Large		150	150
Total	100	275	375

Table 2. Final Sample Numbers

Farm Size	Region of Ohio		
	South	North	Total
Small	22	52	74
Medium	50	56	106
Large		105	105
Total	72	213	285

with employers. Workers are permitted to receive visitors at their place of residence, even if that residence is on the growers' property. We often drove past "No Trespassing" signs to locate the housing, but we did not cross physical barriers, such as locked gates. We encountered growers at ten sites, and all but one granted us permission to speak with the men he or she employed.

Data Collection Details

All surveys were conducted in Spanish, and I have translated the quotes in this article. When permission was granted, we audio-recorded the interviews. Otherwise, we recorded their answers in our survey instrument, and kept fieldnotes to record our general observations or interactions that occurred outside the interview itself. No identifying information was collected; all names included here are pseudonyms.

The information shared here comes from the "open" portions of the survey instrument, which asked participants to reflect on their experience as an H-2A worker. It is drawn from the audio recordings, survey data, and fieldnotes and supplemented by semi-structured interviews I conducted in 2021 with stakeholders (such as farmworker advocacy organizations or relevant state agencies) and H-2A employers ($n=27$).

Data Analysis

Data were collected using the password-protected RedCap app on password-protected tablets. The survey results were initially stored in password-protected RedCap server, then downloaded as a CSV file onto a password-protected computer. The observations were cross-referenced with our field logs and duplicate entries were eliminated.

I used thematic and content analysis to interpret the qualitative data. I began by organizing the answers to the open-ended questions by question, reading the responses of all participants to a specific question at once. This helped me identify themes and patterns in the data, in addition to flagging unusual responses. I then re-organized the responses by theme, noting where certain phrases or topics surfaced repeatedly throughout our interviews. Throughout this process I also referred to my fieldnotes and audio recordings of the inter-

views to supplement and deepen my interpretation of the survey responses.

Results

Self-Care: Social Reproduction at a Micro-Scale

How these men managed household chores in their residences and labor camps was not originally a focus of the survey. However, when men reflected on what they had learned about life in Ohio and what they have had to get used to while living there, they often discussed their life outside of work. Specifically, they addressed learning to take care of themselves:

In Mexico you don't cook, here we make our own food. Clean my house, make my bed.
(Alex, Tlaxcala, 27)

Doing chores by yourself, becoming self-sufficient. (Yago, Chiapas, 43)

It's hard because you have to do everything yourself. My mom showed me how to cook.
(Silverio, Veracruz, 32)

Cook and clean by myself. (Cristian, Hidalgo, 24)

You have to learn how to live independently.
(Jonás, Guanajuato, 28)

It has taught me to be independent ... to value ourselves. (Geraldo, San Luis Potosi, 29)

Like women who are living away from their families, who have to be "both father and mother" because they are earning an income and caring for their children from afar (Paciulan & Preibisch, 2014), men in the H-2A program have to be both husband and wife for themselves—something to which they are not accustomed. The men themselves frame the experience in terms of gender and, at least in some cases, it has caused them to reflect on the domestic labor of their wives and mothers.

Being away from family has taught me a lot about being a man and doing domestic chores.
(Ignacio, Aguascalientes, 34)

In Mexico you depend on others: your mom or wife. Here you have to do everything yourself—make your bed, wash your clothing. (Lucio, Hidalgo, 25)

To be more independent. In Mexico my wife cooks, here I have to cook and clean. (Francisco, Guanajuato, 38)

Do the chores your wife normally does; value what they do at home more. (Uriel, Guanajuato, 30)

You learn to value the work women do for you (clean, cook, etc.). [I] learned to cook by cutting my fingers. (Isidro, Durango, 24)

Caring for Each Other

My findings confirm the social isolation many migrants' experience. When describing how he spends his free time, Hector's response was typical for many: "Rest, hang out outside, you only leave for chores. Maybe go to the store to spend some time, but I spend most of my time here." In this response, though, there is also an implicit sociality: he is in fact "hanging out outside" with the other men in his camp, who are also spending most of their time there. And when one spends 6–18 hours a day working with people, in addition to living with them, friendships—or, in academic parlance, "affective ties"—are developed, which become an important, genuinely meaningful part of the guestworker experience.

When asked what they liked most about their work, a number of respondents said "la convivencia." There is no English equivalent for this word, but I translate it as the camaraderie of living and working with others. Throughout the course of our fieldwork, it became clear that even when this precise word was not used, this was a defining aspect of their lives as guestworkers. In the responses below, we can see that although the men are here to work, and do so under grueling conditions, there is more to the guestworker experience than the labor itself.

Like: The closeness of the company, meeting people from all over. Hard: Being far from family. (Dominic, Jalisco, 26)

Like: How many people I get to meet, the friends from Mexico and the U.S. Hard: The hardest part is adapting to being alone. (Ignacio, Aguascalientes, 34)

Like: Likes the other workers, they become friends. Hard: Not knowing English is the hardest part. (Alvaro, Guerrero, 34)

Like: Work environment and compañeros. Hard: English. (Alfonso, Guanajuato, 36)

Like: The convivencia, there's no rivalry. Hard: The weather: we have to work even when it rains. (Timoteo, Guanajuato, 32)

Like: La convivencia between friends. Hard: The weather: the cold. (Edgar, Chiapas, 35)

Like: The convivencia. Hard: Getting used to being here. (Jaime, Michoacán, 25)

Like: The convivencia with my people and learning about life here. Hard: In terms of work, it's the same. Being here alone without family. (Ricardo, Guanajuato, 48)

Like: I work with family and friends, meeting new people, good community. Hard: Far from family. (Saul, Guerrero, 21)

Like: I live with friends and I earn more. Hard: Nothing has been difficult for me because I've done manual labor before. (Omar, Michoacán, 19)

Furthermore, the camaraderie during both work and leisure time creates feelings of connection that are a crucial antidote to the loneliness and disorientation of guestworker life. In one camp, where the men had only recently arrived and a number of them were working as an H-2A for the first time, Marco explained what is hardest and what he likes the most about the work: "[The hardest thing] is working in the field because I'm new at this. But it doesn't stress me out because my compañeros support me." For another, the hardest part was the schedule: "We work every day from 5 am–

11 pm,” but the part he liked the most was “chatting while we work” (Manuel, Veracruz, 41). At another camp, a man who was about five months into his first H-2A contract, which would last ten months, shared how the social connections with his *compañeros* were an important coping mechanism when he first arrived:

Interviewer: And what’s it like being far away from your family? How do you manage?

Roberto: Now it’s a little easier to manage, but when I first arrived, I was like, “to hell with the contract, to hell with the visa, I’m out of here.” In truth, I was depressed at the beginning because it was my first time here, but later, it got better. I started to work and it was a distraction.

Interviewer: What helped you with the depression?

Roberto: I think everyone. ... They didn’t know it, but for me, just with talking I began to focus on other things.

Interviewer: So having *compañeros* helped?

Roberto: Uh-huh.

For others, this manifests as an appreciation, or excitement even, at being able to meet and form relationships with people from different places. In a camp that had brought together men from Chiapas and Durango, more than one participant remarked on this when asked what he like most about his work: “To start with, you meet different people. It’s nice getting to know people from different parts of Mexico” (Andrés). In another instance, we interviewed men from Guanajuato, Michoacan, and Zacatecas, all living in an apartment complex on the edge of a medium-size city. Diego, a young worker from Michoacan, shared that he enjoyed the H-2A program because it afforded him an opportunity to “be far [from home] and get to know people from other parts of Mexico.” Indeed, when we met him, he was on his way out the door to meet friends and had to partic-

ipate quickly so he wouldn’t be late.

In addition to creating a sense of belonging within a general context of social exclusion, the relationships—both established before the program (as when an uncle and nephew work together) and developed during the program itself—allow for more efficient social reproduction. For example, instead of every man cooking for himself, households often organize themselves so that each man takes a turn providing dinner for his roommates. When workers from different parts of the country share a space, the arrangement functions as a kind of cross-cultural exchange: “It’s interesting” said Isaías; “you learn something” when eating and cooking with *compañeros* from other places. Workers will also split their grocery bills in order to maximize the earnings they can send home to their families.

When men shared that they had learned how to cook, my research assistant had the good sense to follow up with “and how did you learn how to cook?”, a question which I also began including in my interviews. The responses were illuminating, and sometimes funny, as when one man remarked dryly “by ruining a lot of meals.” Some called their mothers, others watched their wives during their time in Mexico, some learned from YouTube. But many learned from each other. This was particularly true at a large vegetable farm in northern Ohio, which joined the program in 2019 and now, at peak season, employs over 400 H-2A workers each summer:

I learned to cook from my *compañeros* here.
(Sebastian, Guanajuato, 21)

You have to learn how to prepare your own food and wash your own clothing. My friends are teaching me. (Jaime, Michoacán, 25)

You have to get used to doing things on your own, things you don’t normally have to do. Me and my *compañeros* learned to cook all together. (Ruben, Veracruz, 38)

Be independent, at first it was hard to learn home chores. Friends here taught me to cook.
(Kevin, Veracruz, 21)

As can be seen in the responses, an ethics of care is woven throughout the experience. Indeed, in our sample, the men often framed their workplace communities as families; for example, “Here we’re a family even though we’re from different states. We support each other” (Benito) and “I enjoy...the companionship. It’s a second family” (Ramón). And while these bonds are no replacement for their partners and children, men regularly give and receive care in these space, such as teaching their newer *compañeros* how to cook, or being the camp barber, offering haircuts under the shade of a tree.

The companionship created in these spaces is perhaps best illustrated by the following vignette. We had entered the labor camp, and knocked on the first door where it seemed that someone was inside. A man answered, listened to us explain our work, and told us that, although he was making dinner, we were welcome to come inside and talk with him while he cooked. I described the following interaction in my fieldnotes:

There are three men in a small kitchen space. They are cooking dinner. One man is methodically slicing a pineapple, another is making rice in a pan and the third is cutting up the ingredients for *pico de gallo*. Each guy seems to know exactly what he is doing—there’s not a lot of conversing between them about their tasks. By the end of our conversation, they have a big pot of *carnitas* cooked, rice with *jitomate salsa*, homemade tortillas, and two kinds of salsa done and they share their tacos with us. It’s delicious.

The men had done this work together so many times in the past, they did not need to plan or strategize. Each person knew their job and knew how to do it well. Indeed, they were so comfortable with the process, two of the men let us interview them while they were cooking.

Agency

It is true that the terms of the program considerably constrain guestworker agency in the host country. However, the process of actually becoming a guestworker is itself an act of significant agency,

since the men and their families must mobilize substantial resources in order to participate in the program: it requires connections, material resources, commitment, ingenuity and no small amount of courage. Workers often evinced a sense of pride at being “*contratado*” (contracted). We met a man from Chiapas who had only just arrived—on his first contract—two days before. He offered to show us his documents (we declined) and when I explained the interview would be anonymous he said, “I have nothing to hide—I came here with papers.” After the interview concluded, he insisted on introducing himself, shook my hand and looked me in the eye: “Nice to meet you. My name is Miguel.”

Nonetheless, once here, workers’ agency is significantly constrained; it is here where Rogaly’s attention to the microscale, and his assertion that researchers “need to focus on the low-key and often invisible ways by which people with very limited material means make viable lives” (2009, p. 1984), is helpful. In terms of space, workers had a variety of strategies to improve their living quarters and make it feel more like home. We saw volleyball nets, makeshift soccer fields, and fire pits, where the men would smoke meat or simply gather around, listening to music and drinking beer. They also often planted small kitchen gardens of their own, partly to supplement their diet but also as a way to pass time and beautify their spaces. In addition to growing food, men planted herbs and flowers, making their yards—where they spent most of their free time—more pleasant and attractive.

Many men also got their drivers’ licenses, and after saving for a few years bought their own cars. In one case, we interviewed two men while a third stood in the yard, shouting directions at his *compañero* who was practicing for the parallel parking part of his driver’s test. Occasionally, after the formal interview ended men would ask us if we knew how they could get their license, expressing a desire to increase their mobility and independence. It should be noted that the logistics of getting a license generally requires the active support of the employer, and not all are willing to help their employees with the process. However, in my grower interviews, eight of 13 said that they had helped their workers get licenses, and five

provided vehicles for the workers to use both during and after work. This was corroborated in the survey: 15% percent of those surveyed had a license, of whom 88% had access to a vehicle for personal use—either their own, one they shared with friends, or one their boss lent them for the season.

While this may seem a minor concern, the immobility and subsequent isolation of the men during their contract is often a chief concern for farmworker advocates. It increases their vulnerability and makes it difficult to learn of workplace abuse, wage theft, or other violations that may be occurring on the farm. While having a driver's license and car doesn't overcome the vulnerabilities built into a non-portable visa, it does improve the workers' quality of life and increase opportunities for them to participate and connect with communities outside the farm. The men we interviewed who had their own cars and lived in or near towns would spend their free time visiting family that had settled in the area, going to bars or restaurants, and sometimes participated in activities in the community such as a soccer league or gym. They also operated as an informal taxi service, charging their *compañeros* a small fee if men without cars wanted to go somewhere other than the weekly errand trip offered by the employer.

The Limits of Care

The creation and appreciation of an ethics of care among coworkers exists alongside their awareness of the exploitative and precarious nature of the labor arrangement they participate in. While less common, or addressed indirectly, workers spoke to the structural injustices of the program and in some cases were quite clear about the limits of their coping mechanisms. The critiques were offered at various scales, and each will be discussed in turn.

At the interpersonal level, a worker from Guanajuato at a small nursery in northern Ohio told me early in the interview that what he most liked was “La convivencia.” Later, however, he noted that “You get stressed near the end of the season. You get tired of each other.” Even in the best of cases—when the man is working with long-time friends and generally gets along with his com-

pañeros and the employer—those relationships do not substitute for the intimacy and connection of a partner and children.

His comments also point to the variability *over time* of the social and affective dimensions of the program: friendships can sustain you, but only for so long. The sacrifice and the mental and emotional fortitude necessary for a nine- or ten-month contract is much greater than a four-month contract, for example—something the men take into account when weighing the decision to return for another season. In some cases, workers will request a shorter contract in order to have more time with their family while not losing out on the opportunity entirely. One man explained his cost-benefit analysis: “I do like coming here to work, it's nice; I come because it is a short amount of time (four months); if it were longer I wouldn't come.”

Beyond the personal sacrifice required to participate, workers were also keenly aware of the imbalanced power dynamics, vulnerabilities, and limitations created by the terms of the visa. The following group conversation, held after the formal interviews were completed, illustrates some of these issues:

They asked if I'm only studying H-2A workers, and not other visa holders. And I explained yes, and began to explain I'm doing that because of how their experiences differ from other ag workers. I don't know if I did a good job explaining that overall concept, but I did say “for example, the grower has to provide housing free of charge—that's not the case for other ag workers. ... BUT if you don't like your grower, you can't just quit and go find another boss. You're stuck with this one because your visa is only good for this one” and one guy responded by saying “Like slaves.” And I said “Yes, well some people say that about this program. Is that how you guys see it?” and they gave me a look, with silence and raised eyebrows, that seemed to say, “Well that's the reality but we're not going to say it out loud.” Also, they asked me if they could ask for a higher salary, if, for example, one of them got a supervisory role, and I explained that the wage was set by the federal govern-

ment and it's against the rules for them to be paid anything different—higher or lower.

While this conversation involved program regulations, workers also reflected more generally on U.S. immigration policies when asked what could be done to improve the program. We asked this as a wrap-up question at the very end, and it was common for men to say “Oh, nothing,” because, in the words of one man, “They’re never going to change it.” Or they would say, “Nothing, it’s great the way it is.” In either case, we would counter with something like “Well, sure, we can’t do much about it, but it’s still helpful to know what you would change. For example, would you like to be able to bring your family? Get residency? Get paid more? Get English classes?” When phrased this way, 14% said “residency.” Efraín—who needed no prompting—elaborates on this point:

Interviewer: If you could change one thing to improve the program, what would it be?

Efraín: That they help us get visas.

Interviewer: In what sense?

Efraín: Although the truth is that the work is good, it's also very hard. And there are many *compañeros* that have more than five or six years in the program, and so I think there should be an opportunity for them to get papers.

Interviewer: Like for their residency?

Efraín: Yes, their residency because I think that's fair. Many people don't like this kind of work. They get here and the first thing they do is leave. There are only a few of us who can handle it. And so I feel that we deserve the opportunity of getting residency.... Some people come, creating problems, entering without documents. They're not following the rules...[but we are]. So, it would be fair. Yes, it would be fair to fight for that paper. But unfortunately, we can't. ... It would be great if that opportunity existed.

In contrast, at another farm a participant was emphatically not interested in gaining residency:

I came here out of necessity, because the situation in Mexico is very hard; you can't support yourself with the salary they pay there. I have my own land in Mexico but I have to find other work because it isn't enough. I have to find money to start production every season. For harvesting, you are paid very little in Mexico. I still really enjoy my land, home; but I get frustrated at my government because they make so much money, raising prices. They never think about the *campesino* that is out there working. The government in Mexico needs to help us, we shouldn't be suffering in another country. (Patricio, Guanajuato, 54)

As these interactions show, the men are acutely aware of the structural factors that circumscribe their laboring lives. From interpersonal dynamics to the dysfunctional policies of their own country, they can see and name the systems that create their precarious labor arrangements. Specifically, the lack of any kind of career ladder that rewards experience and expertise with increased wages or job security makes the H-2A program essentially a dead-end job. For the visa holders, this truth, and the injustice of it, is held alongside the valuable social connections, social reproductive skills, and acquisition of technical knowledge when they reflect on their lives as guestworkers.

Discussion

This article adds specificity and detail to labor geography's interest in precarious work in general and guestworker programs in particular. Investigating social reproduction within the labor camps, the affective ties developed through the experience, and the small but meaningful ways these men exercise agency during their contracts contributes to the “widening and diversifying approaches and perspectives” that are “necessary to continue our understanding of evolving forms and actors of labour agency” in a variety of contexts (Raj-Reichert, 2023, p. 191). In addition to broadening our analytical perspectives, focusing on dimensions of the guestworker experience beyond and outside

their jobs encourages scholars and advocates to see these men as full human beings.

Social Reproduction and Feminism

How migrants manage both productive labor and social reproduction while doing guest work is not a new question. However, the emphasis has been almost universally on women, and how they, for example, mother their own children in a different country while also caring for others' children as a nanny (Pratt, 2012). Nevertheless, while the entire premise of the program is a split between production and social reproduction—men produce in the North so that their families can socially reproduce in the South—the men still must buy groceries, cook, clean, and maintain their shared quarters in the camps, apartments, and old farmhouses where they are housed during their stay.

Researchers such as Salzinger (2003) and Dutta (2020) have explored how factory work for women, while being exploitative and physically exhausting, also partially liberates them from an oppressive and stifling domestic sphere. A feminist interpretation of social reproduction would also see it as liberatory that the men in this study have learned how to cook and maintain their temporary homes. Indeed, the ignorance and inexperience around tasks of social reproduction is one of the many ways a patriarchal social structure costs men, because it leaves them without the basic skills necessary for self-care. While this in no way makes up for the vulnerability and exploitation created by the H-2A program, the men participating do find value in it beyond wages—experiences and skills *that they themselves* find useful.

The research still leaves unclear how the men transfer their newly developed household skills to their own homes in Mexico, or, if after months of taking care of themselves, they arrive home, flop onto a couch or hammock, and shout for their wife or mother to bring them a beer. It is therefore premature to celebrate this as some kind of great equalizer that disrupts gender norms on a larger scale. However, one of feminism's earliest and more important contributions to the concept of social reproduction was identifying the value of unpaid domestic labor and how it makes productive labor possible (Winders & Smith, 2019). If we

want to truly place equal importance on productive and socially reproductive labor, then we must value these newly acquired skills, even as they are being developed in oppressive circumstances.

An Ethics of Care

Often research on guestworker programs has emphasized the isolation that migrants experience (Basok & George, 2021; Reid-Musson, 2017), as scholarship tends to focus on the relations (or lack thereof) between the workers and the host community, rather than investigating the social worlds inside the camps themselves. In fact, The H-2A experience is profoundly social. Like the women in Dutta's ethnography, the men experience the workplace as a "site that produces a sense of community that exceeds the problem of wage relations" (2020, p. 1360). And while work—precarious, physically demanding, and dangerous labor in a foreign country—was the structure under which these relations occurred, the experience and meaning of it went far beyond the work itself. Men form friendships, support each other through difficult moments, and share a variety of resources—from medicine and food to knowledge about cooking or where to find the closest Mexican tienda. Highlighting the various ways these men give and receive care to each other helps us challenge dominant definitions of masculinity, which do not allow for male tenderness, while also encouraging us to see beyond their identities as workers.

Agency

The mobilization of both social and financial capital that is required to participate in guestwork reflects what is widely known in migration literature: the people who migrate are not generally the most vulnerable or least-resourced. Instead, they have some measure of connection and efficacy which they have utilized to achieve their goals (Feliciano, 2020). Labor geography also recognizes this dimension of migrant labor and guestworker programs, noting how agency is exercised within a range of constrained circumstances (Rogaly, 2009; Seo & Skelton, 2017). Recent ethnographic work has also made it clear that "precarisation and agency should not be examined as two opposing poles but rather as an inherent part of the migra-

tion process where one cannot be separated from the other” (Deshingkar, 2019, p. 2639). This approach has the added benefit of reflecting worker subjectivity: the terrible working conditions notwithstanding, getting a contract is considered an accomplishment. In other words, the men can both be aware of the exploitative nature of the job and still feel pride in the fact that they got it.

Once in Ohio, the men exercise agency by doing things like planting a garden or getting a driver’s license. Although these kinds of choices don’t transform the terms of the program, they do materially improve the workers’ lives and demonstrate the small ways they can exercise control within a highly constrained environment. As Rogaly notes, the “influence of such agency on workers’ spatially embedded everyday lives can be significant to workers themselves both materially and in relation to the subjective experience of employment” (2009, p. 1975).

Limitations

This piece explores the experiences of guestworkers that go beyond labor and attempts to create a fuller and more nuanced portrait of who they are as *people*. However, the research was still conducted with men who were, essentially, “at work”—separated from their families, living at labor camps, and beholden to their employers in significant ways. It was also conducted over one summer, creating a broad portrait of H-2A life in Ohio at a certain moment in time. Future research would benefit from both a binational approach and a longitudinal one: connecting with men during their months with their families would likely yield richer insights into how the men perceive themselves in other contexts and how their experiences in the U.S. shape their time at home. A longer-term study, in which a researcher returned to the same camps for multiple seasons in a row, would also create more opportunities to understand how questions of social reproduction, care ethics, and agency evolve as the communities of men shift and the men themselves age and gain more experience.

Implications for Practitioners

For practitioners, including an ethics of care opens

up potential new spaces for intervention and support of the H-2A population. While documenting violations and pursuing legal remedies continue to be necessary and essential work, the politically charged nature of migrant advocacy programs and the extensive power that employers exercise over H-2A workers’ lives means that such efforts are often met with intense opposition. I consider work that is based on an ethics of care and centers the workers’ agency to be something of a backdoor approach: programs that increase workers’ integration with their host communities, support their psychosocial wellbeing, increase their autonomy, or help them develop new skills have the potential to meaningfully improve the men’s lives without placing the practitioners and programs in direct confrontation with other stakeholders.

Examples of this approach include the Sembrador Initiative that is piloted by the Catholic Migrant Farmworker Network in Michigan and Arizona and the Immigrant Worker Project in Ohio. The purpose of the Sembrador Initiative is to create a farmworker ministry that “welcomes, protects, promotes & integrates migrant farm workers into the parish” (Catholic Migrant Farmworker Network, n.d.), through a series of workshops educating participants in both the structural vulnerability experienced by migrant farmworkers (H-2A and otherwise) while also emphasizing the shared humanity, mental health, and spiritual and social needs of the workers. There is an emphasis on accompaniment within a “faith/justice framework” (Catholic Migrant Farmworker Network, n.d.), both community members and farmworkers learning and becoming empowered to take collective action. A more secular version of this approach is practiced by the Immigrant Worker Project in Ohio. Inspired by Paolo Freire’s pedagogy, the organization focuses on building capacity and leadership within farmworker communities and H-2A camps while also offering direct services, such as legal advice on workplace violations. In both cases, the initiatives emphasize seeing a migrant farmworker as a whole person, establishing relationships between migrant workers and members of the host community and developing interventions that empower the workers themselves.

Conclusion

On January 17th, 2023, the U.S. signed a Memorandum of Understanding with Mexico that specifically addresses many of the issues surrounding guestworker programs. Among other things, the two countries agree to “increased transparency and coordination between the two countries ... enforcing working conditions and preventing discrimination ... [and] establishing fair recruitment processes and facilitating the availability of quality temporary agricultural and non-agricultural employment” (Bureau of International Labor Affairs, 2023. Para. 2). It may seem at first glance that this development contradicts my earlier assertion that macroscale solutions are not realistic. In fact, I believe that the MOU does just the opposite. Its existence is the product of an executive branch that recognizes the need to improve the critical visa program but cannot count on the legislative branch to address the issue. Moreover, operationalizing

something as broad as “improving shared mechanisms to prevent, report and investigate worker rights ... and to connect workers harmed or exploited with assistance and care” (Bureau of International Labor Affairs, 2023, para. 3) entails exactly the kind of nuanced understanding of the H-2A experience that this paper advocates. Increasing transparency and coordination, effectively improving labor recruitment practices, and ensuring legal redress in abusive arrangements all require seeing the agency and humanity of the men at the heart of the experience. 

Acknowledgements

I would like to thank Hailey Fortson for her reliability and enthusiasm during our fieldwork and Munirih Yeshwant for providing the space for a writing retreat where early drafts of this paper were written.

References

- Agustín, L. M. (2003). A migrant world of services. *Social Politics: International Studies in Gender, State & Society*, 10(3), 377–396. <https://doi.org/10.1093/sp/jxg020>
- Aspenson, A. (2020, February 20). *Controversies around Farm Workforce Modernization Act*. Center for a Livable Future, Johns Hopkins University. <https://clf.jhsph.edu/stories/controversies-around-farm-workforce-modernization-act>
- Basok, T. (2002). *Tortillas and tomatoes: Transmigrant Mexican harvesters in Canada*. McGill-Queen's Press.
- Basok, T., & George, G. (2021). “We are part of this place, but I do not think I belong.” Temporariness, social inclusion and belonging among migrant farmworkers in Southwestern Ontario. *International Migration*, 59(5), 99–112. <https://doi.org/10.1111/imig.12804>
- Bauer, M., & Perales Sanchez, M. (2020). *Ripe For reform: Abuses of agricultural workers in the H-2A visa program*. Centro de los Derechos del Migrante, Inc. <https://cdmigrante.org/ripe-for-reform/>
- Bauer, M., & Stewart, M. (2013). *Close to slavery: Guestworker programs in the United States*. Southern Poverty Law Center. <https://www.splcenter.org/20130218/close-slavery-guestworker-programs-united-states>
- Beltran, B. (2018). 134,368 unnamed workers: Client-centered representation on behalf of H-2A agricultural guestworkers. *New York University Review of Law & Social Change*, 42(4), 529–592. <https://doi.org/10.31228/osf.io/7s8en>
- Binford, L. (2013). *Tomorrow we're all going to the harvest: Temporary foreign worker programs and neoliberal political economy*. University of Texas Press. <https://doi.org/10.7560/743809>
- Buckley, M., McPhee, S., & Rogaly, B. (2017). Labour geographies on the move: Migration, migrant status and work in the 21st century. *Geoforum*, 78, 153–158. <https://doi.org/10.1016/j.geoforum.2016.09.012>
- Bureau of International Labor Affairs. (2023, January 18). *U.S., Mexico sign memorandum to protect temporary foreign workers: Helps ensure safe working conditions, prevent discrimination, inform workers of their rights*. [Press release]. U.S. Department of Labor. <https://www.dol.gov/newsroom/releases/ilab/ilab20230118>
- Campos-Flores, L., & Martin, P. M. (2023). Towards an emotional geoeconomics? Masculinity and emotions among Mexican and Guatemalan temporary agricultural workers in Quebec. *Canadian Geographies / Géographies canadiennes*. Advance online publication. <https://doi.org/10.1111/cag.12877>

- Carswell, G., & De Neve, G. (2013). Labouring for global markets: Conceptualising labour agency in global production networks. *Geoforum*, 44, 62–70. <https://doi.org/10.1016/j.geoforum.2012.06.008>
- Catholic Migrant Farmworker Network. (n.d.). *Our Sembrador Initiative*. <https://cmfnsebrador.org/>
- Coe, N. M., & Jordhus-Lier, D. C. (2011). Constrained agency? Re-evaluating the geographies of labour. *Progress in Human Geography*, 35(2), 211–233. <https://doi.org/10.1177/0309132510366746>
- Costa, D., & Rosenbaum, J. (2017). *Temporary foreign workers by the numbers: New estimates by visa classification*. Economic Policy Institute. <https://www.epi.org/publication/temporary-foreign-workers-by-the-numbers-new-estimates-by-visa-classification/>
- Deshingkar, P. (2019). The making and unmaking of precarious, ideal subjects—Migration brokerage in the Global South. *Journal of Ethnic and Migration Studies*, 45(14), 2638–2654. <https://doi.org/10.1080/1369183X.2018.1528094>
- Dutta, M. (2020). Workplace, emotional bonds and agency: Everyday gendered experiences of work in an export processing zone in Tamil Nadu, India. *Environment and Planning A: Economy and Space*, 52(7), 1357–1374. <https://doi.org/10.1177/0308518X20904076>
- Farmworker Justice. (2021, March). *The Farm Workforce Modernization Act: A bipartisan bill that would provide a path to immigration status for agricultural workers and revise the H-2A program*. <https://www.farmworkerjustice.org/wp-content/uploads/2021/03/FarmWorkforceModernizationAct-FactSheet-FJ-2021.pdf>
- Favakeh, D. (2022, April 19). Operation Blooming Onion: Federal indictment reveals ‘modern-day-slavery’ in Georgia. *Savannah Morning News*. <https://www.usatoday.com/story/news/2021/12/01/u-s-attorney-trafficking-operation-georgia-onion-farms/8738135002/>
- Feldman, D. B. (2020). Beyond the border spectacle: Global capital, migrant labor, and the specter of liminal legality. *Critical Sociology*, 46(4–5), 729–743. <https://doi.org/10.1177/089692051988499>
- Feliciano, C. (2020). Immigrant selectivity effects on health, labor market, and educational outcomes. *Annual Review of Sociology*, 46, 315–334. <https://doi.org/10.1146/annurev-soc-121919-054639>
- Horgan, M., & Liinamaa, S. (2017). The social quarantining of migrant labour: Everyday effects of temporary foreign worker regulation in Canada. *Journal of Ethnic and Migration Studies*, 43(5), 713–730. <https://doi.org/10.1080/1369183X.2016.1202752>
- Kline, A. (2023). *Welcoming the guest: The lives and experiences of H-2A workers in Ohio* [Doctoral dissertation, Ohio State University]. https://etd.ohiolink.edu/acprod/odb_etd/etd/t/1501/10?clear=10&p10_accession_num=osu1681388721577359
- Lawson, V. (2007). Geographies of care and responsibility. *Annals of the Association of American Geographers*, 97(1), 1–11. <https://doi.org/10.1111/j.1467-8306.2007.00520.x>
- Lee, J. J. (2017). U.S. workers need not apply: Challenging low-wage guest worker programs. *Stanford Law & Policy Review*, 28(1), 1–59. <https://law.stanford.edu/publications/u-s-workers-need-not-apply-challenging-low-wage-guest-worker-programs/>
- Locke, C. (2017). Do male migrants ‘care’? How migration is reshaping the gender ethics of care. *Ethics and Social Welfare*, 11(3), 277–295. <https://doi.org/10.1080/17496535.2017.1300305>
- Martin, P. (2022, January 3). *A look at H-2A growth and reform in 2021 and 2022*. Wilson Center. <https://www.wilsoncenter.org/article/look-h-2a-growth-and-reform-2021-and-2022>
- Massey, D. S. (1999). When surveys fail: An alternative for data collection. In A. A. Stone, J. S. Turkkan, C. A. Bachrach, J. B. Jode, H. S. Kurtzmann, & V. S. Cain (Eds.), *The science of self-report: Implications for research and practice* (pp. 145–160). Psychology Press.
- McLaughlin, J. (2017). Strengthening the backbone: Local food, foreign labour and social justice. In I. Knezevic, A. Blay-Palmer, C. Z. Levkoe, P. Mount, & E. Nelson (Eds.), *Nourishing communities: From fractured food systems to transformative pathways* (pp. 23–40). Springer. https://link.springer.com/chapter/10.1007/978-3-319-57000-6_2. https://doi.org/10.1007/978-3-319-57000-6_2
- Minkoff-Zern, L. A., Dudley, M. J., Zoodsma, A., Walia, B., & Welsh, R. (2022). Protracted dependence and unstable relations: Agrarian questions in the H-2A visa program1. *Journal of Rural Studies*, 93, 43–54. <https://doi.org/10.1016/j.jrurstud.2022.05.006>

- Morales, J. R. G. (2021). Contrastes en la migración internacional de trabajadores agrícolas purhépechas [Contrasts in the international migration of Purhépecha agricultural workers]. *Maya America*, 3(3), 70–84.
<https://doi.org/10.32727/26.2022.5>
- Paciulan, M., & Preibisch, K. (2013). Navigating the productive/reproductive split: Latin American transnational mothers and fathers in Canada's temporary migration programs. *Transnational Social Review*, 3(2), 173–192.
<https://doi.org/10.1080/21931674.2013.10820763>
- Palacios, S. P. I. (2010). Abusos y condiciones de servidumbre relacionados con la implementación de los programas de trabajadores huéspedes (el caso tamaulipeco) [Abuses and bondage conditions related to the implementation of the guest workers' programs (the Tamaulipeco case)]. *Frontera Norte*, 22(44), 237–264.
<https://doi.org/10.17428/rfn.v22i44.859>
- Pratt, G. (2012). *Families apart: Migrant mothers and the conflicts of labor and love*. University of Minnesota Press.
<https://www.jstor.org/stable/10.5749/j.ctttt5jj>. <https://doi.org/10.5749/minnesota/9780816669981.001.0001>
- Preibisch, K. L. (2004). Migrant agricultural workers and processes of social inclusion in rural Canada: *Encuentros and desencuentros*. *Canadian Journal of Latin American and Caribbean studies/Revue canadienne des études latino-américaines et caraïbes*, 29(57–58), 203–239. <https://doi.org/10.1080/08263663.2004.10816857>
- Raj-Reichert, G. (2023). Labour geography I: Labour agency, informal work, global south perspectives and the ontology of futures. *Progress in Human Geography*, 47(1), 187–193. <https://doi.org/10.1177/03091325221144455>
- Reid-Musson, E. (2017). Grown close to home™: Migrant farmworker (im)mobilities and unfreedom on Canadian family farms. *Annals of the American Association of Geographers*, 107(3), 716–730.
<https://doi.org/10.1080/24694452.2016.1261683>
- Rose, J. (2022, November 13). *Farmers and immigrant advocates hold out hope for compromise in lame duck session*. NPR.
<https://www.npr.org/2022/11/08/1135190249/farmers-lame-duck-session-immigration>
- Rogaly, B. (2009). Spaces of work and everyday life: Labour geographies and the agency of unorganised temporary migrant workers. *Geography Compass*, 3(6), 1975–1987. <https://doi.org/10.1111/j.1749-8198.2009.00290.x>
- Salzinger, L. (2003). *Genders in production: Making workers in Mexico's global factories*. University of California Press.
- Seo, S., & Skelton, T. (2017). Regulatory migration regimes and the production of space: The case of Nepalese workers in South Korea. *Geoforum*, 78, 159–168. <https://doi.org/10.1016/j.geoforum.2016.02.001>
- Smith-Nonini, S. (2002). Nadie sabe, nadie supo: El programa federal H-2A y la explotación de mano de obra mediada por el Estado [Nobody knows, nobody knew: The federal H-2A program and state-mediated labor exploitation]. *Relaciones. Estudios de historia y sociedad*, 23(90), 57–86. <https://www.redalyc.org/articulo.oa?id=13709003>
- Strauss, K., & McGrath, S. (2017). Temporary migration, precarious employment and unfree labour relations: Exploring the 'continuum of exploitation' in Canada's Temporary Foreign Worker Program. *Geoforum*, 78, 199–208.
<https://doi.org/10.1016/j.geoforum.2016.01.008>
- Vegetable Growers News*. (2021, March 4). U.S. representatives reintroduce Farm Workforce Modernization Act.
<https://vegetablegrowersnews.com/news/us-representatives-reintroduce-farm-workforce-modernization-act/>
- Weiler, A. M., Sexsmith, K., & Minkoff-Zern, L.-A. (2020). Parallel precarity: A comparison of U.S. and Canadian agricultural guestworker programs. *International Journal of Sociology of Agriculture and Food*, 26(2), 143–163.
<https://doi.org/10.48416/ijsaf.v26i2.57>
- Winders, J., & Smith, B. E. (2019). Social reproduction and capitalist production: A genealogy of dominant imaginaries. *Progress in Human Geography*, 43(5), 871–889. <https://doi.org/10.1177/0309132518791730>
- Wozniacka, G. (2019, July 23). *The H-2A guest worker program has ballooned in size, but both farmers and workers want it fixed*. Civil Eats. <https://civileats.com/2019/07/16/the-h-2a-guest-worker-program-has-ballooned-in-size-but-both-farmers-and-workers-want-it-fixed/>
- Yea, S. (2017). The art of not being caught: Temporal strategies for disciplining unfree labour in Singapore's contract migration. *Geoforum*, 78, 179–188. <https://doi.org/10.1016/j.geoforum.2016.05.003>
- Zoodsma, A., Dudley, M. J., & Minkoff-Zern, L.-A. (2022). National food security, immigration reform, and the importance of worker engagement in agricultural guestworker debates. *Journal of Agriculture, Food Systems, and Community Development*, 11(4), 139–151. <https://doi.org/10.5304/jafscd.2022.114.009>

The food and agricultural nonprofit landscape

Alicia Papanek,^{a *} Chelsea DeMasters,^b Micayla Richardson,^c
and Kimberly Wiley^d
University of Florida

Submitted October 13, 2023 / Revised January 23 and March 19, 2024 /
Accepted March 20, 2024 / Published online June 5, 2024

Citation: Papanek, A., DeMasters, C., Richardson, M., & Wiley, K. (2024). The food and agricultural nonprofit landscape. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 255–269. <https://doi.org/10.5304/jafscd.2024.133.023>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

Collaboration among nonprofits, commercial entities, state Extension offices, and governmental agencies is crucial for improving and sustaining food and nutrition security at the state and local

levels. This study examines the landscape of 904 food and agricultural nonprofit organizations (FANOs) operating in Florida in 2019 to determine their scope, role in the food supply chain, and potential collaboration opportunities with allied organizations. FANOs primarily address the pre-production and distribution stages of the supply chain. Aligned goals and initiatives between FANOs and Extension programs revealed a wealth of opportunities for collaboration that would ensure the continuity of food systems and sustainable resource use in Florida, despite existing competition between allied organizations and FANOs.

^{a *} *Corresponding author:* Alicia Papanek, Graduate Research Assistant, University of Florida, Department of Family, Youth, and Community Sciences;  <https://orcid.org/0000-0003-1001-4628>; aliciapapanek@ufl.edu

^b Chelsea DeMasters, Graduate Research Assistant, Department of Family, Youth, and Community Sciences, University of Florida; P.O. Box 110310; Gainesville, FL 32611 USA; +1-713-876-4043;  <https://orcid.org/0000-0002-1112-328X>; cdemasters@ufl.edu

^c Micayla Richardson, Undergraduate Research Assistant, Department of Family, Youth, and Community Sciences, University of Florida.

Micayla is now a law student at the College of Law, Florida International University;  <https://orcid.org/0000-0002-6885-207X>; richardsonmicayla@gmail.com

^d Kimberly Wiley, Assistant Professor, Department of Family, Youth, and Community Sciences, University of Florida;  <https://orcid.org/0000-0002-5921-5837>; kimberlywiley@ufl.edu

Author Note

The authors declare that there are no conflicts of interest that relate to the research, authorship, or publication of this article.

Funding Disclosure

This work was supported by Southern Sustainable Agriculture Research and Education (SARE) project no. SPDP21-03 U.S. Department of Agriculture National Institute of Food and Agriculture.

Data Procurement Disclosure

Data were procured from DataLake Nonprofit Research (<https://datalake.net>); © 2021 DataLake, LLC.

Keywords

nonprofit ecology, nonprofit landscape, nutrition security, food supply chain, collaboration, food security, resource competition

Introduction

Food insecurity is a pressing public health issue in the United States (U.S.) that affects 10.4% of U.S. households (Coleman-Jensen et al., 2022). Its prevalence is further complicated by the need to address the “equitable access to healthy, safe, affordable foods essential to optimal health and wellbeing,” referred to by the U.S. Department of Agriculture (USDA) as nutrition security (2022, p. 1). Improving and sustaining food and nutrition security at state and local levels requires collaborative efforts between nonprofits, commercial entities, state Extension offices, and governments. The nonprofit sector is integral to the food and agriculture industry, as it fills in systems gaps resulting from market failure. Nonprofits ensure that underserved populations can access nutritional foods (Fyall & Levine Daniel, 2018; Ma & Beaton, 2023), conduct research (Food Insight, 2022), promote policy change (Buck, 2018; Levine Daniel & Fyall, 2019), provide education (Koch et al., 2020), and promote food safety (Bierma et al., 2019).

Nonprofits are mission-driven organizations that address social and environmental problems, including food and nutrition insecurity. They differ from commercial entities in that their revenue is more often supported by donations, grants, and membership dues, and a majority rely on unpaid labor—or volunteers. The U.S. Internal Revenue Service (IRS) recognizes nonprofits as 501(c) tax-exempt entities. While nonprofits are often recognized as charities (e.g., food banks), they also serve as a legal option for professionals to pool resources for policy advocacy or professional development (e.g., farmers’ associations). Strengthening these nonprofits can fortify the food supply chain and agricultural industries. However, research in this nonprofit subsector is siloed and disjointed, reducing the ability to define its role and value holistically in addressing goals toward food and nutrition security. Mapping the nonprofit landscape will provide a greater understanding of the field and elucidate opportunities for cross-sector collaboration

and improvement of programmatic outcomes (Jones et al., 2018). In this study, we used Florida as a model to analyze the landscape of food and agricultural nonprofits (FANOs). We mapped FANO roles, which include their function and purpose, and assessed their value according to financial capital and personnel within the food supply chain. The findings highlight opportunities for partner organizations and state Extension offices to increase food and nutrition security through nonprofit collaboration.

Nonprofits and the Food Supply Chain

The food supply chain is a step-by-step sequence that tracks food from agricultural preproduction to food consumption (Food and Agriculture Organization, 2023). It comprises four stages: (1) preproduction, (2) production, (3) distribution, and (4) consumption (Global Food Systems Institute, 2022). Each of these stages often includes other critical components of the food supply chain, such as food storage, processing, packaging, transport, retail, markets, and loss and waste (Davis et al., 2021; Fanzo et al., 2021).

Nonprofits serve as active participants in the food supply chain primarily by ensuring food and nutrition security through emergency food services to individuals and by addressing ongoing community-level issues like food access and environmental sustainability (Hecht et al., 2019). For example, nonprofit professional associations support farmers in urban and rural communities, protect farmland, and improve community food access and nutrition through policy advocacy efforts (Haslam et al., 2019; Meenar, 2015; Thissen & Roka, 2010). Nonprofits within this domain range from interest groups and food policy councils to distribution operations and education organizations (Bacon & Baker, 2017; Gupta et al., 2018). Through their initiatives, FANOs seek to build more equitable, profitable, or sustainable food systems (Meenar, 2015).

Within each food supply chain stage, nonprofits serve in roles that enable continuity. In the *pre-production* stage, membership associations composed of farmers, food producers, and key food systems stakeholders strengthen food and agricultural networks by building professional networks,

conducting research, promoting education initiatives, and advocating for policy development (Fanzo et al., 2021). Nonprofits such as professional associations and youth education programs like 4-H (4-H, 2023) and the Edible Schoolyard also support this stage of the food supply chain by contributing to the development of life skills and family and community development (Knapp et al., 2019).

In the *production* stage, food is cultivated and prepared for distribution (Low et al., 2015, p. 92). This second stage in the supply chain includes the production of commodity and specialty crops and the raising of livestock at small and large scales. Production nonprofits include urban, suburban, and rural farms and gardens contributing to local, state, and national food supplies (Campbell et al., 2022b; Reynolds, 2011; Santo et al., 2021). Production-focused FANOs can also include community organizations such as community gardens and seed-saving nonprofits (Brown & Jameton, 2000; Santo et al., 2021).

Third, the *distribution* stage entails packing, marketing, and moving food to consumer-access locations (Low et al., 2015, p. 92). In this stage, food banks and organizations running farmers' markets support both farmer viability and food and nutrition security by connecting local food producers with consumers (Levi et al., 2022). For example, FANOs like the Common Market and Farm to School maintain distribution channels between local farms and schools, hospitals, and other nonprofits that serve food for consumption (Christensen et al., 2018). Nonprofits in this stage also work to improve food safety standards for perishable and non-perishable foods that are collected and transported from varied locations (Davis et al., 2014).

The fourth and final stage of the food supply chain is *consumption*, which includes the intake of food as well as food safety efforts to manage its handling or preparation (Govindan, 2018; Haslam et al., 2019). Nonprofits within this stage range from soup kitchens to professional organizations that advocate for healthy eating and provide evidence-based nutrition and food safety standards (Cody & Stretch, 2014). Nonprofits at this level are responsible for ensuring that foods are handled in

compliance with food safety regulations and that donated foods are delivered to consumers free of foodborne pathogens (Bierma et al., 2019).

Nonprofit Value in the Food Supply Chain

The nonprofit sector exists as an ecosystem with symbiotic and competitive relationships (Potter & Crawford, 2008). Within a community's FANO ecosystem, there is competition for all forms of capital: human, financial, and social. Nonprofits add value to the food system by leveraging their resources toward their individualized missions (Meenar, 2015; Potter & Crawford, 2008). Their effective resource usage strengthens the community (i.e., the nonprofit ecosystem). FANOs may measure their effectiveness through how many people they feed, the tonnage of food distributed, food pathogen spread (or lack thereof), or policy goals met.

Financial performance, such as overhead ratios, is often a stand-in for measuring nonprofit performance (Lecy & Searing, 2015). However, mission fulfillment serves as a more appropriate measure and is often far more challenging to capture. A nonprofit's mission statement determines its goals and impact. Heavy reliance on a single funder, such as the USDA or U.S. Department of Health and Human Services, can lead nonprofits to shift their mission and programming toward the funders' wishes and away from internally set goals (Froelich, 1999). Thus, a FANO's outputs and outcomes may not necessarily align directly with community-defined needs or even their mission.

FANOs are funded mainly by local, state, and federal grants from the USDA, private individuals or foundations, and corporate donors (Meenar, 2015). For example, the Sustainable Agriculture Research and Education (SARE) grant program is administered by the USDA's National Institute of Food and Agriculture to support research and education that promotes sustainable agriculture practices (Sustainable Agriculture Research and Education [SARE], 2023). The Healthy Food Financing Initiative, a USDA grant program administered by the Reinvestment Fund, provides resources to improve food access for underserved populations (USDA, 2023). Their total revenue can indicate their capacity to serve the community but is not

necessarily a reliable measure.

A FANO's human capital also indicates its value to the food system because FANOs often depend on volunteers to assist with organizational operations (Meenar, 2015). Volunteers are deeply embedded within nonprofit communities, and nonprofits compete for volunteers to help build relationships with prospective consumers and community partners (Schiff, 2008). Workers, paid and unpaid, are a finite resource within a community. Determining nonprofits' capacity in terms of pecuniary and human resources is crucial to understanding FANO's value and strength within the food system.

Opportunities for Collaboration

Food system partnerships most often exist between government and nonprofits because of their funding connection (Thissen & Roka, 2010). Weak or nonexistent collaborations between nonprofits can increase competition between entities with similar missions (Potter & Crawford, 2008). Nonprofits with similar missions have long competed for finite resources like government grants, donations, and volunteers (Chetkovich & Frumkin, 2003). The presence of commercial entities and competing organizations can exacerbate competition and challenge a nonprofit's ability to fulfill its mission. Alternatively, recognizing the utility of such diverse entities and expertise may lead to more efficient uses of resources that better support FANO missions (Selsky & Parker, 2005). Two entities maintain their autonomy while working together towards common goals as collaborators. When other organizations work in collective goal fulfillment with nonprofits, it enables nonprofits to provide their societal function, such as distributing fruits and vegetables to food-insecure populations and supporting their own organizational sustainability and growth (Gupta et al., 2018).

When network ties are strong and resources are pooled, diverse partnerships can be more impactful and ensure community resiliency during crises like food supply chain disruptions (Campbell et al., 2022a; Hecht et al., 2019; Levine Daniel & Fyall, 2019). For example, the Common Market is a regional nonprofit that works to improve individual, social, and environmental health through food

distribution by maintaining networks and building programs that forge collaboration between farmers, nonprofits, and communities (The Common Market, 2023). At the height of the COVID-19 pandemic, the nonprofit's collaborative efforts enabled it to shift its programmatic focus to distribute over 20,000 fresh food boxes per week across Texas, the Southeast, and Mid-Atlantic regions (National Farm to School Network, 2021). High-impact collaborations like these may be overlooked because the landscape of FANO efforts across the food supply chain requires comprehensive evaluation (Reynolds, 2011; Surls et al., 2015). As such, understanding the depth and breadth of nonprofit activity within food and agriculture networks is the first step in assessing existing efforts and ultimately identifying partnership opportunities.

Florida Food and Agriculture

Florida provides a unique location to study the landscape of FANOs. Between 2019 and 2021, 9.9% of Florida households, slightly less than the national average, reported low or very low food security (Coleman-Jensen et al., 2022). Florida is the third most populated state in the country, with over 22 million residents, and has experienced an increase in urbanization over the last two decades (Florida Department of Transportation, 2021). Florida is a leader in the U.S. agricultural industry: over the last several years, it has ranked first in production value for oranges, tomatoes, and watermelon, with increasing diversified fruit and vegetable production (Florida Department of Agriculture and Consumer Services, 2023). The state is home to major ports for distribution and a large agricultural labor workforce totaling nearly 127,000 farm workers. Over 50,000 Florida agricultural laborers use H-2A programs, which allow agricultural employers to hire employees from other countries on a temporary basis (National Center for Farmworker Health, 2023). Florida is also home to the comprehensive programming of the University of Florida's Institute of Food and Agriculture Sciences (UF/IFAS) Extension, which is a partnership between federal, state, and county governments that aims to strengthen food and agriculture systems by providing scientific knowledge and

expertise to the public (IFAS, 2023). Because of Florida's robust food and agriculture system, understanding the FANO landscape within the food supply chain and identifying opportunities for collaboration is especially useful.

Purpose and Objectives

This study aimed to provide a landscape of FANOs in Florida that elucidates their role and value to food and agriculture systems. The objectives were to:

1. determine the depth and breadth of FANOs in Florida,
2. define their role in and value added to Florida's food supply chain, and
3. identify opportunities for intersectoral collaborations.

Methods

To study Florida's FANO landscape, the research team built a dataset of nonprofits whose missions were associated with food and agriculture. Once identified, relevant nonprofits were analyzed to determine which stage(s) they engage in in the food supply chain to help identify the FANO's role in food and nutrition security. Then, we determined which UF/IFAS Extension initiatives best aligned to identify the potential for collaboration and innovation.

Data Collection and Sample

Data collection occurred in several stages to identify and refine a directory of FANOs. The research team used data from the Internal Revenue Service (IRS) to build a database of nonprofit information. This database was used to generate a list of the approximately 94,000 nonprofits registered in Florida in 2019, the most recently available IRS information at the time of the study. Specific criteria were then applied to limit this list to only those relevant to food and agriculture. Inclusion criteria required that nonprofits be labeled with one of 112 different food and agriculture codes as determined by the IRS National Taxonomy of Exempt Entities (NTEE). Nonprofits are required to file a publicly available annual tax return called the IRS Form 990. Those with an annual revenue of over

US\$200,000 file an IRS 990. Those with US\$50,000–US\$200,000 in gross receipts file either an IRS Form 990 or 990EZ. Those with US\$50,000 or less file an IRS Form 990N. The IRS, GuideStar, and scholars use the NTEE codes and IRS Form 990 type to sort nonprofits for analysis. For instance, production nonprofits that provide agricultural services are labeled K20 (Agricultural Programs) in the NTEE coding system. Codes range from A to Z and include a sub-numbering system.

Applying food and agriculture criteria to a search of NTEE codes limited the list to approximately 13,000 nonprofits. To further refine, the team applied exclusion criteria to eliminate the search terms “field” or “fish” because such terms primarily referred to sports programs or religious organizations, resulting in a list of 1,300 nonprofits.

The refined list was then randomly sorted into ten batches of 130 nonprofits to be manually investigated by the research team to ensure the nonprofits' relevance to food and agriculture. Team members relied on publicly available information to make this determination, such as reviewing nonprofits' names, websites, or IRS 990 Forms, including employer identification number, financials, number of employees and volunteers, mission, and programs.

Data Coding and Analysis

Two rounds of coding were conducted on the directory. The first round determined where a nonprofit's primary purpose aligns within the food supply chain: preproduction, production, distribution, and consumption. Team members were assigned batches of nonprofits and used publicly available information about nonprofit activities to categorize them correctly. To ensure uniform coding, the team created a shared glossary of terms with corresponding examples for each stage of the food supply chain. The coding tool also allowed coders to flag nonprofits if team members were unsure where the nonprofit fit in the food supply chain. Three team members discussed these flagged cases to complete the sorting process and ensure consistency within the data.

The second coding round was conducted to determine which UF/IFAS Extension initiatives

and workgroups best aligned with each nonprofit's mission and programming. The team used the initiative and workgroup definitions found in Florida's Extension Roadmap to correctly categorize nonprofits based on nonprofit activity (University of Florida, 2013). Batches of nonprofits from round one coding were shuffled and reassigned for second-round coding. Flagged cases were team-reviewed to determine the best placement.

After coding, batches were reassigned to the team for the final time. Every 10th nonprofit was reviewed to ensure coding agreement within the research team. Coding was then aggregated and paired with available IRS 990 data, including but not limited to IRS-defined categories such as 501(c). Nonprofits were sorted by UF/IFAS's five Extension districts to assess the size and reach of Florida FANOs.

Limitations

Three limitations emerged in this study. First, the directory relies on data from 2019, the most recently available IRS data at the time of the analysis. Thus, any nonprofit established in 2020 or later is not included in our dataset. Relatedly, nonprofits that are no longer in operation but were active during data collection are included in the directory. Second, the dataset does not include FANO outputs, outcomes, or the quality of their services. Thus, we cannot align community needs with the subsector's ability to meet those needs regionally or statewide.

The third limitation is the varying nonprofit data available for analysis. Depending on a nonprofit's total revenue, assets, and annual gross receipts, they may submit an IRS Form 990, 990-EZ, or 990-N. The 990N and 990EZ provide limited information about the nonprofits, which reduced our ability to analyze the organizations' human and financial resources. Differing forms provided differing information for analysis. In addition, larger and more established nonprofits typically had extensive publicly available information on their website, in annual reports, and through news articles. This information was helpful in understanding the scope of nonprofit services and activities. However, in some instances, this large amount of information made it difficult to

categorize the nonprofit into a single stage of the food supply chain. In such cases, FANOs were sorted into their primary focus, as indicated in their mission statement.

Findings

The research team identified 904 nonprofits in Florida with missions related to food and agriculture. The findings presented illustrate the landscape, role, and value of FANOs in Florida, followed by FANO overlap by food supply chain stage with Extension Initiatives.

Landscape of Food and Agricultural Nonprofits

FANOs were present in all but one of Florida's 67 counties and were primarily concentrated in Central and South Florida in Miami-Dade, Broward, and Hillsborough Counties. The density of FANOs aligns with population density across counties, and 84% of all FANOs were located in urban counties (United States Census Bureau, 2022). The number of FANOs in Florida by supply chain stage and Extension district can be found in Table 1.

Preproduction

Over half (54.6%) of FANOs functioned at the preproduction stage. The Southeast Extension District had the highest number of preproduction nonprofits ($n=144$) among the 494 total preproduction nonprofits. The greatest number of preproduction FANOs were located in Hillsborough ($n=38$), Orange ($n=32$), and Palm Beach ($n=27$) counties. While these three counties are among the top five most populated counties in Florida (United States Census Bureau, 2022), they neighbor rural farming areas and include a growing number of urban, suburban, and peri-urban agriculture operations that benefit from their services.

Preproduction nonprofits in Florida included membership organizations that conduct research and advocate for public policy, such as the county chapters of the Florida Farm Bureau, Florida Strawberry Growers Association, and Slow Food USA. Nonprofits in this stage, which included local chapters of the Future Farmers of America, provide agriculture training programs that prepare future farmers with the education and business

expertise to maintain and sustain successful operations. Similarly, nonprofits like the Agricultural and Environmental Development Institute conduct research and provide professional development for food and agriculture businesses to ensure they have the resources required to maintain stability.

Production

Production nonprofits accounted for only 12.1% ($n=109$) of Florida's FANOs. By Extension District, Southwest had the highest number of production nonprofits ($n=32$), and by county, Broward ($n=9$), Miami-Dade ($n=8$), and Alachua ($n=8$) Counties had the highest number. Interestingly, nearly 85% of production FANOs were in urban counties.

In this stage, FANOs supported food and agricultural production in Florida by aiding in cultivating crops, livestock, beekeeping, and sustainable farming through conservation stewardship, water containment, and seasonal and zone-specific crop support. For example, nonprofits like the Dominica Coffee Revitalization Initiative and the Karma Honey Project work to improve the sustainability of agricultural practices. Other nonprofits like Urban Farming Institute or Do Good Farms produce food and hands-on programming that supports urban food production.

Distribution

Distribution nonprofits, second to preproduction nonprofits, accounted for 25.2% of Florida's FANOs ($n = 228$). By Extension district, Southwest had the highest number of distribution nonprofits ($n = 85$); the fewest were in Northwest ($n = 14$). Miami-Dade ($n = 32$), Broward ($n = 22$),

and Palm Beach ($n = 12$) Counties had the highest number of distribution nonprofits in Florida. They were situated in areas with proximity to major lines of transport, like ports and interstate highways.

Food banks were the most common type of distribution nonprofit. Food banks are responsible for sorting, storing, and distributing food directly to consumers or other community-based organizations, like food pantries. For example, Helping Neighbors Feed Neighbors, a nonprofit in Broward County, purchases meals from restaurants impacted by COVID-19 to distribute to residents experiencing food insecurity. Nonprofits in the distribution category often provide emergency housing, childcare, or job training; many are affiliated with religious organizations.

Consumption

Just 8.1% of FANOs ($n = 73$) existed in the consumption stage of the food supply chain. By Extension district, the highest number of consumption nonprofits existed in the Southwest ($n = 28$) and the fewest in the Northeast ($n = 9$). Miami-Dade ($n = 9$) and Leon ($n = 8$) Counties had the most nonprofits addressing food consumption. However, nearly 70% of Florida counties had fewer than two consumption nonprofits.

Nonprofits in the consumption stage of the food supply chain connect consumers to food through one-time events as well as ongoing interactions. Youth development nonprofits and food programs like restaurant alliances, kitchens, and food retail associations support food preparation for immediate consumption and play a key role in food safety. Less than 3% of FANOs, including local chapters of the Florida Restaurant

Table 1. Number of Nonprofits (n) by Supply Chain Stage and Extension District

	Preproduction	Production	Distribution	Consumption	Total FANOs
<i>Extension District</i>					
Northwest	53	17	14	13	97
Northeast	83	11	23	9	126
Central	100	25	36	10	171
Southwest	114	32	85	28	259
Southeast	144	24	70	13	251
Florida	494	109	228	73	904

Association and the Florida School Nutrition Association, were involved in nonprofit-driven food safety initiatives statewide. Smaller nonprofits like Good Samaritan Meals worked to reduce food waste from grocery stores and restaurants to serve populations experiencing food and nutrition insecurity. Nonprofits at this stage also provided meals for holidays, such as Thanksgiving dinners, or organized local food festivals that connect consumers to local products.

Role of Food and Agricultural Nonprofits

Nonprofits fall into one of several 501(c) classifications as designated by the IRS. A description of each type of 501(c) and the percent identified in Florida FANOs can be found in Table 2. Over 75% of FANOs were 501(c)(3) and provided food, agriculture and nutrition, animal-related, and

education-based programs. Most (50%) of these charitable and educational nonprofits fell within the preproduction stage. FANOs in this category also included farm bureaus, granges, and research and policy advocacy nonprofits. These efforts are similar to Extension's vast online and in-person education programming for farmers and residents and through research collaborations with University of Florida faculty (Institute of Food and Agriculture Sciences Extension, 2023). Organizations in the 501(c)(3) category most frequently fell into preproduction and distribution stages. They included food banks and pantries, food programs such as Meals-on-Wheels, and soup kitchens. The number of nonprofit types by food supply chain stage can be found in Table 3. This finding demonstrates the robust and varying roles that FANOs play in Florida's food system.

Table 2. Nonprofit Types and Percent Identified in Florida Food and Agricultural Nonprofit Organizations (FANOs)

Nonprofit Type	Description ^a	% in Florida
501(c)(3)	Charitable, religious, educational, and scientific organizations that do not attempt to influence legislation and are eligible to receive tax-deductible contributions.	75.4%
501(c)(4)	Social welfare organizations that operate to promote the common good and which may engage in political activities.	1.1%
501(c)(5)	Labor, agricultural, and horticultural organizations that operate to promote the interests of workers and those participating in agricultural activities.	11.0%
501(c)(6)	Trade associations, including chambers of commerce, business leagues, and real-estate boards.	10.8%
501(c) (1; 7; 8; 12)	Any corporation exempt from Federal Income Tax; Social clubs organized for pleasure or recreation; Fraternal beneficiary societies; Benevolent life insurance associations.	1.7%

^a Note. Descriptions are based on *Charities and Nonprofits* from the Internal Revenue Service (IRS, 2022).

Table 3. Types of Food and Agricultural Nonprofit Organizations (FANOs) by Food Supply Chain Stage

Food Supply Chain Stage	501(c)					Total FANOs
	(3) Charitable and Educational	(4) Civic and Social Welfare	(5) Labor, Agriculture, and Horticulture	(6) Business Leagues	(1, 7, 8, 12) Other	
Preproduction	341	8	73	64	8	494
Production	79	0	19	8	3	109
Distribution	214	0	4	7	3	228
Consumption	48	2	3	19	1	73
Total	682	10	99	98	15	904

* These policies influenced FANO development because they allowed the FANOs to incorporate and increase revenue. However, nonprofits began reporting to the IRS in 1943, meaning that there were no IRS records of FANOs before that year.

Over half of FANOs that submitted a 2019 IRS Form 990 were established after 2000, with spikes in newly formed organizations following impactful federal food and agriculture public policy. Since policy changes were federal, similar trends would likely be found nationally. For example, newly incorporated nonprofits increased following the funding possibilities provided by the Healthy, Hunger-Free Kids Act in 2010. Changes in tax policy, like the 1964 change in the tax deduction limit for donations, resulted in more private donations for nonprofits because donors who gave more could reduce their personal tax burden. The revenue influx in the 1960s led to growth in the number of nonprofits. However, recessions in the 1950s and 2000s reduced donations sectorwide, challenging nonprofit financial resiliency. Changes in food policy increased nonprofits' access to government grants. Governmental funding sources established a consistent and stable nonprofit revenue stream, ensuring organizational longevity. Table 4 shows major public policy formulation and the number of FANOs in Florida that were incorporated and still operating in 2019. If we were to assume the 109 FANOs emerging in the 2000s were still open, that would mean that 75% of FANOs were less than 15 years old in 2024 and that nonprofits in this subsector are pretty young. The FANO's youth may negatively affect its ability to build strong collabo-

rative relationships and trust in the FANO among locals.

Value of Food and Agricultural Nonprofits

Of the 904 FANOs in our sample, only 196 nonprofits filed IRS 990 forms rather than 990EZ or 990N, indicating they were large enough to employ staff and ensure greater financial and human resources to fulfill their mission and remain stable during hard times. Most FANOs ($n = 376$) filed 990N forms, indicating that most nonprofits were small and primarily volunteer-run initiatives. About a quarter ($n = 210$) did not file with the IRS (status: IRS non-filer), which could mean the nonprofit closed or simply failed to submit the tax form (Searing, 2020).

Table 5 illustrates the organizational structure and financial capacity of the nonprofits ($n = 196$) that filed IRS 990 forms, sorted by their role in the food supply chain, including their reported employees, volunteers, and total revenue. The low number of employees compared to the large number of volunteers, particularly for distribution and consumption nonprofits, indicated a heavy reliance on unpaid labor through volunteer support. While preproduction and consumption had the highest and similar total revenues, indicating higher capacity than other food supply stages, far fewer consumption nonprofits were functioning with, on average, much higher sums.

Table 4. Public Policy and Aging Nonprofits

Public Policy (Year Established)	Ruling (incorporation) Decade	Nonprofits Incorporated in the Decade and Still Operating in 2019
Social Welfare Tax Exemption (1913)	*	*
First Food Stamp program (1939)	*	*
IRS Form 990 Filing First Required (1943)	1940s	83
Eisenhower Recession	1950s	8
Increased tax deduction limits for donations (1964)	1960s	76
Agriculture and Consumer Protection Act (1973) Food and Agriculture Act (1977)	1970s	48
Development of Electronic Benefit Transfers via the Hunger Prevention Act (1988)	1980s	49
Welfare Reform Act (1996)	1990s	122
Great Recession; Food and Nutrition Act (2008)	2000s	109
Healthy, Hunger-Free Kids Act (2010)	2010s	447

Table 5. Value of Nonprofits by Food Supply Chain Stage

	Preproduction (n = 102)	Production (n = 21)	Distribution (n = 58)	Consumption (n = 15)	Total (n = 196) ^a
Volunteers	9,311	4,258	11,615	27,537	52,721
Employees	698	466	758	349	2,271
Total revenue (US\$)*	\$99,597,014	\$42,069,215	\$73,602,016	\$95,821,486	\$311,089,731

^a Total revenue includes fundraising and government grant revenue, in addition to program service revenue, investment income, and other revenue.

Consumption-stage FANOs scarcity in the dataset could mean that community needs are addressed through federal and state resources like SNAP-Ed, free school lunch programs (Fyall & Levine Daniel, 2018), religious organizations,¹ or Extension programming on nutrition and food safety. Even though the consumption nonprofits were the least represented in our sample, they had the highest fundraising revenue, the fewest number of employees, and the highest number of volunteers of any food supply chain stage. Since this is the stage where nonprofits need to meet food safety regulations, counties with fewer than two nonprofits could be targeted for expansion or out reach of Extension efforts in relation to food consumption.

Florida Extension and Food and Agricultural Nonprofits

Extension efforts in Florida are driven by seven primary initiatives, as illustrated in Table 6. Working groups within each initiative focus on specific issues that fall under the umbrella of that topic. For example, working groups within Initiative 1: Agriculture and Horticulture work to increase the sustainability, profitability, and competitiveness of agriculture and horticulture enterprises (University of Florida, 2013). This organizational structure informs the type of research, programming, and education initiatives implemented by UF/IFAS Extension agents across the state.

The majority of FANO's missions overlapped with Florida Extension Initiative 1: Agriculture and Horticulture. To a lesser extent, FANO missions are aligned with Initiative 5: Individual and Family

Development and Initiative 6: Community Development, which work to empower individuals, families, and communities to build healthy lives and achieve economic success. This overlap in mission areas and Extension initiatives indicates a high risk for competition and vast opportunities for collaboration in ensuring food and nutrition security across Florida. The number of FANOs with missions aligned with Extension Initiatives can be found in Table 6.

Discussion

This study aimed to understand the role and value of FANOs in Florida within a food supply chain framework. Taking inventory of the FANO landscape makes it clear where organizational saturation exists and how financial and human resources are allocated across each stage. FANOs are positioned in their communities and within the food supply chain to make positive change; further research regarding the allocation of resources and organizational structure would strengthen their ability to make strategic decisions. These findings can benefit practitioners, such as Extension specialists or other nonprofits, and policymakers and scholars interested in opportunities to enhance community development to create more informed and effective strategies for increasing food and nutrition security.

For practitioners across the U.S., this study indicates valuable areas to investigate at both state and local levels. Our findings indicate that across the food supply chain, there is a diversity of FANOs that fulfill charitable missions, provide social welfare and labor advocacy, and maintain trade associations. IRS 990 forms are publicly avail-

¹ Religious organizations are not required to complete IRS Form 990s.

able and provide a wealth of helpful information about how nonprofits contribute to social and economic systems. For example, food policy councils and other local government grant-making entities could benefit from understanding the assets and services of large and small FANOs in their areas, the volume operating at each stage, and the types of resources they might need. This data type can inform organizational and governmental decision-making about community work. Strategic partnering with local and state-level FANOs may help to bridge gaps between similarly oriented goals, build capacity, reduce competition for resources, and increase the populations served.

This study is especially relevant for practitioners working in Florida and indicates key areas for strategic collaboration. Extension has historically served rural communities and commercial agriculture (Buys & Rennekamp, 2020). However, in recent years, UF/IFAS Extension has been working to expand its reach and offer services in urban areas, including in urban food systems and community development (Campbell et al., 2023b). Interestingly, 85% of FANOs in the production stage served urban counties, supporting recent assessments of the scope and growth of urban agriculture (Campbell et al., 2023a; Campbell et al., 2022b). Production FANOs typically host a variety of activities that revolve around food production, including education and job training programs; however, actual food output by these production FANOs may be limited (Campbell et al., 2022b; Santo et al., 2021).

The smaller number of production-stage

FANOs indicates that the supply chain continuity (that is, the supply chain movement from pre-production to production to distribution to consumption) may be addressed by commercial enterprises, government entities, and Extension services, or that populations in need are being overlooked. Additionally, UF/IFAS Extension Initiatives 1-4, which include agriculture and horticulture, water, natural resources, and energy, have a strong presence in Florida and may crowd out nonprofits that provide similar programming. Labor, access to capital, and challenges with profitability are some of the key barriers that urban producers in Florida report facing (Campbell et al., 2022b), which may indicate relevant gaps for FANOs to fill.

As Extension is seeking opportunities to reach new audiences, looking to the urban landscape of FANOs may help strengthen community capacity to reach existing and similar community food and agricultural goals. Additionally, as urbanization is projected to rise across the state (Florida Department of Transportation, 2021), programs whose systems are designed to serve urban audiences will be increasingly necessary. The employment and volunteer data from the largest FANOs indicate a heavy reliance on volunteer participation, placing Extension in direct competition for volunteers. Jones et al. found networking events are productive in bridging Extension-nonprofit partnerships and avoiding competition in such situations (2018). Strategically partnering with FANOs already serving urban populations can avoid competition and promote symbiotic relationships between FANOs and Extension (Harder et al., 2019).

Table 6. Nonprofit Overlap by Food Supply Chain Stage with Extension Initiatives

Extension Initiative	Preproduction	Production	Distribution	Consumption	Total FANOs ^a
Initiative 1: Agriculture & Horticulture	440	95	219	72	826
Initiative 2: Water	9	6	2	1	18
Initiative 3: Natural Resources	24	7	4	1	36
Initiative 4: Energy	4	4	0	0	8
Initiative 5: Individual & Family Development	65	12	126	31	234
Initiative 6: Community Development	146	26	32	6	210
Initiative 7: 4-H Youth	88	12	5	9	114

^a The number of food and agricultural nonprofit organizations (FANOs) exceeds the total number of nonprofits in our sample because many overlapped with two or more Extension Initiatives.

For community food systems scholars, this study indicates several opportunities for further exploration and theory-building within organizational ecology and food systems domains. The methodology provides a roadmap to assess and analyze local nonprofit organizations using the data available in IRS 990 forms. Considering these findings in the context of similarly agricultural states may help to assess nonprofit capacities across the food supply chain and the value they bring to their local economies and social communities. This study categorized FANOs into a supply chain stage according to their primary purpose. However, as discussed in our limitations, FANOs could fall into more than one food supply chain stage. Future studies could account for this by capturing both primary and secondary supply chain stages to indicate how FANOs play multifaceted roles in the food supply chain. Additionally, these findings present research opportunities for further investigation of organizational behavior and how FANOs

function and participate within the organizational ecology of the food supply chain.

Conclusion

FANOs played numerous roles in every stage of the food supply chain to maintain system continuity and serve Florida residents. The majority of FANOs were focused in the preproduction and distribution stages and were most commonly 501(c)(3) charitable and educational organizations or 501(C)(5) labor, agriculture, and horticultural organizations. Given the current state of food and nutrition insecurity in Florida (Coleman-Jensen et al., 2022), understanding the role and value nonprofits bring to the state is critical. The unique perspectives and expertise of both FANOs and Extension are especially suited for collaboration in service of public health and social goals that ensure the continuity of food systems and the sustainable use of limited resources.



References

- 4-H. (2023). *Homepage*. National 4-H Council. <https://4-h.org/>
- Bacon, C. M., & Baker, G. A. (2017). The rise of food banks and the challenge of matching food assistance with potential need: Towards a spatially specific, rapid assessment approach. *Agriculture and Human Values*, 34(4), 899–919. <https://doi.org/10.1007/s10460-017-9783-y>
- Bierma, T. J., Jin, G., & Bazan, C. N. (2019). Food donation and food safety: Challenges, current practices, and the road ahead. *Journal of Environmental Health*, 81(10), 16–21.
- Brown, K. H., & Jameton, A. L. (2000). Public health implications of urban agriculture. *Journal of Public Health Policy*, 21(1), 20–39. <https://doi.org/10.2307/3343472>
- Buck, P. (2018). The role of consumer advocacy in strengthening food safety policy. In T. Roberts (Ed.), *Food safety economics: Incentives for a safer food supply* (pp. 323–358). Springer International. https://doi.org/10.1007/978-3-319-92138-9_16
- Buys, D. R., & Rennekamp, R. (2020). Cooperative Extension as a force for healthy, rural communities: Historical perspectives and future directions. *American Journal of Public Health*, 110(9), 1300–1303. <https://doi.org/10.2105/AJPH.2020.305767>
- Campbell, C. G., DeLong, A. N., & Diaz, J. M. (2023a). Commercial urban agriculture in Florida: A qualitative needs assessment. *Renewable Agriculture and Food Systems*, 38, Article e4. <https://doi.org/10.1017/S1742170522000370>
- Campbell, C. G., Papanek, A., DeLong, A., Diaz, J., Gusto, C., & Tropp, D. (2022a). Community food systems resilience: Values, benefits, and indicators. *Journal of Agriculture, Food Systems, and Community Development*, 11(4), 1–25. <https://doi.org/10.5304/jafscd.2022.114.006>
- Campbell, C. G., Papanek, A., & Diaz, J. M. (2023b). Urban agriculture Extension in Florida: Barriers, needs, and opportunities. *Journal of Human Sciences and Extension*, 11(1). <https://doi.org/10.55533/2325-5226.1394>
- Campbell, C. G., Ruiz-Menjivar, J., & DeLong, A. (2022b). Commercial urban agriculture in Florida: Needs, opportunities, and barriers. *HortTechnology*, 32(4), 331–341. <https://doi.org/10.21273/HORTTECH05038-22>
- Chetkovich, C., & Frumkin, P. (2003). Balancing margin and mission: Nonprofit competition in charitable versus fee-based programs. *Administration & Society*, 35(5), 564–596. <https://doi.org/10.1177/0095399703256162>

- Christensen, L., Jablonski, B. B. R., Stephens, L., & Joshi, A. (2018). Evaluating the economic impacts of farm-to-school procurement: An approach for primary and secondary financial data collection of producers selling to schools. *Journal of Agriculture, Food Systems, and Community Development*, 8(Suppl. 3), 73–94. <https://doi.org/10.5304/jafscd.2019.08C.002>
- Cody, M. M., & Stretch, T. (2014). Position of the Academy of Nutrition and Dietetics: Food and water safety. *Journal of the Academy of Nutrition and Dietetics*, 114(11), 1819–1829. <https://doi.org/10.1016/j.jand.2014.08.023>
- Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2022). *Household food security in the United States in 2021* (Report No. ERR-309). U.S. Department of Agriculture Economic Research Service. <https://www.ers.usda.gov/publications/pub-details/?pubid=104655>
- Davis, K. F., Downs, S., & Gephart, J. A. (2021). Towards food supply chain resilience to environmental shocks. *Nature Food*, 2(1), 54–65. <https://doi.org/10.1038/s43016-020-00196-3>
- Davis, L. B., Sengul, I., Ivy, J. S., Brock III, L. G., & Miles, L. (2014). Scheduling food bank collections and deliveries to ensure food safety and improve access. *Socio-Economic Planning Sciences*, 48(3), 175–188. <https://doi.org/10.1016/j.seps.2014.04.001>
- Fanzo, J., Haddad, L., Schneider, K. R., Béné, C., Covic, N. M., Guarin, A., Herforth, A. W., Herrero, M., Sumaila, U. R., Aburto, N. J., Amuyunzu-Nyamongo, M., Barquera, S., Battersby, J., Beal, T., Bizzotto Molina, P., Brusset, E., Cafiero, C., Campeau, C., Caron, P., ... Rosero Moncayo, J. (2021). Viewpoint: Rigorous monitoring is necessary to guide food system transformation in the countdown to the 2030 global goals. *Food Policy*, 104, 102163. <https://doi.org/10.1016/j.foodpol.2021.102163>
- Florida Department of Agriculture and Consumer Services. (2023). *Florida agriculture overview and statistics*. <https://www.fdacs.gov/Agriculture-Industry/Florida-Agriculture-Overview-and-Statistics>
- Florida Department of Transportation. (2021). *2020 Florida population growth*. https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/demographic/2020popsum.pdf?sfvrsn=8c77f8b0_2
- Food and Agriculture Organization. (2023). *Sustainable food value chains knowledge platform*. <https://www.fao.org/sustainable-food-value-chains/what-is-it/en/>
- Food Insight. (2022). *2022 Food & health survey*. International Food Information Council. <https://foodinsight.org/2022-food-and-health-survey/>
- Froelich, K. A. (1999). Diversification of revenue strategies: Evolving resource dependence in nonprofit organizations. *Nonprofit and Voluntary Sector Quarterly*, 28(3), 246–268. <https://doi.org/10.1177/0899764099283002>
- Fyall, R., & Levine Daniel, J. (2018). Pantries and policy implementation: Using nonprofit priorities to understand variation in emergency food assistance. *Nonprofit and Voluntary Sector Quarterly*, 47(4), 11S-33S. <https://doi.org/10.1177/0899764017753318>
- Global Food Systems Institute. (2022). *Food production and distribution systems*. <https://foodsystems.ifas.ufl.edu/our-work/food-production-and-distribution/>
- Govindan, K. (2018). Sustainable consumption and production in the food supply chain: A conceptual framework. *International Journal of Production Economics*, 195, 419–431. <https://doi.org/10.1016/j.ijpe.2017.03.003>
- Gupta, C., Campbell, D., Munden-Dixon, K., Sowerwine, J., Capps, S., Feenstra, G., & Van Soelen Kim, J. (2018). Food policy councils and local governments: Creating effective collaboration for food systems change. *Journal of Agriculture, Food Systems, and Community Development*, 8(Suppl. 2), 11–28. <https://doi.org/10.5304/jafscd.2018.08B.006>
- Harder, A., Narine, L., & Wells, O. (2019). Organizational priorities for advancing Cooperative Extension in selected urban counties in Florida. *Journal of Agricultural Education*, 60(1), 96–108. <https://doi.org/10.5032/jae.2019.01096>
- Haslam, A., Nesbit, R., & Christensen, R. K. (2019). The dynamic impact of nonprofit organizations: Are health-related nonprofit organizations associated with improvements in obesity at the community level? *Nonprofit Policy Forum*, 10(3). <https://doi.org/10.1515/npf-2018-0040>
- Hecht, A. A., Biehl, E., Barnett, D. J., & Neff, R. A. (2019). Urban food supply chain resilience for crises threatening food security: A qualitative study. *Journal of the Academy of Nutrition and Dietetics*, 119(2), 211–224. <https://doi.org/10.1016/j.jand.2018.09.001>

- Institute of Food and Agriculture Sciences Extension [IFAS]. (2023). *UF IFAS Extension Home*. <https://sfyl.ifas.ufl.edu/>
- Internal Revenue Service [IRS]. (2022). *Charities and nonprofits*. <https://www.irs.gov/charities-and-nonprofits>
- Jones, J., Pracht, D., Simonne, E., Renfrow, K., & Hunter, C. (2018). Nonprofit partnerships in Extension programming: A pilot study. *The Journal of Extension*, 56(2), Article 23. <https://doi.org/10.34068/joe.56.02.23>
- Knapp, M. B., Hall, M. T., Mundorf, A. R., Partridge, K. L., & Johnson, C. C. (2019). Perceptions of school-based kitchen garden programs in low-income, African American communities. *Health Promotion Practice*, 20(5), 667–674. <https://doi.org/10.1177/1524839918782157>
- Koch, P., McCarthy, J., Raffel, C., Gray, H. L., & Guerra, L. A. (2020). Expanding and enhancing food and nutrition education in New York City public schools: An examination of program characteristics and distribution. *Nutrients*, 12(8), Article 8. <https://doi.org/10.3390/nu12082423>
- Lecy, J., & Searing, E. M. (2015). Anatomy of the nonprofit starvation cycle: An analysis of falling overhead ratios in the nonprofit sector. *Nonprofit and Voluntary Sector Quarterly*, 44(3), 539–563. <https://doi.org/10.1177/0899764014527175>
- Levi, R., Schwartz, M., Campbell, E., Martin, K., & Seligman, H. (2022). Nutrition standards for the charitable food system: Challenges and opportunities. *BMC Public Health*, 22(1), Article 495. <https://doi.org/10.1186/s12889-022-12906-6>
- Levine Daniel, J., & Fyall, R. (2019). The intersection of nonprofit roles and public policy implementation. *Public Performance & Management Review*, 42(6), 1351–1371. <https://doi.org/10.1080/15309576.2019.1601114>
- Low, S. A., Adalja, A., Beaulieu, E., Key, N., Martinez, S., Melton, A., Perez, A., Ralston, K., Stewart, H., Suttles, S., Vogel, S., & Jablonski, B. B. R. (2015). *Trends in US local and regional food systems: A report to congress* (Report No. AP-068). U.S. Department of Agriculture Economic Research Service. <https://www.ers.usda.gov/publications/pub-details/?pubid=42807>
- Ma, Y., & Beaton, E. E. (2023). Programming change among nonprofit human service organizations during the COVID-19 pandemic. *Human Service Organizations: Management, Leadership & Governance*, 1–20. <https://doi.org/10.1080/23303131.2023.2228854>
- Meenar, M. (2015). Nonprofit-driven community capacity-building efforts in community food systems. *Journal of Agriculture, Food Systems, and Community Development*, 6(1), 77–94. <https://doi.org/10.5304/jafscd.2015.061.006>
- National Center for Farmworker Health. (2023). *Migratory & Seasonal Farmwork Population Estimates*. <http://www.ncfh.org/number-of-ag-workers.html>
- National Farm to School Network. (2021). *The Common Market's mission-driven response to COVID-19 nourishes communities*. <https://www.farmtoschool.org/news-and-articles/the-common-market-s-mission-driven-response-to-covid-19-nourishes-communities>
- Potter, J. D., & Crawford, S. E. S. (2008). Organizational ecology and the movement of nonprofit organizations. *State & Local Government Review*, 40(2), 92–100. <https://doi.org/10.1177/0160323X0804000203>
- Reynolds, K. A. (2011). Expanding technical assistance for urban agriculture: Best practices for extension services in California and beyond. *Journal of Agriculture, Food Systems, and Community Development*, 1(3), 1–20. <https://doi.org/10.5304/jafscd.2011.013.013>
- Santo, R. E., Lupolt, S. N., Kim, B. F., Burrows, R. A., Evans, E., Evenson, B., Synk, C. M., Viqueira, R., Cocke, A., Little, N. G., Rupp, V., Strauss, M., & Nachman, K. E. (2021). Characteristics and growing practices of Baltimore City farms and gardens. *Urban Forestry & Urban Greening*, 65, Article 127357. <https://doi.org/10.1016/j.ufug.2021.127357>
- Searing, E. A. (2020). Life, death, and zombies: Revisiting traditional concepts of nonprofit demise. *Journal of Public and Nonprofit Affairs*, 6(3), 354–376. <https://doi.org/10.20899/jpna.6.3.354-376>
- Schiff, R. (2008). The role of food policy councils in developing sustainable food systems. *Journal of Hunger & Environmental Nutrition*, 3(2–3), 206–228. <https://doi.org/10.1080/19320240802244017>
- Selsky, J. W., & Parker, B. (2005). Cross-sector partnerships to address social issues: Challenges to theory and practice. *Journal of Management*, 31(6), 849–873. <https://doi.org/10.1177/0149206305279601>

- Surls, R., Feenstra, G., Golden, S., Galt, R., Hardesty, S., Napawan, C., & Wilen, C. (2015). Gearing up to support urban farming in California: Preliminary results of a needs assessment. *Renewable Agriculture and Food Systems*, 30(1), 33–42. <https://doi.org/10.1017/S1742170514000052>
- Sustainable Agriculture Research and Education. (2023). *Sustainable Agriculture Research and Education Home*. <https://www.sare.org/>
- The Common Market. (2023). *The Common Market Home*. <https://www.thecommonmarket.org/>
- Thissen, C., & Roka, F. (2010). Non-governmental organizations serving farmworkers in Florida: FE836/FE836, 7/2010. *EDIS*, 2010(4). <https://doi.org/10.32473/edis-fe836-2010>
- U.S. Census Bureau. (2022). *Quickfacts: Florida*. <https://www.census.gov/quickfacts/FL>
- U.S. Department of Agriculture (USDA). (2022). *Food and nutrition security*. <https://www.usda.gov/nutrition-security>
- U.S. Department of Agriculture (USDA). (2023). *Healthy Food Financing Initiative*. <https://www.rd.usda.gov/about-rd/initiatives/healthy-food-financing-initiative>
- University of Florida. (2013). *Shaping solutions for Florida's future: Florida Extension roadmap 2013-202*. <https://pdec.ifas.ufl.edu/roadmap/RoadmapOverview.pdf>

Barriers and opportunities to agrihood development in growing cities of the Rocky Mountain Region: A comparative case study

Amaia Sangroniz,^{a *} Roland Ebel,^b and Mary Stein ^c
Montana State University

Submitted June 6, 2023 / Revised December 1, 2023, and February 29 and April 24, 2024 /
Accepted April 25, 2024 / Published online July 3, 2024

Citation: Sangroniz, A., Ebel, R., & Stein, M. (2024). Barriers and opportunities to agrihood development in growing cities of the Rocky Mountain Region: A comparative case study. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 271–288.
<https://doi.org/10.5304/jafscd.2024.133.031>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

Rapid urbanization and peri-urban development are driving land use change across the globe, resulting in lands being converted from agricultural uses to housing development. Sustainable, multifunctional land use in urban and peri-urban areas is needed to balance the requirements of producing food in a way that protects environmental resources and of providing housing to a growing population. An agrihood is a planned development model that incorporates food production within a community to help address goals of nutritious food security while providing social, economic, and environmental benefits. Agrihoods may offer an

alternative land use for integrating food production in new housing developments for the sustainable development of rapidly urbanizing cities. A comparative case study, using semi-structured, qualitative interviews with key informants from two cities (Bozeman, Montana, and Longmont, Colorado), highlighted four key barriers to agrihood development in two cities in the Rocky Mountain region of the U.S: labor; ownership and governance structures; resource availability; and land use regulation. Concerns for water and land resource availability reflect general barriers to agricultural expansion in the Rocky Mountain region, while the other identified barriers reflect the structural and legal limitations preventing agrihood development and expansion. To reduce these barriers, policy interventions

^{a *} Corresponding author: Amaia P. Sangroniz, M.S., Sustainable Food Systems, Montana State University; Reid Hall Room 310, Bozeman, MT 59717 USA; +1-208-340-4461;
 <https://orcid.org/0009-0001-3579-2381>;
amaiasangroniz@montana.edu

^b Roland Ebel, Ph.D., Assistant Research Professor, Department of Health and Human Development, Montana State University; Reid Hall Room 345, Bozeman, MT 59717 USA;
 <https://orcid.org/0000-0002-4391-0245>;
roland.ebel@montana.edu

^c Mary Stein, Program Leader and Teaching Professor, Sustainable Food and Bioenergy Systems, Montana State University; Reid Hall Room 349, Bozeman, MT 59717 USA;
 <https://orcid.org/0009-0005-4118-0591>;
mary.stein@montana.edu

Author Note

There are no financial conflicts of interest to disclose.

and incentives provided at municipal, state, and federal levels, informed by community advocates in support of local food production, will be essential.

Keywords

urbanization, peri-urban agriculture, food security, sustainable development, agrihood, land use planning, urban planning

Introduction

In recent years, there has been an increased interest in food production within urban and peri-urban locales across the United States. From New York City to Seattle, civic leaders' goal to increase agricultural production within and around cities, however, often conflicts with other land use priorities, most specifically housing development (L. K. Campbell, 2016; Horst et al., 2017; Rothwell et al., 2015). Agrihoods are an emerging strategy for housing development used to plan communities around food or agricultural activities (Norris, 2018). Despite the growing interest in expanding and promoting urban food production through agrihoods, there has been limited research on the perceived barriers to expanding them as a food production strategy, and on opportunities to incorporate agriculture within housing developments to meet many sustainable development goals.

Urban agriculture (UA) encompasses the growing, processing, and local distribution of food within and on the fringe of an urban area (Mougeot, 2006). It has been increasingly studied for many human and environmental benefits (Lovell, 2010). These benefits include but are not limited to increased food security, improved soil health, enhanced carbon sequestration, the contribution to the environmental sustainability of cities, strengthened community resilience, economic vitality through local markets, and beautification (Clark & Nicholas, 2013; Lovell, 2010; Orsini et al., 2020). Agrihoods are a subcategory of UA. They are unique in that they are envisioned from the beginning of the urban planning process, rather than providing an "infill" opportunity after the development project is completed (Rothwell et al., 2015). Agrihoods can serve as an effective model to be implemented in emerging urban areas during

the planning phase. They commonly exist in the periurban space outside of city centers, while most UA projects are located within urban centers; the term peri-urban describes this transitional zone between rural and urban districts (Birkby, 2016; Rothwell et al., 2015). In peri-urban agriculture, farmers face urbanization pressure that affects the availability of land (Opitz et al., 2016). Agrihoods can help increase the security and stability of a local food system by combining the preservation of farmland with needed housing development (Breger, 2020). They can be planned to incorporate a variety of food production spaces including field production, greenhouses, rooftop gardens, or edible landscaping (Norris, 2018).

In 2020, 56% of the global population resided in cities. This proportion is projected to reach more than 68% by 2050 (Gu et al., 2021). Hence, planning for food production within and around urban centers to support local food security is imperative. The global rate of urbanization has driven the conversion of farmland into peri-urban areas, primarily for housing development (Choy & Buxton, 2013; Rothwell et al., 2015). This trend of losing agricultural land for housing development, coupled with supply-chain breakdowns such as those observed with the COVID-19 pandemic, has contributed to the growing interest in producing food within and around cities (Nemes et al., 2021). Growing food throughout and around cities for their residents promotes food system resilience by shortening supply chains. Producing food within an agrihood, therefore, helps shorten food supply chains, supporting community food security by ensuring adequate food availability during climatic, social, or economic shocks (Chiffolleau & Dourian, 2020; Watson, 2020).

While land in the Rocky Mountain region of the U.S. is rapidly urbanizing and agricultural land is converted to non-agricultural development, there is an opportunity to embed agrihoods as a sustainable solution within urban and peri-urban development projects. In growing small cities of the Rocky Mountains, land outside the city center, historically used for agriculture, is viewed as land-in-waiting for urban expansion. The perception of the best use of peri-urban land often differs between different stakeholder groups, with a notable conflict aris-

ing between housing and agricultural land conservation (Rothwell et al., 2015).

In this region, Boulder County, Colorado, experienced a 12.3% population increase between 2010 and 2020 (U.S. Census Bureau, 2020a), and Gallatin County, Montana, experienced a 32.9% population increase in the same period (U.S. Census Bureau, 2020). While these Rocky Mountain cities experience urbanization, land use is shifting from agriculture to housing and commercial development at a rapid rate, resulting in permanent land use changes. With the rapid growth of small urban areas like Bozeman, Montana, and Longmont, Colorado, the peri-urban space is vulnerable to housing development, ceasing the preservation of agricultural land.

The city of Bozeman (in Gallatin County, Montana) released a climate plan in 2020 that included six focal areas for reducing greenhouse gas emissions and transitioning to sustainable development and enterprise (City of Bozeman, 2020). Similarly, the city of Longmont (Boulder County, Colorado) released a revised sustainability plan in 2018 to focus governance efforts on promoting environmental stewardship, social equity, and economic vitality for its residents and businesses (City of Longmont, 2018). Embedded in these municipal sustainability plans are goals for addressing community food security and local food system resilience during a changing climate. These plans clearly state that goals for local food production and agrihoods could be viable options to help these growing cities meet their listed sustainability goals. However, research is needed to gather the perspectives of the key stakeholders involved in local food systems, city planning, and development to meet the dual goals of resilient, localized food systems and sustainable land use in the face of rapid urbanization. Input from stakeholders is integral for understanding the factors threatening community food security in these urbanizing communities within or surrounding Rocky Mountain cities. Until now, no research has examined the barriers and opportunities for urban agricultural production through agrihoods in the region, which is characterized by important particularities related to agrihood development that include a short growing season and rapid urbanization.

This research sought to answer the question, “*What are the barriers and opportunities to agrihood development in the Rocky Mountain region of the United States?*” and examine the role of agrihoods in the future of local food production in urbanizing small cities (>50,000 people according to the 2010 U.S. Census), specifically in Colorado and Montana. This is because the food systems of this region have become increasingly dependent on long supply chains. Additionally, the long distances between urban centers in this region reflect longer food distribution routes than in other parts of the U.S. Our study compares the cases of two cities, Bozeman and Longmont, based on interviews with core stakeholders.

Literature Review

A literature review was conducted to establish a definition and understanding of agrihoods in the United States.

Background: Agrihoods

The methods for conducting a literature review on agrihoods began with searching key terms in the Web of Science database. Search terms included “urban agriculture,” “peri-urban agriculture,” “planning,” “urban horticulture,” “housing,” and “sustainability,” to explore research involving agriculture within and around city limits as well as the role of governance in a city’s food system. The term “agrihood” was also searched through the Web of Science, but it did not return any results. As agrihood is a relatively new concept in the food systems literature, other sources and literature on agrihoods were found elsewhere. Publications through the Urban Land Institute and the American Planning Association (APA) have presented background information on agrihoods, including definitions, benefits, opportunities, and recommendations for agrihood use in planned communities. These sources provided a foundation for defining agrihoods. Subsequent searches using Google Scholar with the same search terms were used to find articles exploring the intersections of food production and housing.

An agrihood is typically defined as a form of agriculture in peri-urban areas that is incorporated into residential areas. Agrihoods are an emerging

housing development strategy used to plan communities around agricultural activities (Norris, 2018). As intentionally planned communities typically conceived by developers, agrihoods integrate agricultural production systems such as farms, gardens, and orchards into residential or mixed-use communities (Breger, 2020). The agricultural activities involved are varied and may include traditional greenfield farms and community gardens; greenhouse or hoophouse production of vegetables, fruits, and herbs; beekeeping; raising animals such as chickens, goats, and pigs; and producing fish through aquaculture (Breger, 2020; Norris, 2018). The Urban Land Institute defines agrihoods as “single-family, multi-family, or mixed-use communities built with a working farm or community garden as a focus” (Norris, 2018, p. 3). Although most agrihoods in the U.S. are planned and developed communities built around greenfield farms, often referred to as “traditional” or “working” farms (Breger, 2020), they can also take on infill development strategies, in which food is produced on previously developed commercial land within an urban boundary (Birkby, 2016).

Agrihoods range in scale, production system, and organizational structure, but all share the characteristics of integration of food production and housing components of the community, and engagement of residents with agricultural amenities (Breger, 2020). This engagement can be active, through volunteering in garden or farm production activities or participation in educational events, or more passive consumption of produce at farm-to-table restaurants or through community supported agriculture (CSA) programs (Breger, 2020). In most cases, the farmer in the agrihood is not the owner of the land, but rather is an employee of the developer or landowner, overseeing the farm for the first few years of development (Norris, 2018). The land ownership of the farm and organizational operation of an agrihood can take on many different models: frequently, the agrihood is set up as a nonprofit entity centered on the community services provided related to education, nutrition, and

land conservation (Norris, 2018). The ownership may remain in the developer’s hands, transition to a homeowners association (HOA),¹ be set up to be publicly owned and operated, or, in some cases, owned by the farmer, who in turn has an operating agreement with the HOA (Norris, 2018).

Previous research that included interviews conducted with existing agrihood residents has found that these individuals were motivated to move to an agrihood primarily for the agrarian aesthetic and the overall character and feel of the community, with access to local food also being a notable motivation (Breger, 2020). Residents’ involvement with their community agrihood farm can widely vary, but the majority of existing agrihood models utilize residential fees to supplement the cash flow needed to support the farm (Breger, 2020).

Through the late 2010s, there was limited research on agrihoods as a land-use alternative for housing developments. In 2020, a baseline study evaluated and characterized agrihood developments in the U.S. and found the major perceived contributions of agrihoods to be related to the social and educational engagement of residents with the farm (Breger, 2020). The economic value of agrihoods was also reported as important to developers as the farm lifestyle has greater market appeal to young home seekers compared to more common suburban development models, such as those near golf courses. This market trend translates to increased property values related to the preserved green space of the farm (Breger, 2020).

Potential of and Barriers to Agrihood Development

Although the benefits of urban agriculture for food security, through increased access to healthy foods, are well identified in the literature (Lovell, 2010; Siegner et al., 2018), there is limited research on the role that agrihoods can play in food security in peri-urban areas. Being a type of UA, agrihoods share many of the challenges of urban agricultural systems. The historical barriers to expanding UA include land use considerations, land tenure insecurity,

¹ Homeowners association (HOA): “An organization in a subdivision, planned community, or condominium building that makes and enforces rules for the properties and residents. Those who purchase property within an HOA’s jurisdiction automatically become members and are required to pay dues, which are known as HOA fees.” (Chen, 2024, para. 1–2).

rity, lack of support through governance bodies and city planning, insufficient labor, and site-related considerations, such as contaminated soils from industrial activities (Breger, 2020; Horst et al., 2017; Siegner et al., 2018; Soma & Wakefield, 2011; Taylor & Lovell, 2015). Competition for land use in urbanizing locales has been identified as the key barrier to agrihood development and highlights the significant role that policy and governance can play relative to agricultural land protection or the inclusion of agrihoods in urban land-use planning (Choy & Buxton, 2013; Moragues-Faus & Battersby, 2021; Soma & Wakefield, 2011). Previous studies shed light on the importance of city planners collaborating with food systems professionals to promote urban and peri-urban agricultural efforts (Horst et al., 2017; Soma & Wakefield, 2011). As noted by Horst et al. (2017), city planners can play an important role in “long-range planning efforts; removing legal barriers; offering reduced fees and taxes; and providing staff, resources, and, in some cases, permanent access to land” (p. 291).

The current literature on agrihoods has identified barriers related to land tenure and competing land uses (Horst et al., 2017; Siegner et al., 2018; Taylor & Lovell, 2015). This is due to the rapid appreciation of land values, conversion of agricultural lands to development, and limited supplies of available land to rent or purchase (Valliant & Freedgood, 2020). There have been recommendations for policymakers to help advance urban agricultural initiatives and secure land for beginning farmers and new-entrant farmers by reevaluating urban agriculture as a public good similar to public education, health, and transportation (Carlisle et al., 2019; Siegner et al., 2018). Another theme that emerges regarding barriers to urban agriculture expansion is a lack of support and policy through city governments. Although many cities have sustainability goals that align with agrihood development and/or urban agriculture, policy is often insufficient to help individuals secure land tenure and ensure the protection of land for agricultural activities (Horst et al., 2017).

Applied Research Methods

This exploratory study used data collected from semi-structured interviews with key informants.

Current Study

To determine the perceived barriers to agrihood development in two urbanizing Rocky Mountain Region communities in the U.S., we conducted a double exploratory comparative case study built on qualitative research. Specifically, we conducted semi-structured, open-ended, in-depth interviews with key informants from two cities in the region of interest: Bozeman, Montana, and Longmont, Colorado. This method was chosen as case studies support the understanding of complex social phenomena and organizational processes (Yin, 1994). The exploratory case study model was selected because no single set of outcomes was anticipated, and this model allowed for an in-depth exploration of the perspectives of food system stakeholders as key informants in the study areas (Seaton & Schwier, 2014). The dual case-study approach served to compare agrihood developments in two similar-sized, rapidly urbanizing communities in the Rocky Mountain region to explore emerging themes. Synthesizing the analysis of both cases allows us to develop a baseline for understanding agrihood potential and barriers in similar-sized cities of the U.S. Rocky Mountain region and beyond, where population growth and land use change are contemporary pressures. These areas do not represent the patterns of land use change in the entire Rocky Mountain region, but provide two examples of cities trying to keep up with housing demands while also trying to meet stated municipal sustainability goals related to localizing their food production.

Both cities share an environment historically shaped by agriculture and have experienced recent rapid population growth. Between 2010 and 2020, Bozeman and Longmont experienced population growth rates of 42.95% and 14.62%, respectively (U.S. Census, 2020a, 2020b) (Table 1). Since both cities have a strong need for increased housing, there is a high potential for agrihood development. Additionally, both cities have articulated their intention to reduce carbon emissions and to develop robust, resilient, and localized food systems. Specifically, Longmont has committed to “support a locally based, environmentally responsible and healthy food system that is available to all residents” (City of Longmont, 2018, p. 8). Simi-

larly, Bozeman has outlined in its climate plan a need to “cultivate a robust local food system” (City of Bozeman, 2020, p. 11).

Key Informants

We identified key informants through nonprobability sampling. Specifically, we used purposive and snowball sampling to identify specific types of stakeholders who could yield relevant information (Bourgeault et al., 2013). The purposive sampling technique was used to identify people who hold important perspectives on the research topic and, therefore, needed to be specifically identified and included in the study (S. Campbell et al., 2020). Snowball sampling, which is a technique where existing study subjects recruit future subjects from among their colleagues (Sharma, 2017), was a secondary approach: In some cases, interview subjects suggested other key informants who would have knowledgeable perspectives and insights into barriers and opportunities to agrihood development.

For each city, we aimed to identify at least one

stakeholder for each of the following categories: city sustainability coordinators, city planners, housing developers, and farmers. The city sustainability coordinators and planners were required as key informants to speak on behalf of their city about sustainability goals and city policies, since current literature has identified policy as a barrier to the expansion of urban agriculture. We found them through each city’s employee directories. Developers were identified using purposive sampling through each city’s active development log, as well as through snowball sampling in which other key informants suggested local developers. Farmers were identified through each city’s farmers market vendor listings. The farmers and farm managers who participated in this study all operate organic, small-scale operations (fewer than 10 acres or 4 hectares). In total, 16 farmers were contacted, with four respondents. Altogether, one city planner, one sustainability coordinator, and two farmers from each city were interviewed. A developer from Bozeman participated in an interview, but no developers from Longmont were available to participate in this study. Therefore, a total of nine semi-structured, in-depth interviews were conducted (Table 2).

The Interviews

We developed questionnaires based on an instrument from the APA, written for urban planners regarding urban agriculture (Hodgson et al., 2011) and approved by an expert panel. Montana State University’s institutional review board (IRB)

Table 1. Demographics of Case Study Locations

	Bozeman	Longmont
Population, 2010	37,280	86,270
Population, 2020	53,293	98,885
Population % increase, 2010–2020	42.95%	14.62%
Median household income, 2020	US\$59,695	US\$79,140

Sources: U.S. Census Bureau, 2019, 2020a, 2020b

Table 2. Interviewed Key Informants (N = 9)

Job Title	Location	Questionnaire
City Sustainability Program Administrator	Longmont	Standard (Appendix A); city sustainability goals (Appendix B); organizational
City Sustainability Program Administrator	Bozeman	
City Planner	Longmont	Standard; food system planning (Appendix C)
City Planner	Bozeman	
Farmer 1	Bozeman	Standard; farm operation; farm economy (Appendix D)
Farmer 2	Bozeman	
Farmer 3	Longmont	
Farmer 4	Longmont	Standard; motives; design (Appendix E)
Developer	Bozeman	

*All farm managers consider their production organic, only farmer 2 operates a certified organic farm. Only farm manager 4 owns their farmland, while farm managers 1–3 operate on leased land.

granted IRB exemption (IRB #AS071522-EX). Questionnaires varied according to the profession of each interview subject and were aligned with the subject's area of expertise. All questions were centered on the themes "What are the barriers (if any) that are preventing your city from expanding local food production?" and "What kind of support is needed to ensure successful agrihood development and management?" (see Appendices A–E for detailed questionnaires).

Nine semi-structured, in-depth, remote interviews were conducted between May and September of 2022 using the video conference platform Zoom. Interviews lasted from 30 minutes to one hour. Completed interviews were transcribed.

Data Processing

For the analysis of the open-ended, semi-structured interview question responses, we conducted inductive content analysis to identify common themes in the responses (Kuckartz, 2014; Saldaña 2015). The coding process was facilitated by the qualitative software NVivo (QSR International, Doncaster, Australia). Codes were developed in an iterative and emergent process throughout the data collection period. We applied inductive coding, determined the condensed meaning units, and calculated the frequency of meaning units per code as a percentage of total meaning units per survey (Leech & Onwuegbuzie, 2011; Saldaña, 2015).

Results and Discussion

The key stakeholders identified a wide variety of barriers to agrihood development in the Rocky Mountain region (Table 3). Among the diversity of

responses in each interview, the following key themes emerged: labor, ownership and governance structures, resource availability, and land use regulation.

Labor

All informants noted quality management and labor as barriers to the development of an agrihood. There was consensus among the informants that the management of an agrihood's agricultural area should not rely on a volunteer labor force. However, uncertain ownership of these areas raised concerns about who should oversee hiring and managing professional support. A Bozeman developer with an expressed interest in integrating agriculture into a new housing development suggested that the HOA of the prospective agrihood should "hire a passionate individual to ... organize a community garden [on the prospective agrihood] as well as outreach and education ... for the community."

This developer also indicated that agrihood farm managers should receive a salary, but that this salary may vary depending on their tasks. Such a salary may not be sufficient to afford living in often expensive urban environments. Further, all farmers interviewed articulated that an agrihood farm manager needed to possess a wide variety of skills, ranging from technical knowledge of farming to the social skills required for outreach and volunteer coordination. One farmer suggested that most agrihoods should involve diversified, multicrop production systems. According to this farmer, these agrobiodiverse systems imply a limited potential for mechanization, and consequently high manual labor demand. Additionally, a farm manager in

Table 3. Summary of Barriers and Opportunities for Agrihoods (as Perceived by Key Informants)

Themes	Opportunities	Barriers
Labor	Land access for beginning farmers	Reliance on engaged community volunteers
Ownership and Governance Structures	Diversity in farm ownership and management	Lack of clarity on ownership and management
Resource Availability	Alternative, sustainable, agrobiodiverse production indoor growing; edible landscaping; vertical farming	High cost of land; competing ideas for best land use; limited water availability
Land Use Regulation	Land use codes can be changed and adapted to the needs of a community	Existing or current zoning and land use codes prohibit agricultural activities within city limits

Longmont mentioned the common reliance on immigrant labor of many small-scale, organic farms.

Most respondents indicated that operating the farm within an agrihood requires a farm manager who would be content with not owning the farmland. This may present opportunities to engage with beginning farmers who aim to develop skills and experience with small-scale agriculture before acquiring their own land and operation. For example, one Bozeman farmer stated the following:

There could be lots of potential in having those spaces geared to first-generation farmers who don't have all the up-front capital, or experience growing. But then, what are the proceeding steppingstones for those growers if they don't want to ultimately be in that space? (Bozeman Farm Manager)

Our study identified labor as one of the crucial entry barriers to the development of an agrihood. Interviewees raised various questions about the person who would be in charge of technically managing and operating the agricultural component of the agrihood. Concerns included the recruitment of a farm manager and the affordability of the labor needed for small-scale, diversified production.

The most severe barrier for beginning farmers entering and remaining in agriculture is land access (Ackoff et al., 2017). Agrihoods can serve as an access point for beginning farmers to have land for farming, without the need to raise start-up capital. By providing access to land for beginning farmers, agrihoods may support the development of skills for new-entrant farmers, while contributing to local food production. Furthermore, if an agrihood model allowed farm operators to live on the property for free, this could make the positions more appealing to skilled, beginning farmers, and would guarantee consistent monitoring of the farm and regular interactions with residents. This model would decrease the financial burden on the farm operator of living in the city where the agrihood is located (Norris, 2018). Therefore, agrihood developers must address housing affordability for farm operators to ensure that the farmers can live nearby (Norris, 2018). Although agrihoods may serve as an

access point for beginning farmers, if the farmland ownership remains in the hands of the developer, this may serve as a barrier to advancing sustainability and community food security. Tenant farmers in an agrihood model may not be in a position to invest in sustainable improvements to the land via improvements to soil health or use of perennial crops, because they have no guarantee of recouping the value of these sustainable improvements (Carlisle et al., 2019).

Ownership and Governance Structures

Due to the open-ended and not clearly defined organizational structure of an agrihood, many stakeholders were concerned about who would be responsible for running its agricultural component. Not only may the ownership of the land and farm be ill-defined, but the ownership of farm infrastructure may not be well understood, such as ownership of tractors, high tunnels, or other necessary farm equipment.

The management of that agrihood is nebulous to me. And I think ... there has to be either a volunteer champion or some kind of organized HOA where they are proactively supporting that [the management of an agrihood] and organizing that. (City of Bozeman Sustainability Administrator)

The organizational structure and management of farmland in an agrihood can vary widely, ranging from the farm being owned by an HOA, a land trust lease arrangement with the farmers and developers, public ownership with operations done by partnering nonprofit organizations, and many others (Norris, 2018). One example of an existing agrihood farm ownership and operational model is from South Village, an agrihood located in South Burlington, Vermont. In this agrihood, a neighborhood conservancy owns the farmland and a local nonprofit manages it, with residents in the community paying fees to support the farm (Breger, 2020). Another agrihood, Agritopia in Gilbert, Arizona, has its farmland owned and managed by an affiliated nonprofit (Breger, 2020).

Agrihoods can enhance a community's food security by improving accessibility to nutritious,

fresh produce. An agrihood's potential to contribute to food security is largely dependent on the chosen organizational structure of each development (Siegener et al., 2018). There are many different models of organizational structures used to support the necessary infrastructure and maintenance of a farm in existing agrihoods (see Table 4) (Norris, 2018). Cited by most informants, the organizational and governance structure of an agrihood will need to be identified ahead of time to understand where different organizational and financial support will come from, whether that be from the agrihood residents themselves, the developer, or nonprofit partnerships.

Resource Availability

Two limiting resources were identified in nearly all interviews: land and water. Eight of the nine stakeholders cited water as a barrier to expanding food production through agrihoods in the Rocky Mountain region of the U.S. One farmer stated that he sees water becoming an increasingly troubling input over the next 20 years, especially in this region. A city planner noted that the amount of water needed for a given food production space is unknown to them, and with concerns for water already on the minds of city governments in the Rocky Mountain region, this unknown quantity of

water might be a barrier to approving more local agricultural production.

How much water is required for these spaces [agricultural land within an agrihood], and do we have that amount of water? So, you [the agrihood developers] might then need more water rights that are readily available. (City of Bozeman Planner)

Given these perspectives, interviewees shared concerns about water needed for future food production. Climate change and its impact on water availability throughout the growing season were concerns cited by most respondents.

There are different technical strategies to decrease the dependence of agrihood developments on the core resources of land and water. These strategies involve incorporating diverse, local plant species into the design, as their adaptation to the semi-arid and arid regions of the Rocky Mountains enables them to require much lower inputs of water (Shelef et al., 2017). In addition, utilizing year-round growing systems, including high-tunnel greenhouses, for food production could minimize the need for land and water (Benke & Tomkins, 2017). Indoor, controlled environment production systems may also be necessitated by increasing pol-

Table 4. Ownership and Governance Structures of Agrihoods

Type of Governance Structure	Potential Advantages
Developer-owned and -operated	Centralized governance, economic risk associated with farming is absorbed by developers
Land trust ownership with nonprofit or for-profit farm management entity	Land trusts work to protect lands from further development while remaining productive
Land trust ownership with lease or management agreement with farmer	Land trusts work to protect lands from further development while remaining productive and in private ownership
HOA-owned and operated by nonprofit or for-profit farm management entity	HOA fees contribute directly to farm operation and help subsidize farm earnings
Public ownership and operated by nonprofit or for-profit farm management entity	Residential community surrounding the farm is actively involved in farm decision-making
Publicly owned and operated	Public ownership of the farm supports community engagement and social benefits
Farmer-owned with operating agreement and ability to sell or transfer ownership or lease	Opportunity for new entrant farmers to secure land for farming
Nonprofit-owned or leased with operating agreement and ability to sell or transfer ownership or lease.	Nonprofit structure ensures that community benefits are maintained as the central function of the agrihood; community benefits through education, food donations, and land preservation

lution and climate change driving extreme weather patterns (Eigenbrod & Gruda, 2015). Furthermore, utilizing other urban agricultural practices, like edible landscaping, green roofs, and vertical farming, incorporates food production around the community and decreases land requirements for greenfield farming.

City planners and sustainability professionals alike mentioned opportunities to provide funding for sustainable food production but also stated that partnerships with the private and nonprofit sector will be necessary. City employees stated that a functioning pilot agrihood project will need to be realized before city resources are allocated toward such a project. Additionally, a city planner mentioned that “there may be a time in the future when a city’s food supply and reliance on long-supply chains will prompt city governments to incentivize and provide resources to agroecological land management practices, and local food production would become more necessary.”

The statement below highlights the perspectives of municipalities that have a limited amount of funding available for sustainability initiatives competing with other needs related to the development of growing urban areas.

We need to do renewable energy. We need to do water conservation. We need to do storm-water management. We have so many imperatives and just not enough resources. So, where can we get the expertise to understand what those real obstacles are? (City of Bozeman Sustainability Administrator)

Four out of nine stakeholders indicated that competing interests for the best use of peri-urban land in rapidly developing areas are standing in the way of agrihood development. Given the high value of peri-urban land in the Rocky Mountain region, and trends toward urbanization (U.S. Census, 2020a, 2020b), there are many different and competing ideas among stakeholders regarding the best use of this land. Another large barrier cited by informants is the high cost of land, and an “open buyers’ market,” making it difficult to secure land for farming. Several stakeholders expressed

concerns that given the high value and high cost of peri-urban land, denser housing, retail, and commerce would take precedence over agriculture. A Bozeman developer stated that beyond zoning (even if they were to get special permissions to grant an urban farm in the housing development), city officials would not perceive agrihoods as the best land use for developing areas. Given the diverse and sometimes contradictory goals in the cities’ sustainability plans, these plans do not provide guidelines for the most sustainable use of undeveloped land (City of Bozeman, 2020; City of Longmont, 2018).

Land is going to get eaten up for development, and we’re very much in a housing crisis. So, from the sustainability standpoint, it’s a hard challenge to say what is the biggest need of our community, and what’s the most sustainable use of any given property. (City of Bozeman Planner)

New housing developments in Bozeman are required to incorporate some degree of open space and parkland, and agrihoods are an option that could address this requirement and provide additional community benefits in the form of healthy food and educational opportunities. Accordingly, for new developments in Gallatin County, where the City of Bozeman is located, a portion of the land is required to be dedicated to open space and parks (Gallatin County, 2021). In the state of Colorado, planned unit developments are required to preserve at least 25% of the areas as open space, unless the use is predominately commercial or industrial (Colorado Department of Local Affairs, 2015). There are opportunities to integrate agricultural amenities within these preserved open spaces and parks through edible landscaping. Currently, the city of Bozeman has an incentive program for replacing water-hungry lawns with drought-tolerant plantings (City of Bozeman, 2022). To meet multiple sustainability goals related to local food systems, there is potential for this program to shift toward incentivizing edible landscaping, as this provides additional community benefits through nutritious, diverse foods.

Land Use Regulation

Regulation, especially zoning, can affect city planning and ultimately development. In the U.S., city planning and zoning legislation date back to the 1920s. According to the APA, “the basic foundation for planning and zoning in the U.S. was laid by two standard state enabling acts published by the U.S. Department of Commerce in the 1920s” (APA, n.d., para. 1). These two standard enabling acts were the Standard State Zoning Enabling Act (SZEA) and the Standard City Planning Enabling Act (SCPEA) (Advisory Committee on Zoning, 1926). All states have planning and zoning—enabling legislation that allows local authorities to regulate the built environment and control land and property markets to ensure complementary uses, while providing opportunities to stimulate or slow development in specific areas (Advisory Committee on Zoning, 1926).

While Longmont has relatively flexible zoning regulations, Bozeman permits agricultural activities principally in the M-2 zone, which is the manufacturing and industrial district, servicing the vocational and employment needs of city residents (City of Bozeman, 2016). In zones designated as residential mixed-used development (R-S zone), agricultural activities, which include conditionally permitted ownership of a few livestock animals, are permitted on less than 2.5 acres (City of Bozeman, 2023). However, crop production is not specifically outlined as a permitted activity in a mixed-used development zone. Consequently, all stakeholders from the city of Bozeman mentioned land-use zoning codes as a predominant barrier to the expansion of agriculture within city limits.

With zoning laws permitting limited agricultural activities on less than 2.5 acres in the mixed-use residential zone (R-S), it was suggested by a city planner that existing zoning laws could be interpreted with certain flexibility. For example, a high-tunnel greenhouse or vertical agriculture operation could be allowed in a non-agricultural zone. Although this potential for flexible interpretation exists, a Bozeman developer stated that a reinterpretation of zoning codes adds significant time to the planning and development process, which may hinder a proposed agrihood development from coming to fruition. Bozeman city staff indicated

that zoning laws are not always in alignment with the goals identified in the city of Bozeman’s climate plan, and still serve as a barrier to agricultural development in Bozeman’s peri-urban land.

Although zoning and land use regulation were not identified as significant barriers to agrihood development in Longmont, one city planner expressed having little flexibility or autonomy in decision-making:

Everything I do in my job is either demanded by the residents or developers or told to me by a counselor. As government employees, we don’t get to make decisions on what our priorities are. It needs to come from an outside source. (City of Longmont Planner)

The planner said that change is largely driven by citizen comments at public meetings, and, for regulatory zoning to align better with urban agriculture solutions, citizens must speak up to advocate for policy change. Although citizen advocacy plays a formative role in shaping municipal policy, several articles suggest that city planners should take a more proactive role in engaging with food systems. These sources highlight specific strategies for planners to remove regulatory barriers, embed urban agriculture into long-term planning efforts, help to secure land for agriculture, and raise public support for urban agriculture and agrihoods (Horst et al., 2017; Soma & Wakefield, 2011).

Agrihoods’ Feasibility and Alternatives

A common notion among key informants across both cities was that there are no “silver bullets” for facilitating the development of agrihoods. Effective strategies depend on city-internal factors (such as zoning laws) but also on external determinants such as climatic conditions. A major concern brought up by city employees was the short growing season in many areas of the Rocky Mountain region, meaning that traditional greenfield farming can only take place, realistically, between five and seven months of the year. Four of nine stakeholders cited a shorter growing season as a barrier to an agrihood as that land could be more productive for other uses, like dense housing, high-tunnel greenhouses, or other indoor urban agricultural meth-

ods. An opportunity to extend the growing season and support year-round production with greenhouses or vertical farming was cited as a better land use strategy compared to greenfield farming in the middle of a neighborhood.

An alternative use for food production in agrihoods was proposed by two informants, who suggested that grazing animals should be considered. Given the land and acreage requirements for regenerative ranching practices involving cows or goats, having large livestock within an agrihood would likely be challenging in a peri-urban space (Rowntree et al., 2020). However, integrating livestock like chickens that require minimal land could be a useful alternative or addition to agrihood fruit and vegetable production.

For an agrihood development's feasibility, the form that agricultural production takes matters. When describing the process of designing an agrihood, the developer mentioned that the city of Bozeman had raised concerns regarding the use of traditional greenfield farming. These concerns were related to the short growing season, the land requirement for greenfield production conflicting with the city's desire for dense housing development, and current zoning laws prohibiting agricultural activities on more than 2.5 acres in residential areas (City of Bozeman, 2016). According to this developer, the planners from the city of Bozeman communicated greater support for infill agricultural development, and "urban agricultural" approaches, such as incorporating greenhouses, edible landscaping in required park space, and rooftop gardening. Ultimately, the acceptance and subsequent zoning for greenfield farming may be more difficult to "sell" compared to a greenhouse or rooftop garden production in a new development.

Several informants, including farmers and city sustainability administrators, indicated that, although local food production is essential for the self-sufficiency and sustainability of a local food system, the agrihood model may not be the primary pathway to achieving this goal. Accordingly, two informants mentioned that initiatives focused on food waste and rescue may be more important than the expansion of local food production efforts. Additionally, three stakeholders felt that directing public resources to food processing facili-

ties is more critical for ensuring food security (as processing and cold storage facilities enable the year-round availability of food to local consumers). Specifically, three of the four farmers interviewed vocalized a need for access to shared commercial processing space and cold storage.

Agrihoods' Expected Benefits

A potential economic benefit for agrihood farm managers was highlighted by a Longmont farmer. She stated that the opportunity of having agrihood residents as potential consumers available for produce right away would ensure a regular revenue stream and customer base for the agrihood farmer. This informant stated that a regular concern for her, as a beginning farmer whose products are widely varied and seasonally dependent, is finding a buyer. So, having agrihood residents as readily available consumers may alleviate some of the farm manager's stress in finding a market. This stated economic advantage of direct-to-consumer sales was echoed by a study that found that the mean and median CSA farm income substantially exceeded those for all U.S. farms (Paul, 2019). It is possible that agrihoods can perpetuate access to locally grown foods for those who already have economic access to such foods. To advance community food security, it is important to ensure that equitable access and distribution of agrihood-grown foods are prioritized (Siegnier et al., 2018).

All stakeholders identified community benefits related to agrihoods, with these perceived benefits ranging from the contributions to food security, and extending to possible social and mental health benefits related to community involvement and education surrounding food production. Although the contribution to community food security was highlighted, one informant went on to say that the degree to which agrihoods could provide a community's food supply is unclear. The possibility for urban and peri-urban agricultural systems to contribute to food security is significant and should not be understated, with many studies demonstrating how urban and peri-urban agricultural systems can produce similar or greater yields of certain crops per area, relative to greenfield farms (McDougall et al., 2018; Payen et al., 2022).

The expected environmental benefits of agrihoods are vast and largely relative to the production systems used. By conserving agricultural land and producing diverse crops, an agrihood farm may contribute to landscape biodiversity by providing agroecological corridors that positively contribute to animal biodiversity and affect the ability of beneficial insects to persist in urban landscapes (Breuste et al., 2008). Ultimately, agrihoods have the potential to significantly contribute to a community's food security by increasing the accessibility of nutritious foods and shortening the food supply chain, but additional benefits related to personal resiliency, mental and social health, and landscape biodiversity may also be notable (Lovell, 2010).

Study Limitations

The applied comparative case study method could have been strengthened by the addition of stakeholder perspectives from county and state governments. Given the opportunity for county and state governments to shape peri-urban agricultural land use, a cross-sectional survey or additional interviews involving county and state governments would have been beneficial. This limitation presents an opportunity for future research to identify opportunities for county, state, and federal policy support for agrihoods as a sustainable development strategy. Additionally, the comparison between Bozeman and Longmont would have been better supported if a developer perspective in Longmont could have been obtained. During the data-gathering period of this study, there were no responses from developers contacted in the Longmont region.

Conclusion

Rapid urbanization is causing land use change across the world. Sustainable, multifunctional land use in peri-urban areas is essential to balance the needs of local food production and provide housing to a growing population. Agrihoods are one development model that incorporates food production near consumers to help address the goals of nutritious food security while providing social,

economic, and ecological benefits. The ecological benefits of agrihoods can be maximized through agrobiodiverse production methods, but all agrihoods contribute to reduced food transportation and storage requirements, which in turn minimize greenhouse gas emissions related to long food supply chains. Given the known benefits of urban and peri-urban agriculture, this study sought to explore the barriers to the agrihood model as a style of peri-urban agriculture that is planned before development takes place. This study highlighted four key barriers to agrihood development in two cities in the Rocky Mountain region of the U.S.: labor, ownership and governance structures, resource availability, and land use regulation.

Barriers preventing agrihoods from initially developing, such as city land use codes and zoning laws, will need to be addressed by city planners and municipal government officials. Given that the extent of municipal power is shaped by citizen engagement and advocacy, community members vocalizing support for local food production will be crucial for reducing the structural and legal barriers to entry. Nonprofit organizations and universities can play an essential role in educating community members on the importance of localizing food production to ensure community food security. This education will support the community participation necessary to guide sustainable municipal development. Barriers to agrihood expansion, like land and water availability, will require coordinated policy action across local, county, state, and federal governments. Private-sector developers typically respond to the market demand of a given city, so it will likely not be individual developers driving a transition to agrihoods and other sustainable development models without greater government incentivization. Policy interventions and sustainable development incentives driven by polycentric governance structures will be essential in reducing the barriers to agrihood expansion. As climate change, urbanization, and population growth pose challenges to food systems in the Rocky Mountain region of the U.S., small, growing cities can utilize agrihoods as a proactive strategy to support their community's food security. 

References

- Ackoff, S., Bahrenburg, A., & Lusher Shute, L. (2017). *Building a future with farmers II: Results and recommendations from the National Young Farmer Survey*. National Young Farmers Coalition.
https://www.youngfarmers.org/wp-content/uploads/2019/03/NYFC-Report-2017_LoRes_Revised.pdf
- Advisory Committee on Zoning. (1926). *A Standard State Zoning Enabling Act (SZA)*. U.S. Department of Commerce.
<https://www.govinfo.gov/content/pkg/GOVPUB-C13-18b3b6e632119b6d94779f558b9d3873/pdf/GOVPUB-C13-18b3b6e632119b6d94779f558b9d3873.pdf>
- American Planning Association [APA]. (n.d.) *Standard State Zoning Enabling Act and Standard City Planning Enabling Act*. Retrieved July 1, 2024, from <https://www.planning.org/growingsmart/enablingacts/>
- Benke, K., & Tomkins, B. (2017). Future food-production systems: Vertical farming and controlled-environment agriculture. *Sustainability: Science, Practice and Policy*, 13(1), 13-26. <https://doi.org/10.1080/15487733.2017.1394054>
- Birkby, J. (2016). *Agrihoods: Development-supported agriculture*. ATTRA Sustainable Agriculture Program. Retrieved September 30, 2022, from <https://attra.ncat.org/htmlpub/agrihoods-development-supported-agriculture/>
- Bourgeault, I., Dingwall, R., & De Vries, R. (2013). *The SAGE handbook of qualitative methods in health research*. SAGE.
- Breger, B. (2020). *Understanding agrihoods: An exploration into the growing trend of farm-to-table communities across the United States* [Master's thesis, University of Massachusetts Amherst]. <https://doi.org/10.7275/hazh-xp67>
- Breuste, J., Niemelä, J., & Snep, R. P. (2008). Applying landscape ecological principles in urban environments. *Landscape Ecology*, 23, 1139–1142. <https://doi.org/10.1007/s10980-008-9273-0>
- Campbell, L. K. (2016). Getting farming on the agenda: Planning, policymaking, and governance practices of urban agriculture in New York City. *Urban Forestry & Urban Greening*, 19, 295-305.
<https://doi.org/10.1016/j.ufug.2016.03.011>
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: Complex or simple? Research case examples. *Journal of Research in Nursing*, 25(8), 652-661.
<https://doi.org/10.1177/1744987120927206>
- Carlisle, L., Montenegro De Wit, M., DeLonge, M. S., Calo, A., Getz, C., Ory, J., Munden-Dixon, K., Galt, R., Melone, B., Knox, R., Iles, A., & Press, D. (2019). Securing the future of US agriculture: The case for investing in new entry sustainable farmers. *Elementa: Science of the Anthropocene*, 7, Article 17. <https://doi.org/10.1525/elementa.356>
- Chen, J. (2024, May 30). *What is a homeowners association (HOA), and how does it work?* Investopedia. Retrieved July 1, 2024, from <https://www.investopedia.com/terms/h/hoa.asp>
- Chiffolleau, Y., & Dourian, T. (2020). Sustainable food supply chains: Is shortening the answer? A literature review for a research and innovation agenda. *Sustainability*, 12(23), Article 9831. <https://doi.org/10.3390/su12239831>
- Choy, D. L., & Buxton, M. (2013). Farming the city fringe: Dilemmas for peri-urban planning. In Q. Farman-Bowers, V. Higgins, & J. Millar (Eds.), *Food security in Australia: Challenges and prospects for the future* (pp. 397–412). Springer.
https://doi.org/10.1007/978-1-4614-4484-8_27
- City of Bozeman. (2016). *Article 3. Zoning districts & land uses. Sec. 38.300 Zones, maps & designations (Article 7)*. Retrieved November 2022 from <https://www.bozeman.net/Home/ShowDocument?id=2976>
- City of Bozeman. (2020). *Bozeman climate plan*. Retrieved from <https://weblink.bozeman.net/WebLink/DocView.aspx?id=254994&dbid=0&repo=BOZEMAN>
- City of Bozeman. (2022). *Outdoor rebates*. Retrieved November 10, 2022, from <https://www.bozeman.net/departments/utilities/water-conservation/rebates/outdoor-rebates>
- City of Bozeman. (2023). *Article 3. Zoning districts & land uses. Sec. 38.610.060 Regulated activities*. Retrieved March 21, 2023, from https://library.municode.com/mt/bozeman/codes/code_of_ordinances?nodeId=PTTICOR_CH38UNDECO_ART6NAREPR_DIV38.610WERE_S38.610.060REAC
- City of Longmont. (2018). *Longmont sustainability plan*. Retrieved December 2020, from <https://indicators.longmontcolorado.gov/sustainability>

- Clark, K. H., & Nicholas, K. A. (2013). Introducing urban food forestry: A multifunctional approach to increase food security and provide ecosystem services. *Landscape Ecology*, 28, 1649–1669. <https://doi.org/10.1007/s10980-013-9903-z>
- Colorado Department of Local Affairs. (2015). *Land use codes*. Retrieved November 10, 2022, from <https://cdola.colorado.gov/community-development-planning/land-use-codes>
- Eigenbrod, C., & Gruda, N. (2015). Urban vegetable for food security in cities. A review. *Agronomy for Sustainable Development*, 35(2), 483–498. <https://doi.org/10.1007/s13593-014-0273-y>
- Gallatin County, Montana. (2021, March 11). *Information for subdivisions*. Retrieved November 10, 2022, from <https://gallatincomt.virtualtownhall.net/planning-community-development/pages/information-subdivisions>
- Gu, D., Andreev, K., & Dupre, M. E. (2021). Major trends in population growth around the world [Commentary]. *China CDC Weekly*, 3(28), 604–613. <https://doi.org/10.46234/ccdcw2021.160>
- Hodgson, K., Caton Campbell, M., & Bailkey, M. (2011). *Urban agriculture: Growing healthy, sustainable places* (PAS Report 563). American Planning Association. <https://www.planning.org/publications/report/9026887/>
- Horst, M., McClintock, N., & Hoey, L. (2017). The intersection of planning, urban agriculture, and food justice: A review of the literature. *Journal of the American Planning Association*, 83(3), 277–295. <https://doi.org/10.1080/01944363.2017.1322914>
- Kuckartz, U. (2014). Three basic methods of qualitative text analysis. In U. Kuckartz (Ed.), *Qualitative text analysis: A guide to methods, practice & using software* (pp. 65–121). SAGE. <https://doi.org/10.4135/9781446288719>
- Leech, N. L., & Onwuegbuzie, A. J. (2011). Beyond constant comparison qualitative data analysis: Using NVivo. *School Psychology Quarterly*, 26(1), 70–84. <https://doi.org/10.1037/a0022711>
- Lovell, S. T. (2010). Multifunctional urban agriculture for sustainable land use planning in the United States. *Sustainability*, 2(8), 2499–2522. <https://doi.org/10.3390/su2082499>
- McDougall, R., Kristiansen, P., & Rader, R. (2018). Small-scale urban agriculture results in high yields but requires judicious management of inputs to achieve sustainability. *Proceedings of the National Academy of Sciences*, 116(1), 129–134. <https://doi.org/10.1073/pnas.1809707115>
- Moragues-Faus, A., & Battersby, J. (2021). Urban food policies for a sustainable and just future: Concepts and tools for a renewed agenda. *Food Policy*, 103, Article 102124. <https://doi.org/10.1016/j.foodpol.2021.102124>
- Mougeot, L.J.A. (2006). *Growing better cities: Urban agriculture for sustainable development*. International Development Research Centre. <https://idrc-crdd.ca/en/book/infocus-growing-better-cities-urban-agriculture-sustainable-development>
- Nemes, G., Chiffolleau, Y., Zollet, S., Collison, M., Benedek, Z., Colantuono, F., Dulsrud, A., Fiore, M., Holtkamp, C., Kim, T.-Y., Korzun, M., Mesa-Manzano, R., Reckinger, R., Ruiz-Martínez, I., Smith, K., Tamura, N., Viteri, M. L., & Orbán, É. (2021). The impact of COVID-19 on alternative and local food systems and the potential for the sustainability transition: Insights from 13 countries. *Sustainable Production and Consumption*, 28, 591–599. <https://doi.org/10.1016/j.spc.2021.06.022>
- Norris, M. (2018). *Agrihoods: Cultivating best practices*. Urban Land Institute. <https://americas.uli.org/wp-content/uploads/ULI-Documents/Agrihoods-Final.pdf>
- Opitz, I., Berges, R., Piorr, A., & Krikser, T. (2016). Contributing to food security in urban areas: Differences between urban agriculture and peri-urban agriculture in the Global North. *Agriculture and Human Values*, 33, 341–358. <https://doi.org/10.1007/s10460-015-9610-2>
- Orsini, F., Pennisi, G., Michelon, N., Minelli, A., Bazzocchi, G., Sanyé-Mengual, E., & Gianquinto, G. (2020). Features and functions of multifunctional urban agriculture in the Global North: A review. *Frontiers in Sustainable Food Systems*, 4, Article 562513. <https://doi.org/10.3389/fsufs.2020.562513>
- Paul, M. (2019). Community-supported agriculture in the United States: Social, ecological, and economic benefits to farming. *Journal of Agrarian Change*, 19(1), 162–180. <https://doi.org/10.1111/joac.12280>
- Payen, F. T., Evans, D. L., Falagán, N., Hardman, C. A., Kourmpetli, S., Liu, L., Marshall, R., Mead, B. R., & Davies, J. A. C. (2022). How much food can we grow in urban areas? Food production and crop yields of urban agriculture: A meta-analysis. *Earth's Future*, 10(8), Article e2022EF002748. <https://doi.org/10.1029/2022ef002748>

- Rothwell, A., Ridoutt, B., Page, G., & Bellotti, W. (2015). Feeding and housing the urban population: Environmental impacts at the peri-urban interface under different land-use scenarios. *Land Use Policy*, 48, 377–388. <https://doi.org/10.1016/j.landusepol.2015.06.017>
- Rowntree, J. E., Stanley, P. L., Maciel, I. C., Thorbecke, M., Rosenzweig, S. T., Hancock, D. W., Guzman, A., & Raven, M. R. (2020). Ecosystem impacts and productive capacity of a multi-species pastured livestock system. *Frontiers in Sustainable Food Systems*, 4, Article 544984. <https://doi.org/10.3389/fsufs.2020.544984>
- Saldaña, J. (2015). *The coding manual for qualitative researchers*. Sage.
- Seaton, J. X., & Schwier, R. A. (2014). An exploratory case study of online instructors: Factors associated with instructor engagement. *International Journal of E-Learning & Distance Education*, 29(1), 1–16. <http://ijede.ca/index.php/jde/article/view/870/1536>
- Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research*, 3(7), 749-752. <https://www.allresearchjournal.com/archives/2017/vol3issue7/PartK/3-7-69-542.pdf>
- Shelef, O., Weisberg, P. J., & Provenza, F. D. (2017). The value of native plants and local production in an era of global agriculture. *Frontiers in Plant Science*, 8, Article 02069. <https://doi.org/10.3389/fpls.2017.02069>
- Siegner, A., Sowerwine, J., & Acey, C. (2018). Does urban agriculture improve food security? Examining the nexus of food access and distribution of urban produced foods in the United States: A systematic review. *Sustainability*, 10(9), Article 2988. <https://doi.org/10.3390/su10092988>
- Soma, T., & Wakefield, S. (2011). The emerging role of a food system planner: Integrating food considerations into planning. *Journal of Agriculture, Food Systems, and Community Development*, 2(1), 53–64. <https://doi.org/10.5304/jafscd.2011.021.006>
- Taylor, J. R., & Lovell, S. T. (2015). Urban home gardens in the Global North: A mixed methods study of ethnic and migrant home gardens in Chicago, IL. *Renewable Agriculture and Food Systems*, 30(1), 22–32. <https://doi.org/10.1017/S1742170514000180>
- U.S. Census Bureau. (2019, May 23). *Fastest-growing cities primarily in the South and West* [Press release]. <https://www.census.gov/newsroom/press-releases/2019/subcounty-population-estimates.html>
- U.S. Census Bureau. (2020a). *Colorado population percent change (2010-2020)*. Retrieved November 12, 2022, from <https://www.census.gov/library/stories/state-by-state/colorado-population-change-between-census-decade.html>
- U.S. Census Bureau. (2020b). *Montana QuickFacts*. Retrieved October 23, 2022, from <https://www.census.gov/quickfacts/MT>
- Valliant, J. C. D., & Freedgood, J. (2020). Land access policy incentives: Emerging approaches to transitioning farmland to a new generation. *Journal of Agriculture, Food Systems, and Community Development*, 9(3), 71–78. <https://doi.org/10.5304/jafscd.2020.093.027>
- Watson, K. (2020). *Agrihoods: A contemporary planning strategy to shorten a community's food supply chain* [Master's thesis, York University]. Retrieved from YorkSpace Institutional Repository. <http://hdl.handle.net/10315/38351>
- Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). SAGE.

Appendices

Appendix A. Standard Questionnaire: All Informants

- What are the barriers (if any) that are preventing your city from expanding local food production?
- What are current challenges or threats to your community's agricultural system?
- How do you see agrihoods supporting goals outlined in your city's sustainability plan?
- What kind of support is needed to ensure successful agrihood development and management?
- What are other projects that could support a future sustainable and resilient food system in your city?

Appendix B. Questions Asked Specifically to Sustainability Employee

- Describe your role with the city.
- Describe your professional/institutional relationship with the local food system.
- What are the current challenges facing your city's food system?
- What are existing urban agricultural projects taking place within your city?
- What support for local agriculture, food production, and/or processing is the city currently providing?
- How would you describe or define an agrihood?
- Do you have any reference projects in mind?
- What would be the most appropriate application of an agrihood for your city?
- What elements would be necessary for long-term agrihood success?
- Environmental, financial, organizational, policy, or social requirements
- Who should be responsible for maintenance?
- How can agrihoods, or planned agricultural communities, be used to meet goals for localized food systems outlined in the Sustainability Plan?
- What are other projects that could support a future sustainable and resilient food system in your city?

Appendix C. Questions Asked Specifically to City Planner

- Describe your role and your professional relationship to the local food system.
- Describe the socio-demographic characteristics of your city.
- Is there a staff member responsible for planning for local food?
- If not, how does local food get accounted for in city planning?
 - What are the challenges (if any) that you have encountered in planning for a sustainable food system? (Soma & Wakefield, 2011)
- How can we improve opportunities to integrate food considerations in municipal or regional planning? (Soma & Wakefield, 2011)
- Who do you see as the participants/future residents of an agrihood?
- Who should be in charge of the agricultural part of an agrihood?
 - The residents, local farmers, companies?

Appendix D. Questions Asked Specifically to Farmers and Producers

- How did you get started farming?
- What is your property situation, and what did the process of acquiring land look like?
- Describe your farm and what a typical day might look like for you?
 - What is your farm size?
 - What crops are grown?
 - Do you use any rotations?
 - Are crops grown indoors or outdoors primarily?
 - Is the farm certified organic (why or why not)?
 - How is the farm managed?
 - What kind of machinery is used?
 - Who are your customers?
 - Where is your produce sold?
 - What kinds of marketing strategies are employed?
- Are there any unique site considerations or barriers that your farm has overcome?
- Are you receiving any external support from the city/county/or state government?
- In your perception, how is an urban farmer different from a rural farmer?
- What kind of infrastructure would help developing agrihood projects in your city?
- What kind of support would you need to commit to a project involving urban agriculture in your city?

Appendix E. Questions Asked Specifically to Housing Developer

- Describe your current professional role.
- Describe your experience with developments that involve agricultural activities.
- What are your motivations for incorporating agriculture into new housing developments?
- Are there financial or social incentives for developers to incorporate working farms, gardens, or other food production systems into housing developments?
- How are agrihoods, or communities planned with agricultural activities, different from other developments in terms of costs, planning, and design.
- Who do you see as the participants/future residents of an agrihood?
- Who should be in charge of the agricultural part of an agrihood?
 - residents, local farmers, companies?
- What matters most to developers regarding agrihood development?
 - creating a specific lifestyle that is marketable, contributing to solving the needs of local farmers, contributing to city sustainability, or other?

Grassroots organizing for food systems change in the San Joaquin Valley, California

Brittany Oakes *
University College London

Submitted November 19, 2023 / Revised January 31, April 5, and April 28, 2024 /
Accepted May 5, 2024 / Published online July 3, 2024

Citation: Oakes, B. (2024). Grassroots organizing for food systems change in the San Joaquin Valley, California. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 289–315. <https://doi.org/10.5304/jafscd.2024.133.033>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

California's San Joaquin Valley (SJV) is the wealthiest agricultural region in the United States, yet it has among the highest rates of concentrated poverty and food insecurity in the nation. Despite a growing movement to change the food system nationwide and around the world, wealth and health disparities linked to the dominant agricultural industry in the SJV are growing. This study draws upon critical philanthropy scholarship to understand the opportunities and limitations of grant funding for the food justice movement.

This qualitative research contributes a regional

case study of grassroots organizing to change the food system from within a region dominated by industrial agriculture. To understand the challenges and potential for change from the perspectives of SJV grassroots organizers, this research draws on semi-structured interviews with 14 SJV organizers working for food systems change. Interviews were thematically analyzed and complemented with a review of activities across all identified organizations' websites to provide a snapshot of the food justice movement across the SJV. Particular attention is paid to how funding structures may influence organizing activity and discourse.

The findings demonstrate how grantmaking influences the dominant narrative in the SJV and shapes organizing priorities and activities. I argue that philanthropic funding may divert the food justice movement away from directly challenging powerful political and economic interests. This study advances a critical conversation in food movement scholarship to change the conditions under which structural inequality is growing.

Keywords

food movement, critical philanthropy, San Joaquin Valley, California, nonprofit industrial complex

* Brittany Oakes, MSc Social Science and Social Research, Social Science Research Unit, Institute of Education, University College London; 20 Bedford Way; Bloomsbury, London, WC1H 0AL, United Kingdom; +44 (0)7853 855 576;  <https://orcid.org/0009-0006-5413-4487>; brittany.f.oakes@gmail.com

Author Note

This research was completed as part of a master's dissertation (Oakes, 2019).

Funding Disclosure

This research was self-funded.

Introduction

California's San Joaquin Valley (SJV) is the most productive agricultural region in the world, situated at the center of the wealthiest state in the wealthiest country on earth (Buchholz, 2023; Credit Suisse, 2022; Guzman, 2018; Vegetable Research & Information Center, n.d). Yet, communities in this region are among the poorest and most food insecure in the nation (Ganesh & Smith, 2018; Shrider & Creamer, 2023). 'Poverty in the midst of plenty' is a global phenomenon, and many scholars view this as a problem of resource distribution and power (e.g., de Waal, 2018; Sen, 1981). The production and distribution of food is increasingly controlled by transnational corporations aiming to maximize profits, and the negative effects of this industrialized system have been well documented (Heinrich Böll Foundation et al., 2017; Lang & Heasman, 2015).¹

Addressing issues in the food system is inextricably bound with changing economic, social, and political structures, and over the past few decades, a growing movement has called for systemic change to address injustices in the food system. Increasingly, the food justice movement in the U.S. has pushed the national conversation from a narrow focus on food security and aid provision toward an emphasis on social justice and systems change (Cadieux & Slocum, 2015).² However, the extent to which grassroots organizing around food is politicized is "inherently variable" (Fisher & DeFilippis, 2015, p. 364) and largely shaped by context. Grassroots organizations tend to rely on and be financially and legally accountable to grantmakers (e.g., government or private foundations); that is, they are reliant on the same economic system they are working to change. Evidence indicates that working within the context of grant-funding structures can have a depoliticizing effect (Finley & Esposito, 2012). Grantmakers often restrict or prohibit the use of funds for political organizing and

instead give preference to "professionalized" (Finley & Esposito, 2012, p. 17), market-oriented service provision rather than movement-building work. How are SJV communities working to change a powerful multibillion-dollar food industry while being reliant on philanthropic wealth produced through socioeconomic inequality?

This study bridges critical food studies and critical philanthropy scholarship to understand the role of philanthropy in the food justice movement and identify opportunities for and barriers to change. Few studies have focused on the rural food justice movement in the U.S., even though food production primarily takes place in rural areas, and rural communities are among the most affected by the corporate food system (Alkon, 2017; McEntee, 2011; U.S. Department of Agriculture, 2023).

Furthermore, very few critical food studies have applied a critical philanthropy lens to understand the conditions under which the movement operates, apart from Guthman (2008a, 2008b). This research helps to address these gaps and advances a critical conversation around the positioning of food justice organizations working in communities most directly impacted by the industrial food system. This study examines two main questions: (1) How are grant-funded grassroots organizations working for food justice and systems change in the SJV? and (2) What are the perspectives of grassroots organizers on working for food justice and systems change in the SJV while remaining accountable to grantmakers?

Working Definitions

In this study, *grassroots organizations* are operationalized as "locally based, ... formal [or semi-formal], not-for-profit groups ... that manifest significant voluntary altruism" (Smith, 1997, p. 115). *Grassroots organizers* (hereafter, organizers) are operationalized as local residents who organize collective action to accomplish social change (Wittig, 1996).

¹ These impacts include, for example, growing rates of diet-related illnesses (Willet et al., 2019), environmental degradation and climate breakdown (Intergovernmental Panel on Climate Change, 2007, 2023), land-grabbing (GRAIN, 2014), and the exploitation of labor (International Labour Organization, 2003).

² Food justice has been defined as "the struggle against racism, exploitation, and oppression taking place within the food system that addresses inequality's root causes both within and beyond the food chain" (Hislop, 2014, p. 19). Although various definitions for food justice exist (e.g., see Rowe, 2016), the Hislop (2014) definition was identified by Alkon and Guthman (2017) as possibly the most thorough. This definition also has been more widely cited in academic literature (e.g., Bradley & Herrera, 2015; Herman et al., 2018).

Literature Review

Activists and scholars have worked extensively to develop shared analyses and definitions of food movement activity (e.g., La Via Campesina, 2007; Cadieux & Slocum, 2015). Perhaps one of the clearest delineations of different food movement orientations is the typology (Table 1) by Holt Giménez and Shattuck (2011); however, as the authors note, the progressive food movement is heterogeneous. The food movement might be best understood across a gradient, with efforts falling between a hegemonic food regime and radical praxis.

The dominant food movement narrative tends to focus on food security or sustainability, which often ignores structural race and class inequities (Alkon & Agyeman, 2011). However, there is a growing segment of the food movement calling for food justice, which extends concern over food security toward an analysis of the drivers of inequities within the food system, with an emphasis on the role of power.

Neoliberal Discourse in the Food Justice Movement

Neoliberalism describes an ideological commitment to free markets and state devolution, based on a premise of individualism and competition

(Peck & Tickell, 2002). Extensively critiqued in the food justice literature, neoliberalization—that is, how neoliberalism is “produced and reproduced through institutional forms” (Peck & Tickell, 2002, p. 383)—recreates the conditions which give rise to oppression and exploitation within the food system (Fairbairn, 2012). Many scholars have observed the prevalence of neoliberal discourse and approaches in the food movement and call for deeper exploration beyond a free market-oriented strategy (e.g., Mares & Alkon, 2011; Pudup, 2008).

Yet, McClintock (2014) argues that scholars need to move beyond a “dualism” of whether food justice organizations are “radical” or “neoliberal” (pp. 165–166). McClintock examined urban agriculture initiatives and concluded that such organizations quell radical activism while still working to reclaim food production from the corporate food system. To imagine a “more just food system,” we must understand the conditions under which food justice initiatives operate and embed these efforts “within a broader framework of justice and structural change” (McClintock, 2014, p. 166).

The Boundaries of Philanthropy

Others have noted the contradiction of working for systems change within existing economic and

Table 1. A Food Regime/Food Movements Framework

Corporate Food Regime			Food Movements	
POLITICS	NEOLIBERAL	REFORMIST	PROGRESSIVE	RADICAL
Discourse	Food Enterprise	Food Security	Food Justice	Food Sovereignty
Orientation	Corporate and Global Market	Development and Aid	Empowerment	Entitlement and Redistribution
Model	Overproduction; corporate concentration; unregulated markets and monopolies; monocultures (including organic); genetically modified organisms; agrofuels; mass global consumption of industrial food; phasing out of peasant and family agriculture and local retail	Mainstreaming and/or certification of niche markets (e.g., organic, fair, sustainable); maintaining northern agricultural subsidies; market-led land reform; microcredit	Agroecologically produced local food; investment in underserved communities; new business models and community benefit packages for production, processing, and retail; better wages for farmworkers; solidarity economies; land access; regulated markets and supply	Dismantle corporate agri-foods monopoly power; parity; redistributive land reform; community rights to water and seed; regionally based food systems; democratization of the food system; sustainable livelihoods; protection from dumping and overproduction

Source: Reproduced from a larger table in Holt Giménez & Shattuck, 2011; reprinted by permission of the publisher (Taylor & Francis, <http://www.tandfonline.com>).

political structures. In a survey of urban agriculture organizations across the U.S. and Canada, McClintock and Simpson (2017) found that those with an explicit food justice aim were much less likely to have government funding and more likely to rely on funding from private foundations. However, philanthropic funding may also undermine the radical aims of these organizations and limit envisioning alternatives to the structures imposed by funders (INCITE! Women of Color Against Violence, 2007; Skocpol, 2016).

Some progressive foundations have worked to make their funding processes more democratic and allow organizers more autonomy (Ostrander, 2005). Nonetheless, Dowie (2001) asserts that “because foundations are dependent on an unequal distribution of wealth, they will not directly address the injustices created by disproportionate wealth” (p. 245).

The structural constraints of the grantmaking practice are well illustrated in a case study conducted by Guthman (2008b), which centered on a two-year food justice project initiated by a coalition of private foundations. Guthman traces how governance practices of the funding coalition “delimited the thinkable” (p. 1248) among recipient food justice organizations. In her analysis, Guthman observes that the delimiting factor was primarily the processes of governance that privileged technocratic exercises and expertise, and not necessarily an ideological misalignment between the funder and grantees. Here, her analysis intersects with critical philanthropy scholarship and also reiterates the concept of neoliberalization raised above. Acquiescence within the governance structures of philanthropy may reproduce the very systems organizers are working to change.

Activists and scholars have termed this the *nonprofit industrial complex*, defined as “a system of relationships between the State (or local and federal governments), the owning classes, foundations, and nonprofit social service and social justice organizations that results in the surveillance, control, derailment, and everyday management of political movements” (INCITE!, n.d., para. 11). In the food justice literature, much attention has been paid to

neoliberal rationalities manifested in food justice discourse and activities; however, the constraints inherent to working within philanthropic structures are often only mentioned in passing.³ The apparent contradiction of working for systems change within philanthropy structures, as highlighted by critical philanthropy scholars, does not appear to feature as an analytical focus in food justice literature. Yet, such a focus is necessary to understand the conditions under which grassroots organizations operate.

To help fill this gap, this study is situated at the nexus of critical philanthropy scholarship and critical food studies. This study builds on the research of Kohl-Arenas, who focused on interactions between philanthropic foundations and the historic SJV farmworker movement in the SJV. With this work as its point of departure, this study explores the broader food movement in the SJV. The work of Kohl-Arenas provides both historical context for the SJV and an analytical framework to understand the role of philanthropy in social movements.

Theory of Philanthropy as a Consensus Broker

Kohl-Arenas (2014, 2015a, 2015b, 2017) examined the role of philanthropy in SJV farmworker movements throughout the twentieth century. By bringing together the Gramscian conceptual frames of “discursive power,” “hegemony as politics,” and “strategic articulation,” Kohl-Arenas (2015b, p. 796) posited a framework for analyzing interactions between foundations and social movements (Table 2). Kohl-Arenas (2015b) proposed that the grantmaking process creates “idealized spaces of public participation and discursive theories of change” (p. 796) that build consensus and shift attention away from challenging structural inequality.

Through archival research and ethnography, Kohl-Arenas (2017) found that philanthropic foundations both catalyzed and constrained farmworker organizing by providing financial resources to expand organizing while ultimately delimiting permissible activities. Kohl-Arenas (2014) argues that while

³ The work of Guthman (2008a, 2008b) is a notable exception.

Table 2. Analytical Framework for Understanding the Role of Philanthropy in Grassroots Movements

Discursive power	What assumptions, values, and beliefs are considered “common sense”? What ideas and activities are excluded?
Hegemony as political process	How might hegemony be reproduced through ongoing practices of self-governance? How are power relations negotiated in the process?
Strategic articulation	How do activists negotiate ideas, discourses, programs, and institutions to challenge or maintain the status quo? What strategic compromises are made, and what openings or closures does this create in the dominant frameworks of ideas and practice?

Note. Adapted from Kohl-Arenas, 2015b.

foundations do not always have articulated or clear-cut political agendas to dilute organizing campaigns[,] ... lines [for organizing] are most often drawn at the point at which a nascent organizing campaign directly confronts the economic structures upon which philanthropic wealth is created and maintained. (pp. 494–495)

Through interviewing program officers in grantmaking institutions, Kohl-Arenas (2017) recognized foundation staff as inhabiting a contradictory space of serving as both “brokers of political opportunity” (p. 677) and manufacturers of consent to maintain “unchanged hegemonic institutions” (p. 679). Kohl-Arenas (2017) called on staff in philanthropic foundations to “not only change the script but also join in the movement to reconstruct the stage and the scaffolding that continues to hold it up” (p. 697).

This in-depth investigation led Kohl-Arenas (2015a) to draw similar conclusions as Guthman (2008b), which call into question the governance of social movement activity as potentially undermining imagination beyond the “neoliberal box” (p. 1250). Yet, importantly, Kohl-Arenas (2015a) and Guthman (2008b) observed that philanthropic governance is not blanketly uncontested by grassroots organizations. To move beyond a critique of the ways in which food justice organizations reproduce neoliberal rationalities, we must better understand the philanthropic structures in which they operate and how the boundaries of what is possible are

imagined and negotiated. This study complements the work of Kohl-Arenas, who examined the role of foundation staff in brokering consensus, by focusing on the role of grant recipient organizers.

Research Methods

Sample Selection

Using Google Search to conduct a carefully documented internet search, I first compiled a list of grassroots organizations located in the SJV that (a) work on issues of food justice (in accordance with the framework in Table 1), (b) explicitly state aims of systems change and/or community empowerment, and (c) reference a funder or fiscal sponsor. Organizations that were extensions of organizations outside the SJV were included if they had a physical presence in the SJV (both a locally based office and paid or volunteer staff). In this way, I identified 16 grassroots organizations. To expand my search further, I asked interviewees whether they were aware of other SJV food justice organizations; however, this question did not generate any additions.

To recruit participants, I sent individualized emails to each organization requesting an interview. Fieldwork took place from late May to early June 2019, and 14 staff members from 12 organizations agreed to be interviewed.

Data Collection

Data were gathered using 12 semi-structured key informant interviews.⁴ Interviews followed a guide

⁴I conducted 12 interviews with 14 organizers in total. Two interviews were each conducted with two staff members together. Both of these interviews ran for approximately 1.5 hours, or about 15 minutes longer than the median time (75 minutes).

(Appendix D) to facilitate the emergence of common themes while enabling more fluid conversation (Brinkmann, 2014). For three interviews where in-person meetings were not possible, I conducted interviews via conference call. All interviews were audio-recorded and ranged from 52 minutes to 2 hours in length, generating 917 minutes of audio. I transcribed the audio verbatim using oTranscribe, which resulted in 248 pages of text.

Data Analysis

I thematically analyzed the interview data according to guidelines developed by Braun and Clarke (2006). I coded data in NVivo to identify themes and patterns across responses, and I kept a detailed codebook to document the decisions made throughout the analysis and to facilitate reflexive inquiry. Rather than attempt to fit participants' responses into a

preconstructed framework, I focused on drawing patterns from the data (Boyatzis, 1998). Given my positioning as a former organizer, this open-ended approach was important to attend to patterns I may have otherwise overlooked.

I familiarized myself with the interview data by listening to each audio recording multiple times during transcription and carefully re-reading each transcript. I then developed codes by systematically and iteratively reading through transcripts until I had coded all interviews and generated an initial codebook of 85 codes (Appendix C). I reviewed the coded references to merge or link significantly overlapping concepts, and I examined codes for common threads. I identified two organizing

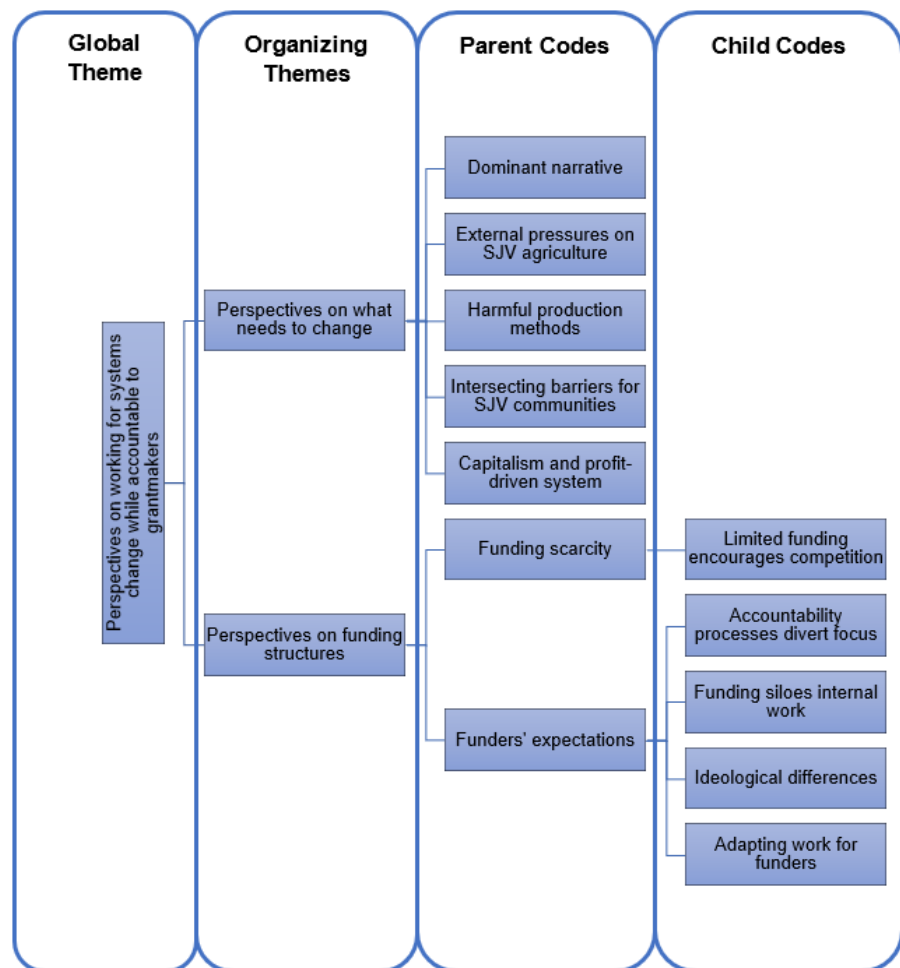
themes to address my research question, with seven parent codes and five child codes (Figure 1).

To explore the role of philanthropy in the SJV food movement, I analyzed these themes using the theoretical framework by Kohl-Arenas (2015b) for understanding the role of philanthropy in social movements (Table 2). To investigate the orientation of the SJV food movement, I drew on these themes when applying the food movement framework (Table 1) by Holt Giménez and Shattuck (2011).

Limitations

Because grassroots organizations were identified using a web-based search, this sample excludes organizations without an online presence. Consequently, the sample may have been skewed away from organizations that are small or very new.

Figure 1. Organizing Themes Identified in Interview Data



Moreover, this study did not include a detailed profile of the organizations' funders and the funding provided to each grantee. While this protects the anonymity of the organizations and the relationships of the grantees with their funders, this information would have further illustrated the funding landscape in the SJV and the activities that grant-makers tend to favor.

Ethics

I followed British Sociological Association guidelines (2017) as well as the U.K. Data Protection Act (2018, c. 12). This research presents two notable ethical considerations given the population of interest: preserving anonymity and minimizing the

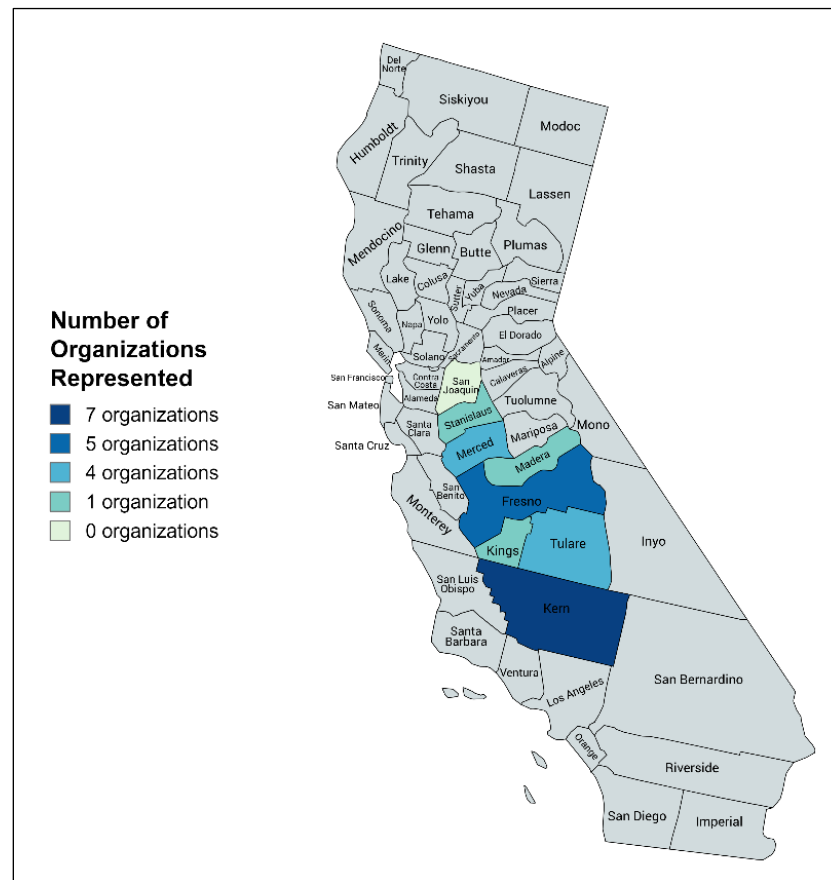
burden placed on interviewees in participating.

Because this research explored organizers' perspectives on their current work, it was critical to maintain confidentiality to avoid compromising their position in their organization or with their organization's funders. In presenting the findings, I have taken care to preserve participants' anonymity, including organizational affiliation.

Additionally, throughout the course of the study, I was keenly aware that organizers are often extremely busy, underpaid, and at risk of burnout. I made sure to meet at a time and place convenient for each interviewee, and I ended each interview on a positive note. The full report and a research brief were shared with all participants.⁵

Figure 2. Distribution of San Joaquin Valley (SJV) Grassroots Organizations Working to Change the Food System, by County (n = 23)

Six of the 16 organizations had multiple sites (see Appendix A).



Map created using MapChart (<https://www.mapchart.net>).

Results

Findings below build a snapshot of the grassroots food justice movement in the San Joaquin Valley. I first offer an overview of grassroots food justice organizations, their activities, and the organizers involved, and then share organizers' views on the problems they are seeking to address and their root causes, as well as their perspectives on remaining accountable to funders while working to change the food system.

Overview of Food Justice Organizations in the SJV

Most of the organizations included in this study are located in four of the eight SJV counties: Kern, Fresno, Merced, and Tulare (Figure 2). Six organizations are based in multiple counties. Three organizations were coalitions with dedicated organizers based in the SJV. Most organizations had fewer than 10 staff. Nine organizations were fiscally sponsored, six were

⁵ For the full thesis and research brief, please contact the author.

incorporated as a 501(c)(3), and one was incorporated as a 501(c)(5). The majority were founded after 2000, and newer organizations were less likely to be incorporated. Many organizations emphasized a range of foci on their websites: The majority emphasized environmental justice, several focused on public health, and a few emphasized social justice (see Appendix A for further summary).

Activities

An overview of the organizations' activities (Figure 3) was compiled by reviewing all 16 organizations' websites and supplementing this with information gleaned through the interviews. Nearly all the organizations participated in policy advocacy; only one focused exclusively on program management. Two organizations primarily advocated for policy change at the state or federal level on specific campaigns (e.g., banning certain pesticide use; implementing a statewide soda tax), often through involvement in regional or statewide coalitions. Many organizations focused on mobilizing community members around various issues, including infrastructure projects, pesticide use, clean air and water programs, healthy food access, and farmworker rights. Three organizations provided legal representation to marginalized communities and individuals, and two worked with unincorporated communities to establish local committees that represent their interests at the county level.

A few organizations had piloted entrepreneurial initiatives to expand access to healthy food, such as mobile produce vending. However, none of these continued beyond the funding period. Three organizations ran gleaning programs (one exclusively), which facilitated the transfer of food that would be wasted by institutions and farmers to others who might use it

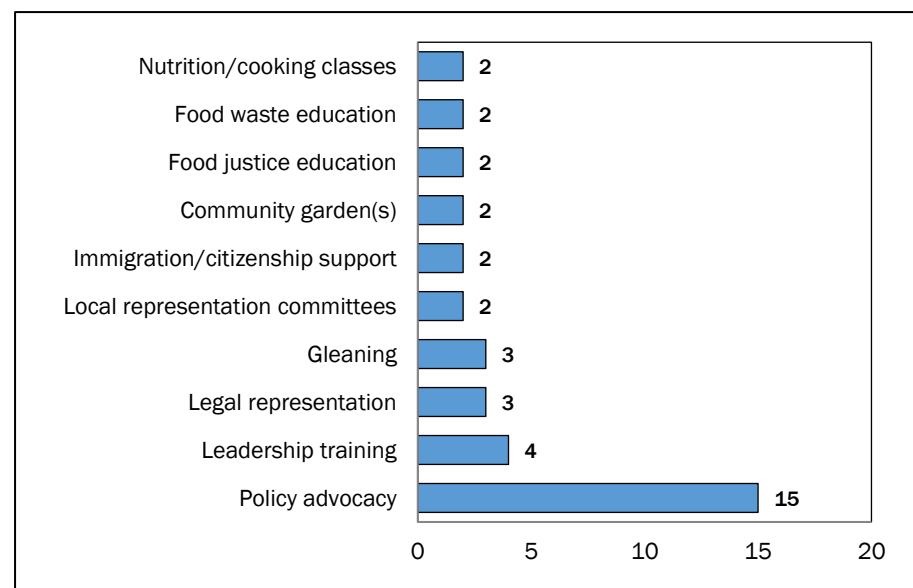
(often low-income community members). One organization was starting a community garden, while another had established multiple community gardens and was in the process of starting a permaculture farm. Several organizations facilitated workshops on nutrition, cooking, or reducing food waste.

The three coalitions coordinated efforts across member organizations. All three were involved in organizing conferences to convene members, as well as raising awareness of potential avenues to influence state and federal policy. Two focused on environmental justice, and one focused on sustainable agriculture. One coalition was beginning to coalesce efforts to start an agroecology center. Each coalition had community organizers involved in local campaigns in conjunction with member organizations, such as monitoring air pollution and holding community workshops on food justice.

Characteristics of Participants

Participants worked in a range of capacities in their organizations, and several worked with multiple organizations (e.g., one participant directed an organization and also spearheaded a regional coalition). In smaller organizations, organizers also held administrative roles. For larger organizations, organizers held a distinct, non-administrative role. All received payment for their work, and the

Figure 3. Activities of Grassroots Organizations (n = 16)



majority of participants were full-time organizers.⁶ All but three participants were originally from the SJV. When asked about their motivations for working as an organizer, participants mentioned their passion for the cause, their strong bond with their communities, and finding the relational work extremely fulfilling. Several organizers mentioned having farmworker parents or relatives, and a few organizers had worked in the SJV fields themselves. They described being influenced by witnessing the injustices their farmworker parents faced while growing up; a few also mentioned being influenced by the political activism of their parents during the heyday of the farmworker movement and beyond.

Perspectives on What Needs to Change

In discussing the problems in the SJV, several recurring themes arose: a dominant narrative around SJV agriculture that ignores structural inequality; external pressures on the SJV agriculture industry; harmful methods of agricultural production; intersecting systemic barriers oppressing communities; and capitalism and a profit-driven food system. These are explored in turn below.

Dominant Narrative Ignores Structural Inequality

The majority of organizers referred to the paradox of California's wealth and agricultural abundance coinciding with poverty and food insecurity. Several organizers pointed to a dominant narrative in the SJV that industrial agriculture feeds the world, which they directly challenged:

Because there's that narrative that's not true, that oh, we're the breadbasket and we feed the world, or we feed our country. We have a lot of crops here. But we're not feeding; we import a lot, right? You can't just blanket that just because you're concentrated on ag. Not everybody eats almonds. Like, almonds are sucking up all the damn water. Like, you have so many monocrops growing here. You're not

feeding the world with just one type of crop, right? So, it's that mindset of how we're feeding the world, and my job and my livelihood depends on ag, there can't be any other way. (ID.1)⁷

The phrase "we feed the world" and "my job depends on ag" came up repeatedly in references to the conservative SJV context. One participant explained,

"My job depends on ag" was a recent, ongoing marketing campaign that could be seen across the SJV on bumper stickers and yard signs, and was . . . started by a couple of local people. . . . Farmers. And then one teenager, this teenager just graduated from some local high school and now goes to [local community college] to study ag or something. So, they're also pro-conventional ag. Very conservative. And basically, it's a marketing campaign to talk about how everything you do, touch, whatever, involves ag. (ID.2)

This dominant narrative suggests that there is no better alternative to industrial agriculture, which organizers argued masks the reality of widespread poverty and hunger experienced in communities affected by this industry.

External Pressures on the SJV Agriculture Industry

One organizer was particularly concerned with helping farmers become more profitable in the global market to improve the wages and working conditions of SJV farmworkers. This participant explained that industrial farmers are

. . . being squeezed from the top pushing down, driving—you know, the Walmarts—they're pushing the price down. And the grower's like hey, I've got less to do with—you know, how do I provide my workers a fair wage if I can't myself produce a product at the

⁶ While all organizers received some payment for their work, not all received full salaries. A few indicated that they voluntarily worked far beyond a 40-hour work week without overtime pay, and a few organizers sometimes received stipends for projects, rather than drawing full wages.

⁷ See Appendix B for a full list of participant ID codes, with detail on their respective organization.

rates that I'm being asked to? And then with globalization coming from Mexico, coming from Chile, all driven by the U.S. consumer. 'Cause the U.S. consumer wants their product yesterday. They want it nice. They want it pretty. They want it big. (ID.3)

This participant expressed concern primarily over rapid shifts in agricultural production toward mechanized labor and an increasingly competitive market. The main problem their organization sought to address was a lack of recognition of farm labor as a skilled profession. From the perspective of this organizer, the focus needs to be on

the entire supply chain, we have to be looking at the entire—and how one piece impacts the other. We have to figure out how to create these [farmworker] jobs. Again, as a profession. And growers have to compete. Just like any other industry. (ID.3)

Production Methods Cause Harm

From the perspective of the majority of organizers, the production methods of SJV industrial agriculture were problematic. Many organizers were involved in campaigns to regulate pesticide drift, which pollutes the water and air across the SJV and particularly affects low-income communities of color. Several organizers experienced the effects of pesticide drift personally. One organizer shared,

We hear it like, constantly, oh, she died of cancer, oh she needs a liver transp[lant]—like things that you would never imagine from years before are happening now. And for us, it's that correlation that we live near a field. We're exposed to a lot of these chemicals. (ID.11)

This was echoed by another organizer in another part of the SJV, who observed, "... so many people that have passed away from cancer, respiratory illnesses, in our town. ... It's bad for how very [few] people we have" (ID.14).

Although organizers were working to regulate the existing agriculture industry, many also described conventional growing practices as unsus-

tainable because they degrade the environment, contribute to climate change, and negatively impact communities. One organizer explained that for their coalition,

some of the key convening points were a shared analysis of how our dominant industrial agricultural model in the San Joaquin Valley touched on all of the issue areas that they work on with communities in the Valley, so whether their focus was on water, or air quality, or pesticides. All of it, like the root causes of those different environmental injustices were tied back to our food and farming system. Both as a root challenge, but where change needed to be happening. (ID.7)

Intersecting Problems Tied to SJV Food System

Repeatedly, participants emphasized the interconnectedness of issues in the SJV, many of which were linked to the predominance of the agriculture industry in the region. A couple of organizers stated that the food system encompassed multiple intersecting issues, and they use the food system as a lens to address different problems in the community. As one organizer stated,

We know that people can't think about growing their own food if they're having to work 16-hour days just to pay for their rent. So, we need to look at affordable housing. We know that we can't talk about them growing their own food and having a local food economy if there's no land for them to plant on. Right? If all the big farmers are owning all the land around them, then there's no way that that system is gonna change. So, we're looking at it as a much more holistic idea of how food justice is intertwined with pesticide use and health outcomes from that. Affordable housing, land use, water use, like all of that stuff. We're looking at all of it together and how we can combine all of that stuff and really make it part of a larger idea of just organizing our communities in general. (ID.4)

A few participants also highlighted barriers to participation for marginalized communities, partic-

ularly undocumented immigrants at risk of deportation, and residents living in poverty without the time or energy to engage in long-term advocacy work. Many of the communities the organizers engaged with were small and unincorporated. Lacking basic infrastructure such as sidewalks and traffic lights, many unincorporated communities also lack access to affordable, healthy food. Residents in these communities rely on mini-markets for groceries, which offer an extremely limited selection of food at a premium cost. One participant described that they

... have three little mom and pop stores, and they sell the basics, but if you run out of milk and you have to go there, it's really expensive. You're paying six bucks for a gallon of milk, and then you have to check expiration dates because they do sell, frequently they sell, expired food. (ID.5)

The nearest grocery store is typically miles away and requires time, personal transportation, and money for fuel to access. In this particular community, the nearest full-service grocery store was 35 miles away.

Only a few organizers brought up racism as a core issue in the SJV, even though the majority worked primarily in communities of color. It is possible the reality of racism in the SJV was broadly assumed. One organizer stated,

And then the last thing I'll add, which I realized I don't always say, but I feel like for who I'm in dialogue with, it usually goes without saying is that, part of when we're saying power and inequities—I know equity can be kind of a buzzword, especially lately—but racial equity specifically, and like, recognizing environmental racism and just racism broadly in the Valley as part of that. What we see, and who is most impacted when we're talking about most impacted communities. Who that is. So, just to add that. It's inherent to the way that we think about our work and who we work with and who we are, but it might be worth saying out loud. (ID.7)

Root Causes: Capitalism and the Profit Motive

Participants were asked why they thought the problems in the SJV existed. Most referred to a fundamentally broken system, capitalism, or a drive for profit. For instance, the following response problematizes the commodification of food and the profit incentive for intensive agriculture:

I mean, definitely just capitalism itself. Like, you cannot commodify a necessity. You know, it's like everybody has to eat. Healthy, nutritious, affordable food is a human right. And so, when we limit that access by commodifying it and making it profitable to grow monoculturally. Like, there's no way that we're ever going to get food justice until, like I said, we think holistically and we think about it economically as well. Right? So, if a community has control over their food system, we know that it's more resilient, that it fights climate change, it fights poverty. Like all of those things work together. But of course, that's not the way that Big Ag wants to do their business. (ID.4)

Another organizer echoed a similar sentiment, also highlighting the concentration of land ownership:

I really think it's because a very small number of people own the land ... The way we grow food has changed completely because it's now a business. It's really industrial business. It's not—you know, before, when you were a farmer, you owned your property, you worked in the property. You were the one that worried about the pests, took care of your trees, took care of irrigation, did everything. And now, there's farmers where they own the land, but they don't even live there. ... It's [the work is] contracted. ... The whole thing is just so industrial. And so, the goal is not to feed community. It's just to make money the cheapest way possible. (ID.1)

Another organizer more broadly asserted that capitalism is at the root of many issues in the SJV:

... this is big and complicated and complex and can be argued from so many different angles, but the bottom line, and I truly believe this, is that the system of capitalism, which requires growth, which is really not a system that is meant to be sustainable, that it kind of, that the whole thing is based upon things growing and using up resources and not necessarily putting prices on externalities. ... There's just these huge, uneven power dynamics in our society, which are usually based around the economic system, you know. Definitely a root cause of a lot of these issues. (ID.6)

Having outlined the perspective of organizers on problems in the SJV, I now turn to examine organizers' perspectives on addressing these problems within current funding structures.

Perspectives on Remaining Accountable to Grantmakers

The key themes around funding related to funding scarcity and funders' expectations. These are examined in turn below.

Scarcity of Funding for SJV Communities

When discussing funding availability, organizers described both a scarcity of funding for the SJV in general, and a scarcity of funding for the priorities of SJV communities in particular. A few SJV organizers explained that most funding is directed toward urban centers in California (particularly Los Angeles, Sacramento, and the Bay Area).

Finding resources to sustain organizations' overhead and increase the accessibility of community meetings can especially be a challenge. One organizer explained,

We need to be able to have meaningful relationships and build that trust with folks. And through that, it doesn't happen overnight. We have to have ongoing meetings; we have to be providing food and childcare and translations and all these services. And oftentimes those types of things are things that, you know, the first things that [funders] wanna cut. (ID.8)

Yet, funders are more likely to fund new pro-

jects with tangible results. Another participant stated,

If you're looking at funding for a program, it's only going to last a year or two. And then, again, how do we sustain it? How do we make sure to build sustainability into that program? And so, yeah, funders are looking for outcomes and for accountability within that one or two years, but that's not how it's going to work. We know that this a long haul. (ID.4)

The majority of participants expressed a similar sentiment and emphasized that the work they do centers on building ongoing relationships in the community, and the vision for enacting systemic change must be long-term.

Limited Funding Encourages Competition Between Organizations

Although all grassroots organizations partnered with other community groups in some form, several organizations indicated it was challenging having to compete for limited funds. Sometimes larger organizations would secure large federal or foundation grants and subcontract some of the work to smaller organizations. However, this can raise contention over ownership of the work and the distribution of funds. For example, one organizer noted,

we were part of a coalition for many years. And we were getting grants through them, but in their reporting, they never mentioned us. And, um, the foundation that was giving us money, I had met with them, and they were like, well we don't even know who your organization is. I'm like, wait a minute, you've been giving me a grant for like the last 10 years! How do you not know who I am? And I had that discussion with a foundation about, well, because others are taking the credit for your work. ... We've had to talk about it internally. How do we change that? How do we take ownership of our work without hurting our relationship with community members? (ID.1)

Another shared that they "learned a long time

ago that not all funding, not all money is good money.... [A partner will] get [US]\$300,000 a year and they give us maybe less than [US]\$10,000. We can't do that" (ID.12).

Accountability Requirements Divert Resources from Organizing

When organizations secure funding, grants may come with time-consuming accountability processes that tie organizers up in bureaucracy and detract from organizing. "Like you have to get other funding to do what you said you're going to do because all the money they give you is spent reporting on what you want to do" (ID.9). For instance, a few organizers mentioned that public health agencies secure large federal grants, which may be divided into smaller grants for organizers. However, the reporting burden tends to be high and the reimbursement process lengthy, which sometimes makes smaller grants "not even worth it" (ID.9). Ultimately, one organizer said, "there's gonna have to come a time where funders think differently about how their funds are being used and how they're holding organizations accountable and what their expectations are" (ID.4).

Piecemeal Funding Siloes Work

A particularly striking theme that arose was how funding may silo work within organizations. Because organizations may have different funding sources for various projects, funding streams are expected to remain separate. This means organizations are unable to leverage coinciding programming, even if the programs are complementary.

This was clearly illustrated through a small, fiscally sponsored organization that both ran a nutrition education program and promoted agroecology; however, these activities were kept strictly bounded. This organizer shared, "there's limits that you can do. I mean, my biggest frustration personally is always with the nutrition piece, because I'm like, it's [the agroecology work is] such an easy link" (ID.9). They later added that they wanted to "use those [nutrition workshops] as jumping off points, but it is a bit frustrating that there are so many strict black and white lines within that when it's like, this is the perfect opportunity to have this conversation" (ID.9).

Another organizer explained that although a foundation funds them "to do leadership development training, resident empowerment, and then the policy work" to reduce carbon emissions at the state level and safe routes to school "because that's their [the funder's] focus," they need to "find additional grants that will help support what the residents' goals are" (ID.12).

Ideological Differences Between Funders and Organizations

Private funders in the SJV seem to be more ideologically conservative in what they will fund. A few organizers described having to code-switch (e.g., focusing on alleviating hunger instead of talking about systemic change) when communicating with the funder. On the other hand, another organizer expressed discomfort at being encouraged by a funder from outside the SJV to take an antagonistic approach in making demands of elected officials:

[Our foundation officer] goes, well, maybe [your organization] isn't the right organization to take the lead on the work. [I] said maybe you're right. Maybe you're right. Maybe it is somebody else to take the lead on this work because they wanted us to be those kind of—excuse my language—"fuck the police" approaches. We weren't raised that way. I wasn't raised that way, and I refuse. Refuse. If we can't build true, genuine partnership with our parents and school systems and city government, then it's not us. We have to change those systems and put people there that are responsive to people's needs. But I'm not going to disrespect anybody. (ID.12)

However, not all funders may be ideologically invested in supporting the success of funded projects. One organizer mentioned that "unfortunately, 90-some philanthropic communities just want to say, here's my money, give me my tax write-off" (ID.1). Of those who are invested, not all may understand or support the priorities of SJV communities. This organizer continued on to say,

... [funders] trying to find those that are truly effective for not just the purpose of the money

portion, but true change, and those are the ones that I'm saying who want to see the change, are really the ones who need to be invited to ground-level type of events. So there's a better understanding. 'Cause right now, I don't think the understanding is where it needs to be. (ID.1)

Consequently, organizers mediate between communities and philanthropic foundations, in addition to advocating within communities to change the food system.

Adapting to Funding Constraints

A couple of organizers stated that they may skip funding opportunities to remain autonomous and focus on community priorities. In the words of one organizer, "the heart of our work is leadership development work with community residents. I don't guide the work. They guide the work. My job is to support the project that they select" (ID.12). Yet, participants also described how the availability of funding shapes their work. For instance, one organization had shifted its focus from social justice toward environmental justice because of funding availability. Another had adapted by narrowing its focus to service provision:

We really made a shift from advocacy and policy work to community-based organization and results. It was really, I mean, you can obviously see results with policy. You know, if you get policy change. But as you know, that's years of work. To go to the funders side of the conversation that you brought up, that is a lot harder to get funded than people want to see, where is my dollar going. Dollar for dollar ... we have it like an equation now where we can go and sell it. And people wanna invest in it, and funders wanna invest in it. (ID.10)

One organizer was exploring how to convince funders to offer grants based on community priorities. This organizer was in the process of developing "a menu for [funders] to decide what they want to do," which would show different components of the organization's operations (ID.1). Although a few organizers emphasized that they avoided initi-

ating projects solely to maintain operations, the community priorities that they do pursue are clearly shaped by funding availability.

Despite the challenges of working within funding structures, organizers expressed optimism about the potential to transform the SJV. Several indicated that the number of funders interested in the SJV is increasing. Many organizers were hopeful of creating healthy communities with thriving local economies, representative democracies, and access to affordable, ethically grown food.

Discussion

From their perspectives in working in marginalized, food insecure SJV communities, many organizers sharply critiqued the dominant narrative that the agriculture industry feeds the world and identified the root causes of the problems their communities are facing as embedded in the current food system. However, although organizations' activities primarily focused on addressing the negative effects of industrial agriculture, they often stopped short of directly addressing or even making explicit these root causes. Many organizers emphasized the importance of work being community-driven. Yet, the organizing agenda, campaigns, and project lifespans are shaped by the funding available, and the narratives and boundaries of this work are often delimited by funders. These findings correspond with Kohl-Arenas's (2015b) findings that funders "broker consensus" with the neoliberal status quo through channeling and constraining grassroots organizing away from explicitly challenging and addressing the root causes of the problems that SJV communities face. However, some organizers recognized this contradiction and were seeking ways to contest this by educating and influencing funders.

How Are Grant-Funded Grassroots Organizations Working for Food Justice and Systems Change in the SJV?

Organizations' activities were largely directed toward engaging residents to advocate on behalf of their own communities and create policy changes, without directly confronting the agriculture industry. However, the primary activities of SJV organizations concentrate on addressing problems caused

by the agriculture industry. Nearly all organizations focused on policy advocacy to increase regulations on industrial agriculture and/or expand social services to increase access to healthy food. It is important to note that policy advocacy is often directed at changing state policy rather than local policy. This points to a fundamental power imbalance in the SJV that came up in interviews repeatedly: Elected officials are often conservative and, according to many interviewees, more likely to represent industry interests. Moreover, many SJV communities are unincorporated, and many residents lack citizenship documentation and elected representation. However, the activities of grass-roots organizations appear to center on creating localized changes with residents, rather than challenging industrial power. While these activities are beneficial, they may divert resources away from challenging economic and political power and reproduce a hegemonic narrative emphasizing individual responsibility rather than structural disparities, as Kohl-Arenas (2015a) also found.

I found a wide heterogeneity of food justice efforts across the 16 SJV organizations identified. As Holt Giménez and Shattuck (2011) argued, the SJV food justice movement reflected tensions between a neoliberal or market reform stance and a radical food sovereignty position. While most organizations focused on policy advocacy and community organized projects, a few organizations had adopted a narrower focus to work with the agriculture industry. One organization promoted labor rights by mediating between farmworkers and farm owners. While advocating for farmworkers, this organization was concerned with keeping industrial agriculture competitive in an increasingly globalized market. By increasing profits for growers, they might convince farmers to improve work conditions for laborers. However, this approach does not challenge the power imbalance between workers and farm owners. Two organizations collaborated across sectors, including with industrial agriculture and corporate food retailers, to capture and redistribute otherwise wasted food. Yet, these organizations did not appear to challenge the system of agricultural subsidies and food overproduction, the harm caused to workers and the environment in food produc-

tion, and the quality of food made available.

Few organizations were creating alternative food initiatives (which seems to be a greater focus in urban areas; e.g., Allen et al., 2003). The two organizations involved in community gardens emphasized the gardens' social benefits, and the food produced was intended to supplement (rather than supplant) industrially grown foods. Notably, the permaculture farm and agroecology center were developing almost simultaneously, but with different approaches. The agroecology center was a multi-organization collaboration to build a viable economic alternative to industrial agriculture, whereas the permaculture farm appeared to be oriented toward promoting health and entrepreneurship. While neither initiative directly confronts industrial agriculture, the initiative to build an agroecology center reflects a stronger critique of the dominant food system and greater alignment with a food sovereignty orientation.

What Are the Perspectives of Organizers on Working for Food Justice and Systems Change in the SJV While Remaining Accountable to Grantmakers?

The majority of organizers viewed current economic and political structures that incentivize the pursuit of profit and concentrate power and wealth as a root cause of issues in the SJV. However, it became clear that while funding was viewed as necessary to sustain organizing, grants fundamentally constrained organizing away from building a strong social movement. Despite a commonly shared aim to be community-driven, priorities were shaped by funding availability and organized in accordance with the timelines and demands set by grantmakers. Several organizers asserted that to address structural inequality, the expectations and accountability procedures of funders must change.

Although organizers may decline funding opportunities that do not align with (or detract from) community priorities, organizers more frequently described having to stretch to align grant objectives with ongoing work in the community. Scarcity of resources, combined with the structural constraints imposed by philanthropic governance, result in organizers adapting their work based on the demands of funders. These demands may be

negotiated, as illustrated by the innovative organizer developing a funding “menu” for grantmakers. Yet, the negotiating power primarily rests in the hands of wealthy benefactors determining the distribution of resources. While organizers work in communities to address systemic failings of the dominant food system, they are caught between the communities they serve and the U.S. philanthropic apparatus.

These findings further support the claim by Guthman (2008b) and Kohl-Arenas (2015b) that philanthropic governance diverts organizing efforts away from challenging power. Just as Kohl-Arenas (2015b) found, organizations’ activities and how they are framed most often excluded “explicit antagonisms and questions of structural inequality unspeakable to those in power” (p. 812), even though organizers often personally held a more explicit critique of the root causes of problems in the SJV. This is further reflected in practice through organizers’ adapting their priorities and the framing of their work to secure much-needed resources and support from those in power. By focusing activities on addressing problems caused by the agricultural industry rather than making explicit and confronting the root causes, philanthropy generates consensus to maintain the status quo. However, organizers are strategically contesting this through collaborating with each other and advocating for funders to shift their funding priorities and practices.

Recommendations

These findings could be used to advance critical conversation in the SJV food justice movement about working within philanthropic structures to address the structural oppression of SJV communities. Grassroots organizations seeking to rebalance some of the power that funders hold may also learn from the examples offered by SJV organizers. Rather than trying to fit a community’s need into prescribed funding bids, organizations might try developing a funding ‘menu’ of projects based on residents’ priorities, along with descriptions and

costs, to approach funders. To build stronger regional networks, organizations might also ask funders what other organizations and projects they are funding, and to request opportunities for organizations to convene and learn from each other. Organizations might further collaborate to create a shared document explaining their aims and priorities, and the gaps and challenges collectively identified, to educate funders about the need in the region.

Funders could proactively shift grantmaking policies to better support grassroots organizations, rather than waiting for organizers to advocate for change. Funders might make more sustained core funding available and make the funding process less administratively cumbersome.⁸ Moving toward a participatory grantmaking model, in which communities shape funding allocation and governance, may help rebalance power and better align resource distribution with community priorities.⁹

This exploratory study contributes insight into the food justice movement in a rural setting; further study into other rural regions in the U.S. could allow for a comparative analysis to understand the barriers and opportunities for change in rural areas. Follow-up research might explore whether philanthropic trends in the SJV are changing in response to the needs expressed by organizers. Additional study of how food justice organizations are working to change the same political and economic system upon which they rely would also offer greater insight into how organizers, funders, and allies might challenge the dominant narrative and build a strong movement for structural change.

Conclusion

This study explored the perspectives of organizers for food justice in a rural region dominated by industrial agriculture, with a particular focus on the influence of grant funding. Findings demonstrate that funding plays a critical role in influencing the aims, activities, and narrative of the food justice movement. I have argued that organizers’ efforts to fundamentally change the food system are diverted

⁸ See Soul Fire Farm’s (n.d.) Equity Guidelines for Donors and Foundations.

⁹ For further examples and resources, see Equal Measure’s (2021) *Equitable Food-Orientated Development: The origin story*; Gibson’s (Oct 2017) *Participatory Grantmaking: Has its time come?*; and Participatory Grantmakers’ (n.d.) *Participatory Grantmaking* 101.

by their reliance on grant funding, and many organizers suggest that funding structures must change to address systemic inequality. However, despite the many challenges faced, organizers sometimes contest this power imbalance in creative and collaborative ways. These findings complement what Kohl-Arenas (2015b) found in interviews with SJV philanthropic program officers, with SJV grassroots organizers also caught between negotiating the demands and contradictions of working with funders while seeking to address the fundamental inequalities they and their communities experience.

This research offers a snapshot of organizing for food justice in the SJV, which can inform organizing work in the region while also contributing toward filling a gap in the literature on organizing for food justice in rural areas. Through bring-

ing together critical philanthropy scholarship with critical food studies, this study may deepen the understanding of the complexities, challenges, and opportunities in working for food justice. To change the dominant food system, greater attention must be paid to the philanthropic structures under which the food justice movement operates. 

Acknowledgments

This research would not have been possible without the ongoing work of the community organizers across the San Joaquin Valley. Thank you for generously sharing your dedication and passion. Thank you also to Sandy Oliver for supportive, patient supervision and thoughtful feedback, and many thanks to Kate Hinds for encouragement and guidance throughout the initial stages of this study.

References

- Alkon, A. H. (2017). Food justice: An environmental approach to food and agriculture. In R. Holifield, J. Chakraborty & G. Walker (Eds.), *The Routledge handbook of environmental justice* (pp. 412–424). Routledge.
<https://doi.org/10.4324/9781315678986>
- Alkon, A. H., & Agyeman, J. (2011). Introduction: The food movement as polyculture. In A. H. Alkon & J. Agyeman (Eds.), *Cultivating food justice: Race, class and sustainability* (pp. 1–20). The MIT Press.
<https://doi.org/10.7551/mitpress/8922.003.0003>
- Alkon, A. H., & Guthman, J. (2017). Introduction. In A. H. Alkon & J. Guthman (Eds.), *New food activism: Opposition, cooperation, and collective action* (pp. 1–27). University of California Press.
- Allen, P., FitzSimmons, M., Goodman, M., & Warner, K. (2003). Shifting plates in the agrifood landscape: The tectonics of alternative agrifood initiatives in California. *Journal of Rural Studies*, 19(1), 61–75.
[https://doi.org/10.1016/S0743-0167\(02\)00047-5](https://doi.org/10.1016/S0743-0167(02)00047-5)
- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. SAGE.
- Bradley, K., & Herrera, H. (2015). Decolonizing food justice: Naming, resisting, and researching colonizing forces in the movement. *Antipode*, 48(1), 97–114. <https://doi.org/10.1111/anti.12165>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
<https://doi.org/10.1191/1478088706qp063oa>
- Brinkmann, S. (2014). Interview. In T. Teo (Ed.), *Encyclopedia of Critical Psychology* (pp. 1008–1010). Springer.
https://doi.org/10.1007/978-1-4614-5583-7_161
- British Sociological Association. (2017). *Statement of ethical practice*.
https://www.britisoc.co.uk/media/24310/bsa_statement_of_ethical_practice.pdf
- Buchholz, K. (2023, August 7). *Which states are contributing the most to U.S. GDP?* Statista.
<https://www.statista.com/chart/9358/us-gdp-by-state-and-region/>
- Cadieux, K. V., & Slocum, R. (2015). What does it mean to do food justice? *Journal of Political Ecology*, 22(1), 1–26.
<https://doi.org/10.2458/v22i1.21076>
- Credit Suisse. (2022). *The global wealth report 2022*. Retrieved April 28, 2024, from
<https://www.credit-suisse.com/about-us/en/reports-research/global-wealth-report.html>
- Data Protection Act. (2018, c. 12). Retrieved June 29, 2024, from
<https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted>
- de Waal, A. (2018). *Mass starvation: The history and future of famine*. Polity. <https://doi.org/10.4324/9780203486863-8>

- Dowie, M. (2001). *American foundations: An investigative history*. MIT Press. <https://doi.org/10.7551/mitpress/1229.001.0001>
- Equal Measure. (2021). *Equitable Food-Orientated Development: The origin story*. https://efod.org/wp-content/uploads/2022/04/EFOD-Origin-Story_FINAL_May-2021.pdf
- Fairbairn, M. (2012). Framing transformation: The counter-hegemonic potential of food sovereignty in the US context. *Agriculture and Human Values*, 29, 217–230. <https://doi.org/10.1007/s10460-011-9334-x>
- Finley, L. L., & Esposito, L. (2012). Neoliberalism and the non-profit industrial complex: The limits of a market approach to service delivery. *Peace Studies Journal*, 5(3), 4–26. <http://peacestudiesjournal.org/wp-content/uploads/2015/01/PSJ-Vol-5-Issue-3-2012.pdf>
- Fisher, R., & DeFilippis, J. (2015). Community organizing in the United States. *Community Development Journal*, 50(3), 363–379. <https://doi.org/10.1093/cdj/bsv016>
- Ganesh, C., & Smith, J. A. (2018). Climate change, public health, and policy: A California case study. *American Journal of Public Health*, 108(S2), S114–S119. <https://doi.org/10.2105/AJPH.2017.304047>
- Gibson, C. (2017). *Participatory grantmaking: Has its time come?* The Ford Foundation. Retrieved June 30, 2024, from https://www.fordfoundation.org/wp-content/uploads/2017/11/participatory_grantmaking-lmv7.pdf
- GRAIN. (2014, May 28). *Hungry for land: Small farmers feed the world with less than a quarter of all farmland*. <https://www.grain.org/article/entries/4929-hungry-for-land-small-farmers-feed-the-world-with-less-than-a-quarter-of-all-farmland>
- Guthman, J. (2008a). Neoliberalism and the making of food politics in California. *Geoforum*, 39(3), 1171–1183. <https://doi.org/10.1016/j.geoforum.2006.09.002>
- Guthman, J. (2008b). Thinking inside the neoliberal box: The micro-politics of agro-food philanthropy. *Geoforum*, 39(3), 1241–1253. <https://doi.org/10.1016/j.geoforum.2006.09.001>
- Guzman, G. G. (2018). *Household income: 2017* [Report No. ACSBR/17-01]. <https://www.census.gov/content/dam/Census/library/publications/2018/acs/acsbr17-01.pdf>
- Heinrich Böll Foundation, Rosa Luxemburg Foundation, & Friends of the Earth Europe. (2017). *Agrifood Atlas—Facts and figures about the corporations that control what we eat*. Heinrich Böll Stiftung. <https://www.boell.de/en/2017/10/26/agrifood-atlas-facts-and-figures-about-corporations-control-what-we-eat>
- Herman, A., Goodman, M. K., & Sage, C. (2018). Six questions for food justice. *Local Environment*, 23(11), 1075–1089. <https://doi.org/10.1080/13549839.2018.1532401>
- Hislop, R. S. (2014). *Reaping equity: A survey of food justice organizations in the U.S.A.* (Publication No. 1590830) [Master's thesis, University of California, Davis]. ProQuest Dissertations & Theses. <https://www.proquest.com/dissertations-theses/reaping-equity-survey-food-justice-organizations/docview/1695282787/se-2>
- Holt Giménez, E., & Shattuck, A. (2011). Food crises, food regimes and food movements: Rumblings of reform or tides of transformation? *The Journal of Peasant Studies*, 38(1), 109–144. <https://doi.org/10.1080/03066150.2010.538578>
- INCITE! (n.d.). *Beyond the non-profit industrial complex*. Retrieved April 28, 2024, from <https://incite-national.org/beyond-the-non-profit-industrial-complex/>
- INCITE! Women of Color Against Violence (Eds.). (2007). *The revolution will not be funded: Beyond the non-profit industrial complex*. South End Press.
- Intergovernmental Panel on Climate Change [IPCC]. (2007). Climate change 2007: Synthesis report. In Core Writing Team, R. K. Pachauri & A. Reisinger (Eds.), *Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. <https://www.ipcc.ch/report/ar4/syr/>
- IPCC. (2023). AR6 Synthesis report: Climate change 2023. In Core Writing Team, H. Lee & J. Romero (Eds.), *Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. <https://doi.org/10.59327/IPCC/AR6-9789291691647>
- International Labour Organization. (2003). *Background paper: Decent work in agriculture*. Prepared for the International Workers' Symposium on Decent Work in Agriculture, 15–18 September, Geneva, Switzerland. http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_161567.pdf

- Kohl-Arenas, E. (2014). Will the revolution be funded? Resource mobilization and the California Farm Worker Movement. *Social Movement Studies*, 13(4), 482–498. <https://doi.org/10.1080/14742837.2013.863727>
- Kohl-Arenas, E. (2015a). *The self-help myth: How philanthropy fails to alleviate poverty*. University of California Press.
- Kohl-Arenas, E. (2015b). The self-help myth: Towards a theory of philanthropy as consensus broker. *The American Journal of Economics and Sociology*, 74(4), 796–825. <https://doi.org/10.1111/ajes.12114>
- Kohl-Arenas, E. (2017). The presentation of self in philanthropic life: The political negotiations of the foundation program officer. *Antipode*, 49(3), 677–700. <https://doi.org/10.1111/anti.12304>
- La Via Campesina. (2007). *Declaration of Nyéléni*. <https://nyeleni.org/en/declaration-of-nyeleni/>
- Lang, T., & Heasman, M. (2015). *Food wars: The global battle for mouths, minds, and markets* (2nd ed.). Routledge. <https://doi.org/10.4324/9781315754116>
- Mares, T. M., & Alkon, A. H. (2011). Mapping the food movement: Addressing inequality and neoliberalism. *Environment and Society*, 2(1), 68–86. <https://doi.org/10.3167/ares.2011.020105>
- McClintock, N. (2014). Radical, reformist, and garden-variety neoliberal: Coming to terms with urban agriculture's contradictions. *Local Environment*, 19(2), 147–171. <https://doi.org/10.1080/13549839.2012.752797>
- McClintock, N., & Simpson, M. (2017). Stacking functions: Identifying motivational frames guiding urban agriculture organizations and businesses in the United States and Canada. *Agriculture and Human Values*, 35, 19–39. <https://doi.org/10.1007/s10460-017-9784-x>
- McEntee, J. C. (2011). Realizing rural food justice: Divergent locals in the northeastern United States. In A. H. Alkon & J. Agyeman (Eds.), *Cultivating food justice: Race, class and sustainability* (pp. 239–259). MIT Press. <https://doi.org/10.7551/mitpress/8922.003.0016>
- Oakes, B. (2019). *Grassroots organising for food systems change in the San Joaquin Valley* [Unpublished master's thesis]. University College London.
- Ostrander, S.A. (2005). Legacy and promise for social justice funding: Charitable foundations and progressive social movements, past and present. In D. R. Faber & D. McCarthy (Eds.), *Foundations for social change: Critical perspectives on philanthropy and popular movements* (pp. 33–60). Rowman & Littlefield.
- Participatory Grantmakers. (n.d.). *Participatory Grantmaking 101*. Retrieved June 30, 2024, from <https://www.participatorygrantmaking.org/resources>
- Peck, J., & Tickell, A. (2002). Neoliberalizing space. *Antipode*, 34(3), 380–404. <https://doi.org/10.1111/1467-8330.00247>
- Pudup, M. B. (2008). It takes a garden: Cultivating citizen-subjects in organized garden projects. *Geoforum*, 39(3), 1228–1240. <https://doi.org/10.1016/j.geoforum.2007.06.012>
- Rowe, J. (2016, July 6). *Food justice definitions*. Retrieved June 30, 2024, from <https://tilth.org/stories/food-justice-definitions/>
- Sen, A. (1981). *Poverty and famines: An essay on entitlement and deprivation*. Clarendon Press.
- Shrider, E. A., & Creamer, J. (2023). *Poverty in the United States: 2022*. U.S. Census Bureau. <https://www.census.gov/content/dam/Census/library/publications/2023/demo/p60-280.pdf>
- Skocpol, T. (2016). Why political scientists should study organized philanthropy. *PS: Political Science & Politics*, 49(3), 433–436.
- Smith, D. H. (1997). The rest of the nonprofit sector: Grassroots associations as the dark matter ignored in prevailing “flat earth” maps of the sector. *Nonprofit and Voluntary Sector Quarterly*, 26(2), 114–131. <https://doi.org/10.1177/0899764097262002>
- Soul Fire Farm. (n.d.). *Equity guidelines for donors and funders*. Retrieved April 28, 2024, from <https://docs.google.com/document/d/1UU4JlR596m5r8Ai8q2CgbngXg4GNVkJALAcEjGbf5y2w/edit>
- U.S. Department of Agriculture [USDA]. (2023). *Farming and farm income*. Retrieved April 28, 2024, from <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/farming-and-farm-income/>
- Vegetable Research & Information Center. (n.d., last updated 2020). *San Joaquin Valley agriculture*. Retrieved April 28, 2024, from https://vric.ucdavis.edu/virtual_tour/sanjoq.htm

Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L. J., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J. A., De Vries, W., Sibanda, L. M. ... Murray, C. J. L. (2019). Food in the Anthropocene: The EAT-*Lancet* Commission on healthy diets from sustainable food systems. *The Lancet Commissions*, 393(10170), 447–492.

[https://doi.org/10.1016/S0140-6736\(18\)31788-4](https://doi.org/10.1016/S0140-6736(18)31788-4)

Wittig, M. A. (1996). An introduction to social psychological perspectives on grassroots organizing. *Journal of Social Issues*, 52(1), 3–14. <https://doi.org/10.1111/j.1540-4560.1996.tb01358.x>

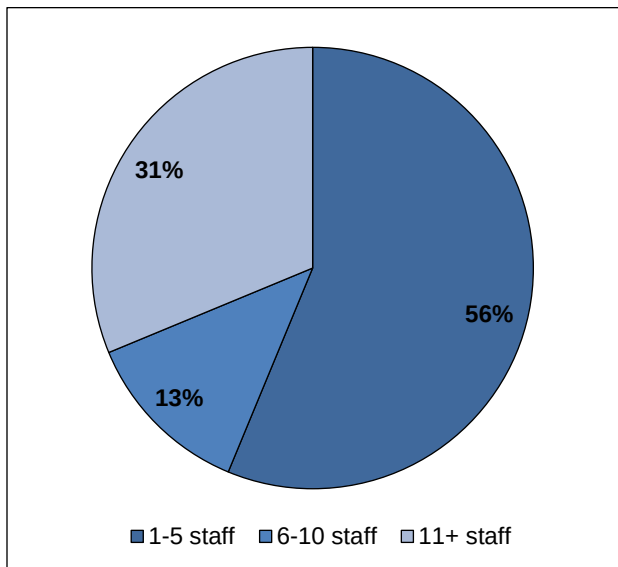
Appendix A. Detailed Overview of San Joaquin Valley (SJV) Organizations

Size of Organizations

Three of the organizations were coalitions with dedicated staff based in the SJV. Two were SJV regional coalitions, and one was a statewide coalition with community organizers based in two SJV counties. Six organizations had executive offices based outside of the SJV, which were located in urban centers (Sacramento, Los Angeles, or the Bay Area). Six of the organizations were based in multiple counties across the SJV, and 10 organizations were based in a single SJV county.

Five organizations had more than 10 staff members. Two organizations had 6–10 staff members, and the remaining nine organizations (including all three coalitions) had five or fewer staff (see Figure A1).

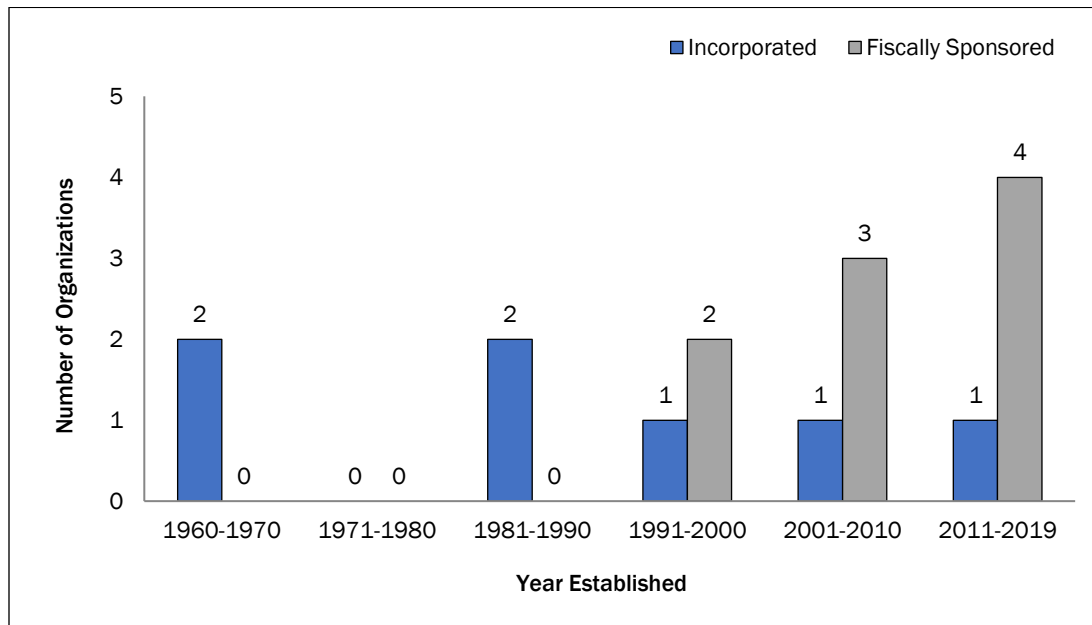
Figure A1. Distribution of Organization by Size, as Measured by Number of Staff Members ($n = 16$)



Year Established and Incorporation Status

Most of the 16 organizations identified were established within the past two decades, and the majority (9) appear to be unincorporated (see Figure A2). Of the nine organizations founded after 2000, only two had incorporated as 501(c)(3) tax exempt nonprofits. The remaining seven were fiscally sponsored by a parent 501(c)(3) nonprofit.

Figure A2. Distribution of Organizations by Year Established and Incorporation Status (n = 16)



Orientation: Environmental Justice, Social Justice, and Health Equity

While all organizations were identified as working on issues of food justice, only three of the 16 organizations explicitly mentioned “food justice” on their websites. Seven organizations stated a focus of environmental justice, five focused on public health and health equity, three emphasized a social justice lens, and one emphasized labor rights. Two also mentioned economic equality/justice.

Appendix B. Overview of Interviewees

To protect the anonymity of participants, information on organizations has been aggregated and personal identifiers for participants has been omitted. However, to provide a sense of participants' positioning, I have indicated the size, incorporation status, and orientation of participants' organizations (Table B1).

Table B1. Overview of Interviewees, by Organization

	Incorporation status of organization	Size of organization (no. of staff)	Primary orientation of organization
ID.1	Incorporated	11+	Social justice
ID.2	Fiscally sponsored	1–5	Food justice
ID.3	Incorporated	11+	Labor rights
ID.4	Incorporated	5–10	Food justice
ID.5	Incorporated	1–5	Environmental justice
ID.6	Fiscally sponsored	1–5	Environmental justice
ID.7	Fiscally sponsored	1–5	Food justice
ID.8	Incorporated	11+	Social justice
ID.9	Fiscally sponsored	5–10	Social justice
ID.10	Incorporated	11+	Social justice
ID.11	Fiscally sponsored	1–5	Social justice
ID.12	Fiscally sponsored	1–5	Social justice
ID.13	Incorporated	11+	Social justice
ID.14	Incorporated	1–5	Environmental justice

Note. Incorporation status indicates whether participants' organizations are legally incorporated as tax-exempt charities. Fiscally sponsored organizations operate under the umbrella of a parent 501(c)(3) nonprofit.

Appendix C. Codebook

Name	Sources	References
Advice for activists	12	14
Agroecology center	3	8
Antagonism	6	17
Attention to SJV	5	7
Autonomy	3	4
Big Ag	11	33
Broken system	8	16
CAFA	5	18
CalEnviroScreen	3	3
Capacity building	9	21
Capitalism	3	4
Climate	6	7
Code switching	6	7
Community leadership	4	17
Community self-determination	6	11
Competition	5	13
Conservative	7	17
Disconnect	2	3
Education	10	36
Existing knowledge	6	13
Expansion	1	1
Farmworker rights	2	10
Federal policy	3	5
Fiscal sponsorship	5	11
Focus	9	37
Food access	10	15
Food as human right	1	1
Food justice foci	1	4
Food security	3	7
Food sovereignty	1	3
Food trauma	1	1
Food waste	3	15
Funder disconnect	6	13
Funder education	5	15
Funders expectations	9	25
Funding fluctuations	8	8
Funding limits work	6	13
Funding scarcity	7	17
Funding source	12	42
Gov. agency partner	5	10
Gov. official partner	4	8

continued

Name	Sources	References
Growing interest & support	2	4
Hunger	2	3
Immigration	4	5
Industry partner	2	8
International connection	5	10
Issue interconnectedness	6	22
Lack of focus on food justice	5	8
Land	6	11
Lobbying	7	10
Local economy	3	3
Motivation	4	8
National coalition	1	1
Nonprofit partner	9	27
Origin story	7	11
Paradox	8	11
Participation barriers	5	10
Personal story	8	15
Policy advocacy	11	43
Poverty	7	10
Power	4	10
Profit-driven	5	12
Race	8	16
Regional coalition	10	20
Relationship building	9	30
Representation	8	24
Resources for activism	9	12
Respond to community needs	7	16
Root cause	5	7
Rural	5	10
Search for other models	4	10
Selecting collaborators	2	2
Siloed efforts	8	20
Size	3	4
SJV context	11	41
State coalition	9	15
State policy	10	21
Story	1	1
Time	5	14
Undocumented	4	5
Unincorporated	5	10
Values	3	5
We Feed the World	5	7
Website	1	1
Youth program	3	6

Appendix D. Semi-Structured Interview Guide

Note: Each interview began by discussing the project information sheet and consent form to reiterate the purpose of the research and allow participants to clarify questions or concerns in advance. I emphasized that any question could be skipped if desired. Although one participant did request a portion of the interview be struck off the record, interviews were conversational in style. I closed each interview by welcoming any questions and encouraging participants to contact me if any concerns later arose. To minimize distraction and practice active listening, I took few notes during each interview; however, I recorded reflections immediately afterward.

Be sure to share information sheet and consent form!

Ask about & start the audio recorder.

Express gratitude for their participation!

I want to learn from community organizers perspectives about what it is to work in the SJV toward changing the current food system, which of course intersects with many other systems. I really want a chance to hear from others who have been working around food issues in the Valley context. What I would like to focus on this morning is the perspective you have gained over the years of doing food systems work in the SJV. I'm also trying to better understand what I see as this tension inherent to grant-funded systems change work; that is, being funded by the same economic, political, and social systems that are integral to the food system we're trying to change.

1. Can you tell me a little about what attracted you to community organizing work?
2. What are *your* main goals with [your organization]? Thinking more broadly beyond the organization, what would you like to see—what's the vision?
3. Can you tell me a little about [your food justice project]?
4. Has [your organization] been involved in policy advocacy?
5. Many communities across the SJV and elsewhere are facing increased rates of poverty and food insecurity. Taking a step back, what do you see as the root causes of the issues you're working on in the Valley?
6. One thing that's come up in my own work as an organizer and in my reading is that grant funding and 501(c)(3) status restricts lobbying activity, which can be kind of a gray area.
7. How have you navigated these limitations in trying to challenge/change policy?
8. What role do you see funders playing in working toward systems change?
9. Have you negotiated with funders on activities, or gotten in trouble for lobbying?
10. What is your sense of progress in the work you do in the community vs. the reports you have to give to funders? What do envision as a way forward?
11. From your perspective, in terms of addressing these issues, how does this map onto grant funding? (i.e., having to adapt to align with funders' goals vs. finding funders that align with your goals)
12. What about issues of competing with other organizations for the same funds vs. building collaborations?

13. Thinking about building coalitions and a strong movement for change, how are you building coalitions both within your community and across communities? Who do you tend to collaborate with?
14. What do you know now that you wish you'd known back when you first started as a community organizer?
15. Are there any resources that you draw upon that you find particularly helpful that you'd recommend to other organizers/activists?
16. What advice would you have for other activists in the Valley?

Thank you again for participating! Do you have any questions for me?

Challenging agricultural norms and diversifying actors: Building transformative public policy for equitable food systems

Johanna Wilkes *
Wilfrid Laurier University

Submitted October 10, 2023 / Revised February 11 and March 25, 2024 / Accepted March 27, 2024 /
Published online July 3, 2024

Citation: Wilkes, J. (2024). Challenging agricultural norms and diversifying actors: Building transformative public policy for equitable food systems. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 317–336. <https://doi.org/10.5304/jafscd.2024.133.032>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

Food systems governance regimes have long been spaces of “thick legitimacy” (Montenegro de Wit & Iles, 2016), where embedded norms benefit productivist agricultural practices. Within governance regimes, the science-policy interface and the scientists who occupy this space are integral in today’s public policy processes. Often treated as objective science, technical disciplines have become a powerful source of legitimatizing in decision-making. Without the contextualization of lived experience or diverse ways of knowing, these siloed spaces can lead policymakers towards an action bias (e.g., a rush to short-term solutions) that neglects the underlying causes and concerns of our current crises. Current governance arrangements in the science-policy interface demonstrate the bias toward technical science (e.g. economics) and

short-term solutions. However, by challenging productivist agriculture norms reformed public policy processes may shift from a space of repression to one of possibility. This reform can happen through investigating dominant actor coalitions and identifying tools to reconfigure these power arrangements. Public policy theory, such as the advocacy coalition framework (ACF), helps organize relations within current agricultural policy arenas. The work of practitioners and other disciplines offer tools that can support transformative action by food systems advocates in the pursuit of changing the way public policy is made. In part, understanding how power is organized and who may influence policy processes is critical to change. This reflective essay ends with tools and strategies for those wishing to engage governments in this shift. The proposed tools and strategies focus on how people (e.g. policy champions), processes (e.g. policy leverage points), and partnerships (e.g. allyship) generate ways in which advocates can, and do, engage governments in transformative change.

Keywords

food systems transformation, public policy, thick legitimacy, advocacy, agriculture, agroecology, science-policy interface, agricultural politics

* Johanna Wilkes, Ph.D. Candidate, Balsillie School of International Affairs, Wilfrid Laurier University;
 <https://orcid.org/0000-0003-1960-8553>;
jwilkes@balsillieschool.ca

Funding Disclosure

The author is supported in part by funding from the Social Sciences and Humanities Research Council of Canada.

Introduction

Food systems are teetering on the edge of converging crises. Human induced climate change has irreversibly altered our environments (Masson-Delmotte et al., in press). Rising global temperatures (Masson-Delmotte et al., 2018; in press), eroding soil health (Booker, 2021), increasing algae blooms in the Great Lakes system (Hance, 2020), declining biodiversity (Secretariat of the Convention on Biological Diversity, 2020), and struggling pollinator populations (Marshman & Knezevic, 2021; United Nations Environment Programme, 2016) all sound warning bells. In addition to failing the environment, our current industrial food system has also left growers, food workers, and consumers struggling (Kelley et al., 2020; Li et al., 2023; National Farmers Union, 2023b).

In Canada, where I ground much of my work, primary agriculture production workers were estimated to be ten times more likely to contract COVID-19 during the pandemic than the average Canadian (Kelley et al., 2020). Further along the supply chain, numerous outbreaks in processing facilities were recorded (Buchan et al., 2022; Dryden & Rieger, 2020; Wilson, 2022). However, vulnerability across the food supply chain predates COVID-19. For example, it is estimated that one of every four children in the ten Canadian provinces live in a household that experiences some form of food insecurity (Li et al., 2023; Statistics Canada, 2023). This number misses the stark realities of Indigenous, Black, single parent, and new immigrant households, which experience heightened levels of food insecurity (Li et al., 2023; Tarasuk & Mitchell, 2020) and more than twice the pandemic exposure rate of White Canadians (Carling & Mankani, 2020; Cheung, 2020).

Globally, a healthy diet is out of reach for an estimated 3.1 billion individuals (Food and Agriculture Organization of the United Nations [FAO], International Fund for Agricultural Development [IFAD], United Nations Children's Fund [UNICEF], World Food Programme [WFP], & World Health Organization [WHO], 2021), when we already grow more than enough food to feed upwards of 10 billion (Committee on World Food Security, 2022; Holt-Giménez et al., 2012). Market concentration, COVID-19, food price inflation,

debt crisis, and global conflict are having direct and indirect negative impact on community food and nutrition security around the world (Clapp, 2022; High Level Panel of Experts on Food Security and Nutrition [HLPE], 2020a, 2020b; IPCC, 2023; FAO, IFAD, UNICEF, WFP, & WHO, 2021), including impact on smaller, informal food system actors (Béné et al., 2021).

Despite all the negative externalities, the influence of the dominant industrial agricultural model is both omnipresent and yet difficult to perceive. Industrial agriculture is filled with power-laden norms and “thick legitimacy” (Montenegro de Wit & Iles, 2016). Defined as “authority that cannot unravel easily because it is multi-stranded and broad-based” (Montenegro de Wit & Iles, 2016, p. 2), thick legitimacy is an outcome and not the process itself. The process is rooted in constrained, path-dependent environments with deeply embedded effective industrial agriculture coalitions, including at the science-policy interface. The norms that emerge from this process are pervasive and inform knowledge creation, farmer identity, and the decision-making processes within public policy. For example, norms connected to industrial agriculture can be found in land-grant institutions (Francis, 2000), the nomenclature used around family farms (Bronson et al., 2019), and the development of “mega-corporations” in the global food economy (Clapp, 2021).

Consistent with the observations of Runge (1988), Coleman et al. (1996) assert that agriculture consists of a closed policy network system with little permeation from those on the outside, including the general public—leaving policy elites, influential private-sector actors, and powerful agricultural insiders as the main source of advice in public policy processes. This arrangement of influential actors necessitates questioning the government's role in creating policy environments and the potential consequences when closed policy networks determine policy outcomes (Wilkes, 2024). For example, when services and public goods, such as agricultural extension work, are underfunded, it can have a negative impact on small farmers (Labarthe & Laurent, 2013). Shifts in governance toward industry-led policies (Sankoff, 2019) and multi-stakeholderism (Levkoe et al., 2022; McKeon,

2017) also create challenges for transparency within public policy processes, making it more difficult for civil society to hold governments accountable.

One of the most challenging roadblocks to eroding the thick legitimacy of industrial agriculture is that governments, like the Government of Canada, play historical and ongoing roles in industrial agriculture coalitions at both the global and national scale (Wilkes, 2024). In Canada, the dominant industrial coalition possesses substantial funding and influence, so that few players are seen as legitimate, and legitimized, by governments (Wilkes, 2024). Presented in isolation from agriculture's colonial roots (Rotz et al., 2023), the inequitable nature of for-profit technology research (Smithers & Blay-Palmer, 2001) and the seriousness of environmental and social crises (Lee et al., 2023), high-tech quick-fix solutions presented by industry seem both a palatable and responsible direction for governments to support. However, when the social context and political economy of food systems is taken into consideration, the solutions that emerge are much different.

Shifts in the ways that public policy is developed, as well as the rebuilding, reconfiguring, and strengthening of alternative advocacy coalitions could reform the role of public policy toward more transformative futures. Academics have described the potential of coordinated policy across scales to build resilient systems through regionalizing food infrastructure as well as producing and making accessible nutritious food closer to home (Blay-Palmer et al., 2020; Reid et al., 2022). In particular, agroecology—an approach to food systems that recognizes integrating environmental, political, and social needs as one—has long been advocated internationally (Altieri et al., 2015; Anderson et al., 2020) and within Canada (Ahmed, 2022; Dale, 2020; Garthson, 2021; Isaac et al., 2018; Laforge et al., 2021; NFU, 2023a).

Agroecology, which is embedded within the food sovereignty movement (Gliessman et al., 2019), transcends geographical scales to unite growers, consumers, and researchers across the globe while being implemented at local scales (Anderson et al., 2021). As part of agroecology, food is seen as a fundamental human right rather than simply a commodity to be traded. In my years

working in agriculture, agroecology rarely came up. It wasn't until I began my Ph.D. program that I learned the holistic value of alternative food systems frameworks, such as agroecology, and was able to reflect on some of the deeply embedded norms in agricultural policy. Alternative food systems frameworks, such as agroecology, can support meeting our international commitments (e.g., the Sustainable Development Goals) while better aligning national food systems mandates with narratives, such as equity, inclusion, and environmental sustainability. Alternative food systems frameworks have the potential to shift narratives from platitudes to action by supporting better alignment between government communications and public implementation (Wilkes & Perttula 2021).

The following reflective essay is structured in several parts: exploring thick legitimacy at the science-policy interface, the challenges of agriculture's action bias, and tools and strategies to effect systems change.

Thick Legitimacy in Action: Global Food Governance and the Science-Policy Interface

The science-policy interface is a significant source of thick legitimacy in agriculture public policy. Scientists who focus on technological innovation and sustainable intensification disproportionately hold positions of power in food governance. Whether this is through the revolving door of industry representatives on government boards (Clapp, 2020) or through international scientific groups (Montenegro de Wit & Iles, 2021), the appointments of industry-affiliated scientists muddle the science-policy interface beyond its normal bounds. Rather than simply discussing the relevance of science and its transmission into policy, there is also the salient role of scientists operating inside the public policy process itself. With an increasingly complex network of multistakeholder and industry-led arrangements in global governance, technical sciences and targets (McDermott et al., 2022) can create a void in understanding the negative social externalities of public policy for governments and their constituents.

This scientific bias can be seen in the membership of two prominent global governance forums, the United Nations Food Systems Summit

(UNFSS) Scientific Group (UNFSS, 2023) and the High-Level Panel of Experts (HLPE). These two forums were the at center of my dissertation research, observing the work of different actors over four years. While the scientific groups were not the focus of my research, I observed their constant influence across the process and the growing role of the science-policy interface in global governance.

Of the 28 members on the UNFSS Scientific Group, 26 are housed in favoured disciplines, including many in “hard” or “technical” sciences.¹ Economists tend to be the most prominent in governance arrangements at the science-policy interface. In the High Level Panel of Experts (HLPE) (2021–2023) at the Committee on World Food Security (CFS) (HLPE, 2023), five of 15 members identify as economists. In the UNFSS Science Group, nine of 28 members identify as economists. In short, economists have the largest share of any individual discipline, eclipsing all other social scientists combined.

This lack of diversity can create bias in several ways. Dominance by any one discipline or way of knowing sends a message about whose knowledge is valued and what the priorities of that particular policy space are. The strong emphasis on members with advanced degrees values academic knowledge over other forms, such as Indigenous and experiential. While a strong mechanism or role for civil society actors in overall policy development can balance an academic-centered science body, they should complement one another rather than be seen as substitutes or for the latter to have disproportionate power.

These science-policy arrangements also encourage the exploration of problems from a relatively limited set of perspectives, missing key groups such as farmers, fisherfolk, small- to medium-sized enterprises, and consumers. These tightly knit elite arrangements say that the knowledge outsiders hold is only relevant when processed through the lens of academic institutions. This creates a biased gatekeeping mechanism for what is

seen as relevant for policy discussions as well as forming an academic filter through which information is processed before reaching government officials. When technical and academic knowledge is taken in isolation, the ensuing science presented to decision makers creates a narrative that is often devoid of historical policies (e.g., colonialization, extraction) connected to the global food economy. This is consistent with an analysis of the UNFSS Scientific Group demonstrating bias toward “science and technological information” (Montenegro de Wit & Iles, 2021, p. 200).

Montenegro de Wit and Iles (2021) also articulate an insidious exploitation by the UNFSS Scientific Group of racialized and marginalized identities in pursuit of “woke” science. The authors go beyond a disciplinary analysis of the Scientific Group to include the membership’s shared networks, connections to international institutions such as the World Bank, and affiliations with corporations (Montenegro de Wit & Iles, 2021). In other words, international scientists participate in elite arrangements, or coalitions, with industry actors similar to those discussed by public policy scholars (Atkinson & Coleman, 1989; Sabatier & Jenkins-Smith, 1993; Skogstad, 2008).

Agriculture’s Action Bias: Change at the Margins

Characterized by highly technical, homogenous cropping systems with an orientation toward global trade, productivist agriculture has defined farming policy since the second world war (Lowe et al., 1993; Marsden et al., 1993). Some researchers even argue that we have entered an era of hyper, neo-, or super-productivism, which reflects on the acceleration of profit-seeking behaviors and a focus on business at the cost of much else (Dibden et al., 2009; Roche and Argent et al., 2015). A relentless need to focus on productivity is a shared core belief by industrial agriculture actors, derived from years of political campaigning at the science-policy interface. The concern with short-term solutions (e.g., action bias) is a subtle factor in the gap

¹ For the purpose of this article, “technical” or “hard” sciences are considered sciences that largely rely on quantitative data and isolated experiments to explain phenomena or impacts. Fields such as economics, crop science, and nutrition fall under this definition. However, there are always exceptions to the rule.

between transformative narratives and productivist recommendations. Patt and Zechhauser (2000) emphasise the desire for individuals “to do something.” Action bias allows practitioners to operate in complex policy environments rapidly but fails to allow for the depth required to address foundational challenges affecting society. Factoring in lack of accountability or enforcement at the international level (Koppell, 2010), solutions that could have been transformative in nature—such as those proposed in the International Assessment of Agricultural Knowledge, Science and Technology for Development report (McIntyre et al., 2009)—are shelved in favour of funder preferences, deeply embedded norms, technical solutions, and quick political wins.

For example, industrial agriculture narratives often adopted by scientists, politicians, and industry representatives strongly emphasize producing more food. This can come under the narratives of sustainable intensification, efficiency, increasing yields, or productivity growth. As the UNFSS Coalition on Sustainable Productivity Growth for Food Security and Resource Conservation (2021) states:

Agriculture faces the daunting challenge of producing more food to meet the nutrition needs of a growing world population while at the same time dealing with climate change and ever-tightening natural resource constraints. (p. 1)

Emphasis on increased production in association with food security underpins many political narratives about food systems (Soil Association, 2010) and establishes a false sense of urgency. Despite this panic for efficiency, we already produce enough food to feed 10 billion people (Committee on World Food Security, 2022; Holt-Giménez et al., 2012). Nevertheless, in 2021, 9.8% of the global population were affected by hunger (FAO, IFAD, UNICEF, WFP, & WHO, 2022) and a healthy diet was out of reach for over 3 billion people. Hunger is urgent, but the dire situation of millions is being co-opted to falsely uphold agricultural intensification beliefs and productivist norms. In the words of a recent blog by the United

Nations Environment Programme, this continued level of food insecurity is “not just math” (2020).

The work of the CFS and UNFSS scientific bodies illustrate how action bias can operate at the science-policy interface. When comparing the 2019 HLPE report “Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition” and the publication “Food systems: seven priorities to end hunger and protect the planet” (von Braun et al., 2023) by the Chair and co-Chairs of the UNFSS Scientific Group, the emphasis is clear. The CFS HLPE report puts a shared emphasis on technological advances *and* political transformation, with recommendations that balance the work required to act immediately while also transforming food systems for the long-term (HLPE, 2019, pp. 21–24). The report recommends to “establish and develop effective technology transfer mechanism to enhance the adoption of technologies in agroecological and other innovative approaches” (p. 23) and supports the need to “empower vulnerable and marginalized communities and address power inequalities in food systems” (p. 23). The UNFSS publication (von Braun et al., 2023) includes narratives that address the political economy of food but fails to integrate them into recommendations. Instead, the authors emphasize access to technology and increased production.

While imperfect, the HLPE report was compiled by scientists with the guidance and input of CFS actors in civil society, the private sector, and governments. It was put to the CFS membership for consideration as part of the “Agroecological and Other Innovative Approaches” guidelines. Although not all their recommendations were taken up, the report necessitated that, at a minimum, member states discussed the systemic issues and considered their implications when drafting the final guidelines (Committee on World Food Security [CFS], 2021). In short, the CFS report was a negotiation of perspectives and politics. The CFS helped bring together industrial and alternative food systems actors within a policy arena with defined roles, responsibilities, and rights. This collaborative process, even if fraught at times, can help buffer against action bias by considering the

broadier political context of food as part of the science-policy interface.

In contrast, the impacts of the overall UNFSS are still to be seen but the process has clearly shifted the bounds of multistakeholderism and corporate engagement in global governance (Chandrasekaran et al., 2021; Clapp et al., 2021; Food Systems 4 People, 2023; Wilkes, 2022b). For example, the UNFSS document was produced by a small group of scientists operating in an influential policy space with little agency provided to actors that hold competing perspectives. The UNFSS Scientific Group informed the “recommended outcomes and clarify[ed] the level of ambition and commitments that emerge[d] from the Summit process” (UNFSS, 2021). The group helped define the scope and acceptability of game-changing solutions brought forward by the Action Tracks of the UNFSS (UNFSS, 2022).

The bias toward “scientific” knowledge feeds into the preference of governments, which can find it difficult to truly tackle systemic issues, reinforcing path dependent policies. The process surrounding the UNFSS document undermined the progress advocates for agroecology were making internationally at the CFS and the efforts to build trust within global food governance (Anderl & Hißen, 2023; Canfield, Anderson et al., 2021; Canfield, Duncan et al., 2021). The Chairperson and Vice Chairs of the UNFSS Scientific Group call on governments to “boost finances...increase scientific capacity...strengthen science-policy interfaces” (von Braun et al., 2023, p. 8); however, the Scientific Group’s view of science is very narrow, relying on technical scientists to interpret the situations and knowledges of those most affected by industrial food systems. In addition, these scientists act as a political sieve through which technical information flows from communities to policymakers. The “action bias” and narrow positionality in their work is evident based on the diversion between their narratives, which are inclusive of Indigenous knowledges, the political economy, and the universality of rights, and their recommendations, which are centered on technology, science, and finance. This divergence is highly significant as international science committees, such as the UNFSS Scientific Group, are agenda-setting bodies

often devoid of specific or binding decision-making powers. The emphasis on non-binding policy tools makes global governance the ideal scale to support norm shifting. However, the UNFSS Scientific Group document focused on re-embedding productivist norms through their recommendations while using narratives of transformation and urgency to bolster broader legitimacy. This shift to include new narratives could be in part due to the intensive scrutiny of industrial agriculture practices for their role in the climate (Houser & Stuart, 2020) and social (Clapp, 2023) crises.

Transforming Public Policy to Build a New Food Systems Coalition: Tools and Strategies for Change

There is need for action when there is a crisis or challenge. However, we should also reflect on what actions are required both in the short and long term to build equitable food systems. The Canadian government shifted its central narratives over the past several years to include the need to tackle systemic racism, yet failed to translate these narratives into action as part of the federal agriculture and agri-food mandate letters (Wilkes & Perttula, 2022). The mandate letters, a communications tool the prime minister uses to direct the priorities to ministers, instead—like the Scientific Group—largely focused on immediate action that would blunt the margins of our complex crises rather than truly shift the equation.

Similar to the gap between narratives and action, I have found that theory and practice can, at times, seem to be worlds apart. However, the advocacy coalition framework (ACF) is a rare example where the two overlap. The ACF investigates policy subsystems as a way of explaining policy outcomes and power dynamics; in particular, allowing for investigation of coalitions (e.g., academic, private sector, government, not-for-profit) with dynamic and diverse membership that coalesce around a particular set of values (e.g., productivism) (Jenkins-Smith & Sabatier, 1993, 1994). In part, the ACF can help outline “the multi-stranded and broad-based” foundation that thick legitimacy rests on.

Throughout my work experience and Ph.D

research, I witnessed the powerful role of scientists and technical experts within public policy processes. The developers of the ACF were also conscious of the role these actors play (Jenkins-Smith et al., 2014, 2018):

To better understand policy processes is thus to understand how scientific and technical explanations are integrated into (or deflected from) belief systems, used in political debates and negotiations, and integrated with other forms of knowledge, especially local knowledge. (2018, p. 142)

In the ACF, scientific practice, politics, and public policy processes are all elements within the same framework, not seen as apolitical or disparate from one another. This intertwining is reflective of how public policy and power are practiced at both the national and international scale. Therefore, I also explore public policy reform from the perspective of process reform, which would allow for more ways of knowing and alternative actors to be perceived as legitimate and valued. The ACF concept helped put my research into an organized framework that aided both describing the dominant (productivist) coalition and finding ways to support alternative food systems actors' engagement.

Toward the end of my work, I began knitting together the differences between private-sector engagement and the engagement strategies of alternative food systems actors. While the former holds immense power through scientific and procedural means, there are specific tools that industry deploys effectively that could be replicated by agroecology advocates to advance transformation.

There are ways that the power held by dominant coalitions can be dislodged and reorganized, but these often take asserted effort and a willingness to engage with deeply embedded industrial institutions. However, I recognize that governments are not the exclusive answer to transformation. Governments can be institutions with histories of repression while also offering an important site of reform. This tension is constantly

present and the calculation of whether or not to engage is highly personal for each food systems actor. For those who are interested in engaging in government processes, the following tools and strategies are included to support their work. These tools and strategies are drawn from work at the international, national, and local levels. The recommendations reflect a few general assumptions: public participation in governance is of interest to the government or governance body (e.g. that multi-actor forums or consultation are used), that democracy—while bent—is not broken, and that transition to transformation is possible.

The suggested tools are taken from public policy work across different fields (e.g., social work, municipal planning) and are used as examples to help understand how transformative food systems actors can, and do, drive change. The tools—people, processes, and partnerships—can be deployed individually but I suggest they are strongest when taken in combination.

People

Inclusive Public Managers

One of the challenges I have observed as a practitioner and researcher, is the lack of public managers who were able to successfully create inclusive, collaborative spaces. While much of the public policy process is stuck in rigid structures, there are also personal elements (e.g., relationships, trust) that help foster or hinder the successful transformation of governance spaces. The work of inclusive public managers can act as an additional layer of democratic engagement, by creating authentic, innovative spaces of engagement that reflect public needs and provide agency for those most affected, while still understanding the larger political landscape in which they operate. Openings for policy and process innovation have led to advances such as participatory budgeting (Pinnington et al., 2009).

An inclusive public manager “facilitates the practice of democracy by creating a community of participation where people can share information from different perspectives and work together on problems” (Feldman & Khademian, 2007, p. 306).²

² To clarify, a community of participation can also be thought of as similar to a community of practice in other disciplines.

Successful inclusive public managers seek to bring different perspectives together, e.g., the “political, the scientific or technical, and the local or experience-based” (p. 306), and support an informed, deliberative process. Feldman and Khademian (2007) emphasize the informational and relational work of an inclusive public manager. Informational work allows inclusive policy managers to act as a knowledge “broker, translator, and synthesizer” (p. 312), helping managers understand and disseminate information across boundaries. As a translator, the manager can reformulate information to be better appreciated. Finally, as a synthesizer, the manager can facilitate different ways of knowing to come together to form a new understanding of the problem at hand. Relational work helps the public manager navigate the political landscape and interpersonal relationships among participants, ultimately building trust within the group.

Inclusive public managers are essential for realizing deliberative democracy in food systems, as Thompson et al. (2020) envision it, but with more structured ways of recognizing those most affected. An inclusive policy manager can also be critical in creating multi-actor engagement spaces that enable collaborative learning, empowerment, and cross-sectoral connections necessary for sustainable transitions (Frantzeskaki & Rok, 2018).

Identifying members within international organizations who can build trust and bridge perspectives is a critical first step to more collaborative and equitable policy environments. Bringing youth into the fold as part of early career development in international relations and food systems could also help shift the culture of multi-actor engagement for the next generation by creating new governance norms. Participation at the CFS and UNFSS have shown that delegates representing youth have an increasing role in global governance forums. It is imperative to our food systems futures that institutions ensure youth have the skills necessary to facilitate transformative pathways forward.

Policy Champions

Critical to the work of transformation are allies leading from in front of, and from behind, the scenes. Looking for allies in unlikely places is an important step to expanding a network when seek-

ing to achieve change. Inside many institutions are policy champions for a particular cause. I have seen first-hand the power that policy champions bring to moving the work of advocates forward. Find these policy champions and work with them to achieve shared objectives (Wilkes, 2022a). Moon (2018) emphasizes identifying people with powerful positions who can “amplify the desired views within policy circles” (para. 5). Moon speaks to the time needed for both sides—the advocate and the policy champion—to form trust and ensure parties are on the same page. These bonds of trust are cultivated over long periods of formal and informal engagement between actors. Policy champions are typically thought of as individuals working inside government but can also be situated outside. External policy champions can lend their influential voices to provide legitimacy from outside institutions or can increase pressure for governments to act. While it is difficult to see the immediate impact of this relational work, researchers have begun to develop metrics of success (Devlin-Foltz & Molinaro, 2010).

Even in the most embedded institutions and governments, there are often policy champions seeking support to advance transformative frameworks such as agroecology. These champions can critically link into the inner workings of a policy process and may provide much-needed evidence to support advocacy within institutions.

Policy Navigators

Throughout my research, I have observed a distinct shortage of policy navigators among the agroecology movement. I use the term policy navigator specifically, quite differently from a translator or inclusive policy manager. A policy navigator is someone who understands how, when, and where policy processes flow. Effective policy navigators are usually former senior government officials or those with extensive experience within policy development processes. A policy navigator may have vital information, such as how to get something in front of the treasury board or the person handling a particular file. In the private sector, policy navigators are often government relations professionals, some of whom are more commonly known as lobbyists. They work in-house for indus-

try associations, large companies, nongovernmental organizations, or government relations firms.

A policy navigator's value comes from strategic timing in policy interventions, knowledge of power structures, clear communication skills, and their extensive network of government connections. A sample of job descriptions for government relations positions shows the emphasis on such skills (*Hill Times*, 2023; Loblaw's Companies Limited, 2023). While there are many highly skilled policy professionals engaged in the movement to transform food systems, there is opportunity to invite in and incorporate the perspectives of skilled policy navigators as part of the advocacy process. Policy navigators can lend important insights and create connections across government networks that are invaluable to the success of new ideas. In addition, policy navigators are adept at finding policy champions and getting policy-ready products into the hands of influential actors.

Resource barriers can make it difficult for financially constrained civil society organizations to hire policy navigators, as their skills are highly sought after and well compensated in the private sector. However, policy navigators can be relied on in areas such as environmental and health movements to help train and support a community of new navigators within food systems governance. Leaning on the growing interest in food at the Conference of the Parties (CoP) on climate change (Slow Food Foundation, 2023), the COP15 conference on biodiversity (Wilfrid Laurier University, 2022), and conferences on nutrition (International Congress of Nutrition, 2022), could be a way to connect with like-minded navigators.

Diversifying the Role of Expert in Governance

As discussed earlier, the science-policy interface lacks significant diversity. It is necessary to create space in scientific groups and expert committees that embrace diverse ways of knowing and being. In a study of certification programs, it was determined that market conditions, competition for ideas, and early decision-making influence the rate at which a scheme is taken up by a population and how it may, or may not, globalize (Auld, 2014). Meaningful inclusion of diverse perspectives from the beginning, such as farmers, Indigenous

leaders, and fisherfolk is essential. These everyday experts should be seen as valuable members who bring unique perspectives and a depth of lived experience that is equally relevant to western science. In addition, governments should look to farmer-to-farmer networks and other place-based knowledge arrangements to help guide decision-making.

Governments must recognize when current policy processes are not appropriate for a particular workstream. For example, Robin et al. (2023) demonstrate the continued harm done by the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) in engaging with Indigenous communities; they suggest that forming "community-first principles and strategies" (p. 18) can support more meaningful engagement. Indigenous peoples are the experts and have a wealth of knowledge from across generations. State-based colonial governments need to recognize the sovereignty of Indigenous nations and uphold government-to-government processes that support Indigenous-led policy design.

Much work is needed to highlight different forms of policy design, such as Indigenous food guides (Wilson & Shukla, 2020), Indigenous sovereignty (Cidro et al., 2015; Coté, 2016; Robin et al., 2023), and connections between sovereignty movements (Anderson & Settee, 2020). Governments need to listen to Indigenous communities, leaders, and scholars and embody these learnings to truly take them to heart and commit to a justice-oriented framework. Overall, there is a need for place-based decision-making and policy design to take a more central role in public policy processes across communities and scales of government.

Processes

Policy Leverage Points

Policy processes have both planned and external leverage points. A planned leverage point might be a scheduled programmatic review. An external leverage point might be a system shock, such as the COVID-19 pandemic or demands for social justice. Advocates for agroecology, as well as for food sovereignty more generally, can use these leverage points as a meaningful entry way into policy discus-

sions. For example, Farmers for Climate Solutions analyzes issues facing Canadian farmers and seeks change through recommendations as part of the annual budget process and the renewal of the national policy framework (Farmers for Climate Solutions, 2021). Proponents for agroecology could use leverage points in the public policy process to create openings for incremental change through larger policy vehicles or evaluations.

Wrap Around Policy

For a period, I had the privilege of working in community infrastructure policy. During this time, my work emphasized the importance of holistic service planning and community engagement. This is where I was first exposed to ‘wrap around’ policy. Adapted from the social services field, ‘wrap around’ policy “focuses on maximising collaboration between stakeholders, including the client and their support network, as well as services involved” (Wyles, 2007, p. 45). The ‘wrap around’ strategy—when applied in a conducive environment—has shown better outcomes and lower expenditures (National Wraparound Initiative, 2023), and promotes more client-oriented delivery and helps identify gaps in the current suite of programs.

Wrap around policy has been implemented in fields ranging from education to out-of-home care but has not yet been used in agricultural policy. If agroecological farmers were to access wrap around services for their technical, financial, and social needs, it could reduce the navigational costs associated with complex funding programs and increase access to services. Wrap around services would alleviate some of the process burden felt by farmers attending to agroecological transitions.

Transparency and Agency over Inclusion Alone

This strategy is both a general observation from my participatory observation work and an action that civil society is deploying in many governance arenas. My experience with the UNFSS and CFS showed that establishing good practices for transparent, accountable governance from the start is essential. Advocates for agroecological approaches should continue prioritizing transparency and agency for those most affected (e.g., farmers, fisherfolk, consumers).

Global governance forums can be interpreted from the point of view of the work of Auld (2014) and Weldon and Parkhurst (2022), that they are defined by their earliest decisions on inclusion. These decisions, such as how the process will be structured, are critical to their outcomes. Therefore, the development of global governance forums needs to prioritize conflict-of-interest safeguards and transparency from the beginning, as well as establish clear roles in decision-making for those most affected by the global food economy. Good inclusive policy managers and effective policy champions can help advocate for transparency early in governance processes, from both within and outside government.

One of the strongest criticisms of the UNFSS was its lack of transparency (Canfield, Anderson et al., 2021; Canfield, Duncan et al., 2021). While the UNFSS offered several opportunities for broad stakeholder engagement, the inner workings of the Summit were less known. Based on participatory observation and content analysis, my findings support the idea that inclusivity does not translate into transparency or equitable access by default (Wilkes, 2023). To achieve the latter two, conscious choices need to be made about the structure of a process in its early stages. At the national scale, building out additional spaces for agency and transparency are central to creating, re-building, or maintaining good governance practices.

Early Intervention and Policy-Ready Products

Policy ideas always come from somewhere. However, siloed debates, such as those in agriculture, can recirculate the same ideas repeatedly, albeit with different framing and narratives. New ideas entering old, entrenched systems can spark new life and become catalysts for process innovation. Having policy products ready for distribution and actively seeking opportunities for early intervention is crucial to leveraging policy openings. In Canada, an example of an early intervention effort is the Eat Think Vote Campaign by Food Secure Canada (2021), which with supporting partners produced and promoted several policy products that advocated for change in the 2021 federal election:

- Party platform evaluations

- Policy briefs
- Video
- Connection to the Sustainable Development Goals (which had been committed to by the Canadian Government)
- Social media tools

At the municipal level, Wayne Roberts and the Toronto Food Policy Council were at the forefront of solution building by creating effective policy products (Blay-Palmer, 2009; Stahlbrand & Roberts, 2022). Through its innovative strategies and policy expertise the Toronto Food Policy Council became an example for municipal systems worldwide.

Thinking even earlier than public policy development processes can be helpful too. Political platform development starts long before an election. By getting involved in the early stages of political priority making, advocates can get what is most important on the agenda—or at least into the discussion—before an election.

Scale-Shifting and Boomeranging in Policy Advocacy Work

Attending to appropriate scale can be a powerful tool in policy development. Sometimes the politics of a country, province, state, territory, region, municipality, or even international institution are just not conducive to change. Such is the case for human rights advocates or Indigenous land defenders when far-right governments come into power (Giraldo & McCune, 2019; Human Rights Watch, 2022). Scale shifting is a way to re-evaluate where advocates might be both safest in their work and most effective. Nicholls et al. (2021) argue that the two characteristics that make a scale-shifting strategy are shifting political “focal points” and scale selection. Scale shifting might also occur if sufficient action has been taken on a particular level and advocacy is required at an additional level to achieve further change. Especially when resources are scarce, scale shifting allows for organizations to best assess the right level of government to exert their efforts.

It is also possible to ‘boomerang’ between scales. Originally developed in human rights literature (Keck & Sikkink, 1999), the concept of boom-

eranging has been applied to discuss forestry policy in British Columbia, Canada. Bernstein and Cashore (2000) note that some organizations will boomerang from the domestic into the international when sufficient effort has not been made at home by governments to incorporate alternative positions. Boomeranging can help hold governments accountable through engagement at a secondary level (e.g. international) by calling attention to the issue in an open setting with other state and non-state actors. This dynamic use of shifting jurisdictions or boomeranging between jurisdictions can both be strategically deployed and used to increase pressure to support domestic and/or global policy change.

Partnership

Allyship

Advocacy can be stronger when it comes from outside traditional agriculture venues. Building alliances with environmental and climate activists as well as nutritionists represents a fruitful strategy. An example of alliance building is Greta Thunberg’s engagement in food systems politics (Deutsche Welle, 2021) and participation in the countermobilization to the UNFSS (Global People’s Summit on Food Systems, 2021), which may have brought wider awareness to the plight of food systems, erosion of democratic governances, and to the role of agroecology in repairing them. Laforge et al. (2021) discuss the importance of forming solidarity across different parts of the food system in Canada. This observation can extend far beyond food systems actors. A broader interest in food systems politics is also evident in the the David Suzuki Foundation advocating for banning neonicotinoids in Canada (2021). Agroecologists can extend their reach by encouraging external support from audiences wider than food systems alone.

In addition, agroecologists need to diversify their vision of who is the ideal policy practitioner in government. Canadian advocates can benefit from engaging with policy actors from the center, usually members of the Treasury Board, Finance, the Premier and Prime Minister’s Office, and other central ministries or departments. While this is a typical government relations strategy used by

industry actors, the strategy could have wider application by transformative actors in food systems work. A significant advantage of using central channels of influence is that while an alternative proposal may not achieve an entire policy shift, nevertheless advocates will be getting non-agriculture policy advisors to question assumptions embedded in the global food economy. Over time, this broader questioning can help erode the thick legitimacy of industrial agricultural norms.

The Public and Individual Efforts

The often-forgotten influential actor(s) in almost all public policy debates is the public themselves. I find that people often underestimate their collective power within broader governing structures. Burstein (2003) found that public opinion had an impact on policy three-fourths of the time that it was gauged. Processes get so wrapped up in special interest groups, corporate influence, and government posturing that it can be easy to miss the omnipresent power of the public, the central apparatus from which all power is drawn. While corporations have gained ground in governance forums in recent decades, the power of the public remains. In rebuke to the treatment of corporations as persons, Ikerd writes:

The only power greater than corporate power is the political power of the people—working together. Only real people, acting together through government, can ensure that for-profit corporations serve the public interest of society as well as the private interests of shareholders. (2023, p. 4)

Whether it is voting, how money is spent, or who benefits from our time and labor, we—the public—are a powerful entity in and of ourselves. Where governments have failed, individuals have gone to work: feeding each other during the pandemic (FoodShare TO, 2021) or implementing community fridges to enhance dignity and choice through mutual aid (Kraemer, 2023).

Individual citizen activism can be connected to system change. Wilkinson discusses the false dichotomy between individual and systemic action (Johnson & Blumberg, 2021) noting that the ripple

from an individual action to creating systemic change. These actions are both tied to accountability and norm shifting. In addition, media can be a helpful tool to amplify concerns and to communicate across the public. However, the role of media has become messier recently, with sharpening partisan divides and their reinforcing algorithms of social media and online news. More work from communications scholars would need to be reviewed to understand the opportunities and limitations of media for public influence on policy.

Agroecology advocates should consider effective ways to engage with individuals, and the wider public, to encourage government action. If the government feels pressure to act, the tools outlined above will present real opportunities for more equitable policy processes. While the public are an important ally at all steps in the policy process, their influence can be particularly valuable at critical leverage points, as discussed earlier. However, this relationship of trust between advocates and the public must be established over time in order to have support at critical junctures.

Conclusion

I was inspired, in part, to write this paper by reading Montenegro de Wit and Iles (2016) work on thick legitimacy. The deeply embedded norms within industrial agriculture extend to public policy processes, creating a circular effect between government and industry. The ACF helps understand the roles and intimate connection between scientists, politicians, and public policy outcomes. These processes can be challenged, however. To challenge these dynamics and shift the dominant norms, innovative tools and strategies must be deployed.

To ensure that transformative ideas are included on the policy agenda, it is imperative to begin early, have policy-ready products, and think about how to build alliances with advocates across organizations. If you are not successful with early intervention, policy-ready products are helpful later in the process as well, at planned leverage points and during crises. If the public can make aspects of agroecology political issues, products developed by advocates can be presented to governments to promote solutions. However, similar to the efforts

involved in communicating complex research to communities (Ruhf et al., 2017), engagement in policy must be flexible and respond to the needs of those it is meant to serve as well as those who have contributed to its making.

These tools and strategies allow for flexibility and can be taken individually or in concert, but are most effective when at least one from each category is deployed. For example, an inclusive policy manager can work with advisors from other branches of government to ensure there is a collaborative approach in supporting an outcome (e.g., food security policy tied to a living wage mandate). Members of a coalition can then work externally to pressure the government to make the policies a priority, opening up an opportunity for internal policy champions to bring their work forward to decision makers. Should these efforts erode the dominant system sufficiently, there could be a transition to an agroecology-led transformation.

This reflection essay challenges what I observed throughout my time working in agriculture as well as what I heard from those around me about their relationship with food systems. Understanding the thick legitimacy of the globalized food system helped me grasp reasons why unlearning those norms and assumptions was uncomfortable for me, and why many people just don't feel connected to or informed about their food systems.

My Ph.D. work gave me the space and stability required to explore difficult questions about my own biases and positionality, but this is not a privilege afforded to most of my former colleagues and friends. There are many public policy concepts and tools that could accelerate the transition toward

agroecology by replicating a process of collaborative learning and action. The tools outlined above focus on both the advocate (allyship) and the policy practitioner (expanding the definition of who is an expert), allowing each to learn from the another and find partnership. These tools can also build more equitable spaces of learning, as has been the case with effective inclusive public managers, that emulate the opportunity I had through my Ph.D. work, but in a practitioner setting.

To change a policy environment, the alternative food systems community must continue to test new strategies and embark on a journey that is anything but linear, even at times disheartening. Inch-by-inch, person-by-person, systems can change. Sometimes, hope is required to believe that even within the most thickened of institutions there is a champion waiting.

Acknowledgments

I am grateful for the work of food producers, scholars, global governance experts, advocates, and practitioners across scales who continue to envision a better way forward toward a more inclusive, just, and sustainable future. Thank you for the generous insights from my tireless advisor, Alison Blay-Palmer, and friend, Jennifer Marshman while reading earlier iterations of this paper. Their comments and suggestions were invaluable. Thank you to Emily and Katie for their constant academic and personal support through the process of writing this article. I extend gratitude to the reviewers and JAFSCD editors, who provided patience, insights, and care throughout this process that strengthened my work immensely.

References

- Ahmed, F. (2022). *Growing common ground: Pathways to advance agroecology policy in Canada. Report of the Agroecology Policy Research Initiative*. Laurier Centre for Sustainable Food Systems, Wilfrid Laurier University.
<https://researchcentres.wlu.ca/centre-for-sustainable-food-systems/news/2023/growing-common-ground-report>
- Altieri, M. A., Nicholls, C. I., Henao, A., & Lana, M. A. (2015). Agroecology and the design of climate change-resilient farming systems. *Agronomy for Sustainable Development*, 35(3), 869–890. <https://doi.org/10.1007/s13593-015-0285-2>
- Anderl, F., & Hißen, M. (2023). How trust is lost: The Food Systems Summit 2021 and the delegitimation of UN food governance. *European Journal of International Relations*, 31 (1), 151–175. <https://doi.org/10.1177/13540661231173553>
- Anderson, C. R., Bruil, J., Chappell, M. J., Kiss, C., & Pimbert, M. (2021). *Agroecology now! Transformations towards more just and sustainable food systems*. Palgrave MacMillian. https://doi.org/10.1007/978-3-030-61315-0_7

- Anderson, C. R., Pimbert, M. P., Chappell, M. J., Brem-Wilson, J., Claeys, P., Kiss, C., Maughan, C., Milgroom, J., McAllister, G., Moeller, N., & Singh, J. (2020). Agroecology now—Connecting the dots to enable agroecology transformations. *Agroecology and Sustainable Food Systems*, 44(5), 561–565. <https://doi.org/10.1080/21683565.2019.1709320>
- Anderson, M. D., & Settee, P. (2020). Knowledge and education for peoples' sovereignty. *Globalizations*, 17(7), 1300–1309. <https://doi.org/10.1080/14747731.2020.1783785>
- Atkinson, M. M., & Coleman, W. D. (1989). Strong states and weak states: Sectoral policy networks in advanced capitalist economies. *British Journal of Political Science*, 19(1), 47–67. <https://doi.org/10.1017/S0007123400005317>
- Auld, G. (2014). *Constructing private governance: The rise and evolution of forest, coffee, and fisheries certification*. Yale University Press. <https://doi.org/10.12987/yale/9780300190533.001.0001>
- Béné, C., Bakker, D., Chavarro, M. J., Even, B., Melo, J., & Sonneveld, A. (2021). Global assessment of the impacts of COVID-19 on food security. *Global Food Security*, 31, Article 100575. <https://doi.org/10.1016/j.gfs.2021.100575>
- Bernstein, S., & Cashore, B. (2000). Globalization, four paths of internationalization and domestic policy change: The case of ecoforestry in British Columbia, Canada. *Canadian Journal of Political Science/Revue canadienne de science politique*, 33(1), 67–99. <https://doi.org/10.1017/S0008423900000044>
- Blay-Palmer, A. (2009). The Canadian pioneer: The genesis of urban food policy in Toronto. *International Planning Studies*, 14(4), 401–416. <https://doi.org/10.1080/13563471003642837>
- Blay-Palmer, A., Haine-Bennett, E., Goupil, S., Friedmann, H., Settee, P., Wilkes, J., Ballamingie, P., Di Battista, A., Reid, H., Mcloed-Kilmurray, H., Mount, P., & Food Secure Canada. (2020). *Now is the time to build sustainable food system resilience*. Building Back Better Post-COVID-19 Task Force, Canadian Commission for UNESCO. iPolitics. <https://ipolitics.ca/2020/07/15/now-is-the-time-to-build-sustainable-food-system-resilience/>
- Booker, R. (2021). *Canadian farm soils still on the move*. The Western Producer. <https://www.producer.com/crops/canadian-farm-soils-still-on-the-move/>
- Bronson, K., Knezevic, I., & Clement, C. (2019). The Canadian family farm, in literature and in practice. *Journal of Rural Studies*, 66, 104–111. <https://doi.org/10.1016/j.jrurstud.2019.01.003>
- Buchan, S. A., Smith, P. M., Warren, C., Murti, M., Mustard, C., Hee Kim, J., Menon, S., Brown, K. A., van Ingen, T., & Smith, B. T. (2022). Incidence of outbreak-associated COVID-19 cases by industry in Ontario, Canada, 1 April 2020–31 March 2021. *Occupational & Environmental Medicine*, 79(6), 403–411. <https://doi.org/10.1136/oemed-2021-107879>
- Burstein, P. (2003). The impact of public opinion on public policy: A review and an agenda. *Political Research Quarterly*, 56(1), 29–40. <https://doi.org/10.1177/106591290305600103>
- Canfield, M., Anderson, M. D., & McMichael, P. (2021). UN Food Systems Summit 2021: Dismantling democracy and resetting corporate control of food systems. *Frontiers in Sustainable Food Systems*, 5, Article 661552. <https://doi.org/10.3389/fsufs.2021.661552>
- Canfield, M. C., Duncan, J., & Claeys, P. (2021). Reconfiguring food systems governance: The UNFSS and the battle over authority and legitimacy. *Development*, 64, 181–191. <https://doi.org/10.1057/s41301-021-00312-1>
- Carling, A., & Mankani, I. (2020). *Systemic inequities increase Covid-19 risk for Indigenous people in Canada*. Human Rights Watch. <https://www.hrw.org/news/2020/06/09/systemic-inequities-increase-covid-19-risk-indigenous-people-canada>
- Chandrasekaran, K., Guttal, S., Kumar, M., Langner, L., & Manahan, M. A. (2021). *Exposing corporate capture of the UNFSS through multistakeholderism*. Food Systems 4 People. <https://www.foodsystems4people.org/multistakeholderism-report/>
- Cheung, J. (2020). *Black people and other people of colour make up 83% of reported COVID-19 cases in Toronto: 21% of reported cases affect Black people, who make up only 9% of the city's overall population*. CBC News. <https://www.cbc.ca/news/canada/toronto/toronto-covid-19-data-1.5669091>
- Cidro, J., Adekunle, B., Peters, E., & Martens, T. (2015). Beyond food security: Understanding access to cultural food for urban Indigenous people in Winnipeg as Indigenous food sovereignty. *Canadian Journal of Urban Research*, 24(1), 24–43. <https://www.jstor.org/stable/26195276>

- Clapp, J. (2020). *Food* (3rd ed.). Polity Press.
- Clapp, J. (2021). The problem with growing corporate concentration and power in the global food system. *Nature Food*, 2(6), 404–408. <https://doi.org/10.1038/s43016-021-00297-7>
- Clapp, J. (2022). *Food price spikes are about much more than Ukraine* [Op-ed]. Civil Eats. <https://civileats.com/2022/05/16/op-ed-food-price-spikes-are-about-much-more-than-ukraine/>
- Clapp, J. (2023). Concentration and crises: Exploring the deep roots of vulnerability in the global industrial food system. *The Journal of Peasant Studies*, 50(1), 1–25. <https://doi.org/10.1080/03066150.2022.2129013>
- Clapp, J., Noyes, I., & Grant, Z. (2021). The food systems summit's failure to address corporate power. *Development*, 64(3–4), 192–198. <https://doi.org/10.1057/s41301-021-00303-2>
- Coalition on Sustainable Productivity Growth for Food Security and Resource Conservation. (2021). *Concept note*. UN Food Systems Summit 2021. <https://www.usda.gov/sites/default/files/documents/Template-FSS-Coalition-Sustainable-Productivity-Growth-ENGLISH.pdf>
- Coleman, W. D., Skogstad, G. D., & Atkinson, M. M. (1996). Paradigm shifts and policy networks: Cumulative change in agriculture. *Journal of Public Policy*, 16(3), 273–301. <https://doi.org/10.1017/S0143814X00007777>
- Committee on World Food Security [CFS]. (2021). *Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition: Policy recommendations*. CFS Global Strategic Framework for Food Security and Nutrition (GSF). https://www.fao.org/fileadmin/templates/cfs/Docs2021/Documents/Policy_Recommendations_Agroecology_of_her_Innovations/2021_Agroecological_and_other_innovations_EN.pdf
- Committee on World Food Security [CFS]. (2022, October 19). Keynote address by CFS Chair to the community of Portuguese speaking countries. <https://www.fao.org/cfs/resources/detail/en/c/1609703/>
- Coté, C. (2016). “Indigenizing” food sovereignty. Revitalizing Indigenous food practices and ecological knowledges in Canada and the United States. *Humanities*, 5(3), Article 57. <https://doi.org/10.3390/h5030057>
- Dale, B. (2020). Alliances for agroecology: From climate change to food system change. *Agroecology and Sustainable Food Systems*, 44(5), 629–652. <https://doi.org/10.1080/21683565.2019.1697787>
- David Suzuki Foundation. (2021). *Federal pesticide regulator flip-flops on proposed neonic ban after years of delay* [News release]. <https://davidsuzuki.org/press/federal-pesticide-regulator-flip-flops-on-proposed-neonics-ban-after-years-of-delay/>
- Deutsche Welle. (2021). *Greta Thunberg takes on food industry*. <https://www.dw.com/en/climate-activist-greta-thunberg-takes-on-food-industry/a-57633673>
- Devlin-Foltz, D., & Malinaro, L. (2010). *Champions and “Champion-ness”: Measuring efforts to create champions for policy change*. Center for Evaluation Innovation. https://www.aspeninstitute.org/wp-content/uploads/files/content/docs/pubs/Champions_and_Championness_Aug2010.pdf
- Dibden, J., Potter, C., & Cocklin, Cl. (2009). Contesting the neoliberal project for agriculture: Productivist and multifunctional trajectories in the European Union and Australia. *Journal of rural studies*, 25(3), 299–308. <https://doi.org/10.1016/j.jrurstud.2008.12.003>
- Dryden J., & Rieger, S. (2020). *Inside the slaughterhouse*. *North America’s largest single coronavirus outbreak started at this Alberta meat-packing plant. Take a look within*. CBC News. <https://newsinteractives.cbc.ca/longform/cargill-covid19-outbreak/>
- Farmers for Climate Solutions. (2021). *A down payment for a resilient farm future*. <https://farmersforclimatesolutions.ca/budget-2021-recommendation/#programs>
- Feldman, M. S., & Khademian, A. M. (2007). The role of the public manager in inclusion: Creating communities of participation. *Governance*, 20(2), 305–324. <https://doi.org/10.1111/j.1468-0491.2007.00358.x>
- Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children’s Fund, World Food Programme, World Health Organization. (2021). *The state of food security and nutrition in the world 2022: Repurposing food and agricultural policies to make healthy diets more affordable*. <https://doi.org/10.4060/cc0639en>
- Food Secure Canada. (2021). *Learn: Eat Think Vote is a non-partisan campaign, gathering community members living coast-to-coast to speak with federal candidates ahead of the upcoming election*. <https://www.eatthinkvote.ca/learn/>

- Food Systems 4 People. (2023). *Multistakeholderism and the corporate capture of global food governance. What is at risk in 2023?* https://www.foodsystems4people.org/wp-content/uploads/2023/05/EN_Analysis-report-2023_FS4P.pdf
- FoodShare TO. (2021). *Right to food: A community- driven COVID-19 response* [Youtube video]. <https://www.youtube.com/watch?v=Kp7tTiTud8w>
- Francis, C. A. (2000). Designing a durable and positive future for agriculture. *American Journal of Alternative Agriculture*, 15(1), 44–47. <https://doi.org/10.1017/S0889189300008468>
- Frantzeskaki, N., & Rok, A. (2018). Co-producing urban sustainability transitions knowledge with community, policy and science. *Environmental Innovation and Societal Transitions*, 29, 47–51. <https://doi.org/10.1016/j.eist.2018.08.001>
- Garthson, B. (2021). *Agroecology and the future of our mother earth*. Ecological Farmers Association of Ontario. <https://efao.ca/agroecology-earth/>
- Giraldo, O. F., & McCune, N. (2019). Can the state take agroecology to scale? Public policy experiences in agroecological territorialization from Latin America. *Agroecology and Sustainable Food Systems*, 43(7–8), 785–809. <https://doi.org/10.1080/21683565.2019.1585402>
- Gliessman, S., Friedmann, H., & Howard, H. P. (2019). Agroecology and food sovereignty. *IDS Bulletin*, 50(2), 91–109. <https://doi.org/10.19088/1968-2019.120>
- Global People's Summit on Food Systems. (2021, September 24). *Today is the Global #ClimateStrike! Here is youth climate activist Greta Thunberg's message for the Global People's Summit on Food Systems* [Tweet]. <https://twitter.com/OurFoodSystems/status/1441365230731227136?cxt=HHwWgMCrlc2C4YAAoAAAA>
- Hance, J. (2020, January 4). Lethal algae blooms—an ecosystem out of balance. Toxic formations across the US and the Baltic are part of a worrying trend linked to the climate crisis and farming methods. *The Guardian*. <https://www.theguardian.com/environment/2020/jan/04/lethal-algae-blooms-an-ecosystem-out-of-balance>
- High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security [HLPE]. (2019). *Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition* [HLPE Report #14]. <https://www.fao.org/3/ca5602en/ca5602en.pdf>
- High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security [HLPE]. (2020a). *Impacts of COVID-19 on food security and nutrition: Developing effective policy responses to address the hunger and malnutrition pandemic* [Issues paper]. <https://www.fao.org/3/cb1000en/cb1000en.pdf>
- High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security [HLPE]. (2020b). *Food security and nutrition: Building a global narrative towards 2030* [HLPE Report #15]. <https://openknowledge.fao.org/server/api/core/bitstreams/8357b6eb-8010-4254-814a-1493faaf4a93/content>
- High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security [HLPE]. (2023). <https://www.fao.org/cfs/cfs-hlpe/experts/en>
- Hill Times. (2023). *Careers: Director, government relations* [Job Posting]. <https://hilltimescareers.ca/jobs/director-government-relations-2/>
- Holt-Giménez, E., Shattuck, A., Altieri, M., Herren, H., & Gliessman, S. (2012). We already grow enough food for 10 billion people...and still can't end hunger. *Journal of Sustainable Agriculture*, 36(6), 595–598. <https://doi.org/10.1080/10440046.2012.695331>
- Houser, M., & Stuart, D. (2020). An accelerating treadmill and an overlooked contradiction in industrial agriculture: Climate change and nitrogen fertilizer. *Journal of Agrarian Change*, 20(2), 215–237. <https://doi.org/10.1111/joac.12341>
- Human Rights Watch. (2022). *Brazil: Indigenous rights under serious threat* [News release]. <https://www.hrw.org/news/2022/08/09/brazil-indigenous-rights-under-serious-threat>
- Ikerd, J. (2023). THE ECONOMIC PAMPHLETEER: Agri-food corporations are not real people; why does it matter? *Journal of Agriculture, Food Systems, and Community Development*, 12(4), 5–8. <https://doi.org/10.5304/jafscd.2023.124.001>
- International Congress of Nutrition. (2022). *Program Symposium. 22nd IUNS-ICN International Conference of Nutrition*, Tokyo, December 6–11, 2022. https://icn22.org/program_symposium.html

- Isaac, M. E., Isakson, S. R., Dale, B., Levkoe, C. Z., Hargreaves, S. K., Ernesto Méndez, V., Wittman, H., Hammelman, C., Langill, J. C., Martin, A. R., Nelson, E., Ekers, M., Borden, K. A., Gagliardi, S., Buchanan, S., Archibald, S., Eit & Gálvez Ciani, A. (2018). Agroecology in Canada: Towards an integration of agroecological practice, movement, and science. *Sustainability*, 10(9), Article 3299. <https://doi.org/10.3390/su10093299>
- Jenkins-Smith, H. C., Nohrstedt, D., Weible, C. M., & Ingold, K. (2018). The advocacy coalition framework: An overview of the research program. In C. M. Weible & P. A. Sabatier (Eds.), *Theories of the policy process* (4th ed.), (pp. 135–171). Routledge. <https://doi.org/10.4324/9780429494284-5>
- Jenkins-Smith, H. C., Nohrstedt, D., Weible, C. M., & Sabatier, P. A. (2014). The advocacy coalition framework: Foundations, evolution, and ongoing research. In P. A. Sabatier & C. M. Weible (Eds.), *Theories of the policy process* (3rd ed.) (pp. 183–224). Routledge.
- Jenkins-Smith, H. C., & Sabatier, P. A. (1993). The study of public policy processes. In P. A. Sabatier & H. C. Jenkins-Smith (Eds.), *Policy change and learning: An advocacy coalition approach* (pp. 135–142). Westview Press.
- Jenkins-Smith, H. C., & Sabatier, P. A. (1994). Evaluating the advocacy coalition framework. *Journal of public policy*, 14(2), 175–203. <https://doi.org/10.1017/S0143814X00007431>
- Johnson, A. E., & Blumberg, Al. (2021, July 29). How to save a planet?: Is your carbon footprint BS? [Audio podcast]. Spotify. <https://gimletmedia.com/shows/howtosaveaplanet/llh8gxxg>
- Keck, M. E., & Sikkink, K. (1999). Transnational advocacy networks in international and regional politics. *International Social Science Journal*, 51(159), 89–101. <https://doi.org/10.1111/1468-2451.00179>
- Kelley, M., Wirsig, K., & Smart, V. (2020). *Bitter harvest*. CBC Radio-Canada, Fifth Estate Investigations. <https://newsinteractives.cbc.ca/longform/bitter-harvest-migrant-workers-pandemic/>
- Koppell, J. G. (2010). *World rule: Accountability, legitimacy, and the design of global governance*. University of Chicago Press. <https://doi.org/10.7208/chicago/9780226450964.001.0001>
- Kraemer, B. (2023). *Community Fridge KW launches new project*. CityNews, Kitchener, ON. <https://kitchener.citynews.ca/2023/03/29/community-fridge-kw-launches-new-project-6772528/>
- Labarthe, P., & Laurent, C. (2013). Privatization of agricultural extension services in the EU: Towards a lack of adequate knowledge for small-scale farms? *Food Policy*, 38, 240–252. <https://doi.org/10.1016/j.foodpol.2012.10.005>
- Laforge, J. M., Dale, B., Levkoe, C. Z., & Ahmed, F. (2021). The future of agroecology in Canada: Embracing the politics of food sovereignty. *Journal of Rural Studies*, 81, 194–202. <https://doi.org/10.1016/j.jrurstud.2020.10.025>
- Lee, H., Calvin, K., Dasgupta, D., Krinner, G., Mukherji, A., Thorne, P., Trisos, C., Romero, J., Aldunce, P., Barrett, K., Blanco, G., Cheung, W. W. L., Connors, S. L., Denton, F., Diongue-Niang, A., Dodman, D., Garschagen, M., Geden, O., Hayward, B. ... Zommers, Z. Intergovernmental Panel on Climate Change. (2023). Summary for policymakers. *Climate change 2023: Synthesis report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1–34). <https://doi.org/10.59327/IPCC/AR6-9789291691647.001>
- Levkoe, C., Andrée, P., Ballamingie, P., Tasala, K., Wilson, A., & Korzun, M. (2023). Civil society engagement in food systems governance in Canada: Experiences, gaps, and possibilities. *Journal of Agriculture, Food Systems, and Community Development*, 12(2), 267–286. <https://doi.org/10.5304/jafscd.2023.122.005>
- Li, T., Fafard St-Germain, A.-A., & Tarasuk, V. (2023) *Household food insecurity in Canada, 2022*. Research to identify policy options to reduce food insecurity (PROOF), University of Toronto. <https://proof.utoronto.ca/>
- Lowe, P., Murdoch, J., Marsden, T., Munton, R., & Flynn, A. (1993). Regulating the new rural spaces: the uneven development of land. *Journal of Rural Studies*, 9(3), 205–222. [http://doi.org/10.1016/0743-0167\(93\)90067-T](http://doi.org/10.1016/0743-0167(93)90067-T)
- Marshman, J., & Knezevic, I. (2021). What’s in a name? Challenging the commodification of pollination through the diverse economies of “Bee Cities.” *Journal of Political Ecology*, 28(1), 124–145. <https://doi.org/10.2458/jpe.2307>
- Masson-Delmotte, V., Zhai, P., Pörtner, H.-O., Roberts, D., Skea, J., Shukla, P. R., Pirani, A., Moufouma-Okia, W., Péan, C., Pidcock, R., Connors, S., Matthews, J. B. R., Chen, Y., Zhou, X., Gomis, M. I., Lonnoy, E., Maycock, T., Tignor, M., & Waterfield, T. (Eds.). (2018). *Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Intergovernmental Panel on Climate Change. Cambridge University Press. <https://www.ipcc.ch/sr15/>

- Masson-Delmotte, V., Zhai, P., Pirani, A., Connors, S. L., Péan, C., Berger, S., Caud, N., Chen, Y., Goldfarb, L., Gomis, M. I., Huang, M., Leitzell, K., Lonnoy, E., Matthews, J. B. R., Maycock, T. K., Waterfield, T., Yelekcı, O., Yu, R., & Zhou, B. (Eds.). Intergovernmental Panel on Climate Change. (in press). Summary for Policymakers. In *Climate change 2021: The physical science basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 3–34). Cambridge University Press. <https://doi.org/10.1017/9781009157896.001>
- McDermott, C. L., Montana, J., Bennett, A., Gueiros, C., Hamilton, R., Hirons, M., Maguire-Rajpaul, V. A., Parry, E., & Picot, L. (2022). Transforming land use governance: Global targets without equity miss the mark. *Environmental Policy and Governance*, 33(3), 245–257. <https://doi.org/10.1002/eet.2027>
- McIntyre, B. D., Herren, H. R., Wakhungu, J., & Watson, R. T. (Eds.) (2009). *Agriculture at a crossroads—Global report*. International Assessment of Agricultural Knowledge, Science and Technology for Development. <https://wedocs.unep.org/handle/20.500.11822/8590;jsessionid=7BC090A97E7A406D8C6D5688C17F171E>
- McKeon, N. (2017). Are equity and sustainability a likely outcome when foxes and chickens share the same coop? Critiquing the concept of multistakeholder governance of food security. *Globalizations*, 14(3), 379–398. <https://doi.org/10.1080/14747731.2017.1286168>
- Montenegro de Wit, M., & Iles, A. (2016). Toward thick legitimacy: Creating a web of legitimacy for agroecology. *Elementa: Science of the Anthropocene*, 4, Article 115. <https://doi.org/10.12952/journal.elementa.000115>
- Montenegro de Wit, M., & Iles, A. (2021). Woke science and the 4th Industrial Revolution: Inside the making of UNFSS knowledge. *Development*, 64(3–4), 199–211. <https://doi.org/10.1057/s41301-021-00314-z>
- Moon, J. (2018, September 19). Influencing policy change: Finding a champion. *Berkeley Public Policy Journal*. <https://bppi.berkeley.edu/2018/09/19/influencing-policy-change-finding-a-champion/>.
- National Farmers Union. (2023a). *Agroecology*. <https://www.nfu.ca/campaigns/agroecology/>
- National Farmers Union. (2023b). *Canadian agriculture: The challenge of achieving authentic sustainability*. <https://www.nfu.ca/publications/cdn-ag-the-challenge-of-achieving-authentic-sustainability/>
- National Wraparound Initiative. (2023). *Wraparound basics or what is wraparound: An introduction*. Regional Research Institute, Portland State University. <https://nwi.pdx.edu/wraparound-basics/>
- Nicholls, W., Gnes, D., & Vermeulen, F. (2021). Local path dependency and scale shift in social movements: The case of the us Immigrant Rights Movement. *Geographical Review*, 111(2), 269–286. <https://doi.org/10.1080/00167428.2020.1780127>
- Patt, A., & Zeckhauser, R. (2000). Action bias and environmental decisions. *Journal of Risk and Uncertainty*, 21(1), 45–72. <https://doi.org/10.1023/A:1026517309871>
- Pinnington, E., Lerner, J., & Schugurensky, D. (2009). Participatory budgeting in North America: the case of Guelph, Canada. *Journal of Public Budgeting, Accounting & Financial Management*, 21(3), 454–483. <https://doi.org/10.1108/JPBAFM-21-03-2009-B005>
- Reid, H., Wilkes, J., Knezevic, I., Robert, N., Perttula, C., & Blay-Palmer, A. (2022). *The need for a strong regional food system*. Building Back Better Post-COVID-19 Task Force. <https://en.ccunesco.ca/-/media/Files/Unesco/Resources/2022/06/StrongRegionalFoodSystem.pdf>
- Robin, T., Rotz, S., & Xavier, A. (2023). *Indigenous food sovereignty in Ontario: A study of exclusion at the Ministry of Agriculture, Food & Rural Affairs*. Yellowhead Institute. <https://yellowheadinstitute.org/food-sovereignty-omafra/>
- Roche, M., & Argent, N. (2015). The fall and rise of agricultural productivism? An Antipodean viewpoint. *Progress in Human Geography*, 39(5), 621–635. <https://doi.org/10.1177/0309132515582058>
- Rotz, S., Xavier, A., & Robin, T. (2023). “It wasn’t built for us”: The possibility of Indigenous food sovereignty in settler colonial food bureaucracies. *Journal of Agriculture, Food Systems, and Community Development*, 12(3), 93–110. <https://doi.org/10.5304/jafscd.2023.123.009>
- Ruhf, K. Z., Devlin, K., Clancy, K., Berlin, L., & Palmer, A. (2017). Engaging multiple audiences: Challenges and strategies in complex food systems projects. *Journal of Agriculture, Food Systems, and Community Development*, 7(4), 179–185. <https://doi.org/10.5304/jafscd.2017.074.016>
- Runge, C. F. (1988). The assault on agricultural protectionism. *Foreign Affairs*, 67(1), 133–150. <https://doi.org/10.2307/20043678>

- Sankoff, P. (2019). Canada's experiment with industry self-regulation in agriculture: Radical innovation or means of insulation? *Canadian Journal of Comparative and Contemporary Law*, 5, 299–348.
<https://www.cjcl.ca/wp-content/uploads/2020/11/Sankoff.pdf>
- Secretariat of the Convention on Biological Diversity. (2020). Global Biodiversity Outlook 5—Summary for policy makers. <https://www.cbd.int/gbo/gbo5/publication/gbo-5-spm-en.pdf>
- Skogstad, G. (2008). Policy networks and policy communities: Conceptualizing state–societal relationships in the policy process. In L. White, R. Simeon, R. Vipond, & J. Wallner (Eds.), *The comparative turn in Canadian political science* (pp. 205–220). University of British Columbia Press. <https://doi.org/10.59962/9780774856188-013>
- Slow Food Foundation. (2023). *Slow Food: Food will be at the heart of COP28, but how? Agroecology must lead the way to shaping a new food system*.
<https://www.slowfood.com/blog-and-news/slow-food-food-will-be-at-the-heart-of-cop28-but-how/>
- Smithers, J., & Blay-Palmer, A. (2001). Technology innovation as a strategy for climate adaptation in agriculture. *Applied Geography*, 21(2), 175–197. [https://doi.org/10.1016/S0143-6228\(01\)00004-2](https://doi.org/10.1016/S0143-6228(01)00004-2)
- Soil Association. (2010). *Telling porkies: The big fat lie about doubling food production*.
https://www.soilassociation.org/media/4906/policy_telling_porkies.pdf
- Stahlbrand, L., & Roberts, W. (2022). Food policy councils and the food-city nexus: The history of the Toronto Food Policy Council. *Canadian Food Studies/La Revue canadienne des études sur l'alimentation*, 9(1), 69–86.
<https://doi.org/10.15353/cfs-rcea.v9i1.505>
- Statistics Canada. (2023). *Canadian income survey, 2021*.
<https://www150.statcan.gc.ca/n1/daily-quotidien/230502/dq230502a-eng.htm>
- Tarasuk, V., & Mitchell, A. (2020). *Household food insecurity in Canada, 2017–18*. Research to identify policy options to reduce food insecurity (PROOF), University of Toronto. <https://proof.utoronto.ca/wp-content/uploads/2020/03/Household-Food-Insecurity-in-Canada-2017-2018-Full-Reportpdf.pdf>
- Thompson, M. S., Cochrane, A., & Hopma, J. (2020). Democratising food: The case for a deliberative approach. *Review of International Studies*, 46(4), 435–455. <https://doi.org/10.1017/S0260210520000017>
- United Nations Environment Programme. (2016). *Pollinators under threat—so what* [Blog]?
<https://www.unep.org/news-and-stories/story/pollinators-under-threat-so-what>
- United Nations Environment Programme. (2020, July 10). How to feed 10 billion people [Blog]. UNEP,
<https://www.unep.org/news-and-stories/story/how-feed-10-billion-people>
- United Nations Food Systems Summit 2021. (2021). *The science behind the summit*.
<https://www.un.org/en/food-systems-summit/the-science>
- United Nations Food Systems Summit 2021. (2022). Game changing propositions. Retrieved from the Internet Archive:
<https://web.archive.org/web/20220115180733/https://foodsystems.community/game-changing-propositions/>
- United Nations Food Systems Summit 2021. (2023). *Bios of the members of the Scientific Group of the UN Food Systems Summit 2021*. <https://sc-fss2021.org/about-us/bios-of-members/>
- United Nations Food Systems Summit Coalition on Sustainable Productivity Growth for Food Security and Resource Conservation. (2021). Background and Proposal. <https://www.usda.gov/sites/default/files/documents/Coalition-Sustainable-Productivity-Growth-background-and-proposal.pdf>
- von Braun, J., Afsana, K., Fresco, L. O., & Hassan, M. H. A. (2023). Food systems: Seven priorities to end hunger and protect the planet. In J. von Braun, K. Afsana, L. O. Fresco, & M. H. A. Hassan (Eds.), *Science and innovations for food systems transformation* (pp. 3–9). Springer. https://doi.org/10.1007/978-3-031-15703-5_1
- Weldon, I., & Parkhurst, J. (2022). Governing evidence use in the nutrition policy process: Evidence and lessons from the 2020 Canada food guide. *Nutrition Reviews*, 80(3), 467–478. <https://doi.org/10.1093/nutrit/nuab105>
- Wilkes, J. (2022a). Municipal policy and as part of local food systems governance: Backyard chickens and land for growing. In D. Szanto, A. Di Battista, & I. Knezevic (Eds.), *Food studies: Matter, meaning, movement* (pp. 609–619). Food Studies Press. <https://doi.org/10.22215/fsmmm/wj58>
- Wilkes, J. (2022b). Reconnecting with nature through good governance: Inclusive policy across scales. *Agriculture*, 12(3), Article 382. <https://doi.org/10.3390/agriculture12030382>

- Wilkes, J. (2023). *Transcending borders: Global food governance in an era of multistakeholderism*. Unpublished manuscript.
- Wilkes, J. (2024). *Canadian agriculture: Proxies of power and (re)defining the expert*. Unpublished manuscript.
- Wilkes, J., & Perttula, C. (2022). Priorities, narratives, and collaboration: Insights from evolving federal mandates on food systems in Canada. *Frontiers in Communication*, 7, Article 793092. <https://doi.org/10.3389/fcomm.2022.793092>
- Wilson, J. (2022, October 31). *Ontario manufacturing workers most prone to COVID-19 deaths early in pandemic*. Canadian Occupational Safety. <https://www.thesafetymag.com/ca/topics/leadership-and-culture/ontario-manufacturing-workers-most-prone-to-covid-19-deaths-early-in-pandemic/425708>
- Wilson, T., & Shukla, S. (2020). Pathways to revitalization of Indigenous food systems: Decolonizing diets through Indigenous-focused food guides. *Journal of Agriculture, Food Systems, and Community Development*, 9(4), 201–208. <https://doi.org/10.5304/jafscd.2020.094.003>
- Wilfrid Laurier University. (2022, December 7). *Laurier's Alison Blay-Palmer advocates for biodiversity at COP15*. Laurier News Hub, Spotlights. <https://www.wlu.ca/news/spotlights/2022/dec/laurier-professor-alison-blay-palmer-advocates-for-agricultural-biodiversity-at-cop15.html>
- Wyles, P. (2007). Success with Wraparound: A collaborative, individualised, integrated and strength-based model. *Youth Studies Australia*, 26(4), 45–53.

Establishing alternative grain networks: A comparison of case experiences in South Tyrol, Italy, and Colorado, United States

Nanna L. Meyer ^{a *}

University of Colorado Colorado Springs (UCCS)

Giovanna Sacchi,^b Camilla Sartori,^c and Christian Fischer^d

Free University of Bozen-Bolzano

Submitted July 25, 2023 / Revised November 1, 2023, and January 6, February 26, and April 15, 2024 / Accepted April 16, 2024 / Published online July 1, 2024

Citation: Meyer, N. L., Sacchi, G., Sartori, C., & Fischer, C. (2024). Establishing alternative grain networks: A comparison of case experiences in South Tyrol, Italy, and Colorado, United States. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 337–361. <https://doi.org/10.5304/jafscd.2024.133.029>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC-BY license

Abstract

Alternative grain networks (AGNs) are micro-systems that supplement conventional food production and distribution systems, emphasizing high quality food and leveraging regional, socio-cultural,

and socio-economic values. In this multiple case study analysis we compare two AGNs, Regiokorn in South Tyrol, Italy, and the Colorado Grain Chain (CGC) in the U.S., using qualitative and comparative analysis to explore the indicators of geographical proximity, cultural homogeneity, commercial viability, and community involvement. Regiokorn and the CGC differ in various ways in

^{a *} *Corresponding author:* Nanna L. Meyer, PhD, RDN, CSSD, Associate Professor, Department of Human Physiology and Nutrition, University of Colorado Colorado Springs (UCCS); William J Hybl Sports Medicine and Performance Center; 1420 Austin Bluffs Parkway; Colorado Springs, CO 80918 USA; +1-719-238-0119;  <https://orcid.org/0000-0002-3451-3715>; nmeyer2@uccs.edu

^b Giovanna Sacchi, PhD, Researcher, Faculty of Agricultural, Environmental and Food Sciences, Free University of Bozen-Bolzano.

Dr. Sacchi is now Associate Professor, Department of Agricultural, Forest and Food Sciences, University of Turin;  <https://orcid.org/0000-0002-9286-7810>; giovanna.sacchi@unito.it

^c Camilla Sartori, MA, Master's Student in Food Sciences for Innovation and Authenticity, Free University of Bozen-Bolzano.

Camilla Sartori is now a Faculty Research Assistant, Department of Food Science and Technology, Oregon State University; camilla.sartori@oregonstate.edu

^d Christian Fischer, PhD, Professor, Agricultural Economics, Free University of Bozen-Bolzano;  <https://orcid.org/0000-0002-5016-3962>; christian.fischer@unibz.it

Funding Disclosure

This work was partially funded by The Colorado Grain Chain: Expanding Markets for Heritage and Whole Grain Growers and Makers of Value-Added Products was made possible by the U.S. Department of Agriculture's Agricultural Marketing Service through grant AM200100XXXXG081. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA. Additional funding was received from the University of Colorado Colorado Springs.

Conflict of Interest

None of the authors have any competing interests.

these operational dimensions as well as in their organizational setups, the former as a pure business network and the latter including consumer members. Our findings highlight how these two different organizational structures can be leveraged to achieve similar outcomes, and provide valuable insights for other AGNs in finding their own paths.

Keywords

agri-food, alternative grain networks, community, sustainable food systems, value chains, cereals, consumers, farmers, Italy, United States

Introduction

Alternative agri-food networks, also called alternative food networks (AFNs), are characterized by value generation mechanisms that generally complement conventional food production and distribution systems. AFNs are often built on personal long-term relationships among small producers, processors, and consumers, and emphasize high food quality, regionality (e.g., the *terroir* concept), proximity, resilience, environmental sustainability, and both socio-cultural and socio-economic values (Michel-Villarreal et al., 2019; Witter et al., 2021).

Alternative grain networks (AGNs) are a type of AFNs that focus on cereals. Like AFNs, AGNs function outside the dominant commodity system. The reliance of conventional, “industrial” agriculture on monoculture, causing soil degradation and loss of biodiversity (Kremen et al., 2012; Poore & Nemecek, 2018; Pretty, 2018), is one of the primary criticisms of such systems. Furthermore, while a simple black-and-white characterization of agricultural systems may be misleading and distinctions between individual operational approaches in practice can be blurry, conventional agriculture, i.e., larger-scale commodity farms primarily selling to international markets, is often criticized for leading to loss of cultural food traditions and knowledge (Jacques & Jacques, 2012).

In contrast, AGNs tend to place a higher priority on crop diversification and sustainable farming methods such as crop rotation, agroforestry, and low-till organic agriculture (Renting et al., 2003). AGNs are more likely to maintain traditional and adapted seed varieties, crops, cultivation

techniques, and foods, and to include community members in the food production and distribution processes (Hergesheimer & Wittman, 2012; Sacchi et al., 2019). By offering communities access to wholesome, culturally appropriate food, and by paying farmers a fair price for their produce, AGNs may help address concerns of food security and food sovereignty. As is known from AFNs in general (Testa et al., 2020), AGNs have the potential to build local grain economies through diversification of small and medium-size farms and the production of flour, malt, and end products such as bread, beer, and other value-added products (Forrest & Wiek, 2021), with potential benefits to farmers and processors (e.g., handlers, millers, maltsters, bakers, brewers) while also feeding the local community.

Starting from these premises, this paper presents a multiple case study analysis of two AGN initiatives in Italy and the U.S. to illustrate differences in organizational structures, actors involved, and consumer motivations in participating in such experiences: Regiokorn in the autonomous province of South Tyrol and the Colorado Grain Chain. Their selection was motivated by the interests of the authors in the research question of whether similar commercial and social endeavors, operating in diverse cultural, agricultural, and legal environments, could achieve comparable outcomes in terms of community development and sustainability practices.

Background

Since 2000 there has been a steady rise in in Europe and the U.S. of localized grain efforts, aiming to re-establish regional grain economies by reducing the distances among farmers, millers, maltsters, bakers, chefs, brewers, and distillers, and expanding their collaborative networks. AGNs also enhance access to, and meet an increased consumer demand for, healthier and more locally produced food and drink. This is accomplished through small-scale, regionalized grain processing infrastructure, often initiated through regional mills (e.g., Anson Mills, North Carolina, USA; L’Azienda Agricola Biologica Floriddia, Tuscany, Italy). In addition, AGNs require a strong farmer interest in cultivating diverse, ancient, and specialty grains and

bakers buying the flour to make artisan breads, leveraging the grains' flavor, baking, and nutritional qualities (Gualandi & Williams-Gualandi, 2021; Halloran, 2015).

In the U.S., AGNs are often supported by educational, community-focused, and nonprofit organizations (Appendix A), as re-organization into localized grain value chains may be a difficult task within the industrialized, large-scale, consolidated commodity system. Cooperative businesses have been very important in marginal, rural regions of the U.S. since the 1840s (Rasmussen, 1991). Today, U.S. grain cooperatives are mostly larger farmer-owned commodity systems and quite opposite in scale to AGNs. Nevertheless, AGNs are well-positioned to adopt some of the principles of cooperation (Democracy at Work Institute, 2021). In Europe, AGNs are often grain cooperatives, supported by rural associations, universities, and farmers' markets, as well as solidarity-based purchasing groups such as Gruppi d'Acquisto Solidale (GAS, in Italian) (Appendix B). AGNs provide farmers a viable way to sell their products directly to consumers as well as through wholesale channels, such as through direct-to-restaurant, retail, or institution pathways (Stevenson et al., 2011), bypassing the traditional commodity market system.

Overall, AGNs are important initiatives for building more sustainable, equitable, and resilient food systems by focusing on long-term relationships among all actors in the grain chain, preserving genetic diversity and agroecological practices, fostering community food and nutrition security, and supporting economic development (High Level Panel of Experts on Food Security and Nutrition, 2019). However, it is also important to note that AGNs are often small-scale and may not have the capacity to meet the food needs of a large population, and it can be difficult for the initiatives to compete with the low prices of agricultural commodities, especially for grain products. Furthermore, AGNs are not always dedicated to more ecologically appropriate production methods or to on-farm diversification, particularly in the unique niche of alternative grains (Brunori et al., 2016). Thus, these networks are highly heterogeneous, and some may be at risk for discontinuation due to their small sizes.

Various AGNs exist in both the U.S. and Italy. A good example of a U.S. AGN is a recently published Arizona case study by Forrest and Wiek (2021), which illustrates the economic growth potential of AGNs in all sectors along the grain chain: milling, malting, baking, brewing, and restaurants. At the time of this work, we counted 14 U.S. initiatives, mostly tied to nonprofit organizations (Appendix A). This is not an exhaustive number of initiatives, and among those missed there may be some with well-developed alternative grain chains; for example, contractual relations, including cooperative structures among farmers, millers, maltsters, bakers, and brewers within the networks (Halloran, 2015; Maenpaa, 2022). In Italy, many initiatives have produced AGNs, that explore the diversity of alternative bread value chains and their valorization practices of the final product (Sacchi et al., 2019). These initiatives typically start with awareness of the need to consider soil, climate, and crop as a single whole, and then set up farming practices that choose crops and varieties adapted to the environment. At least eleven initiatives in Italy have been currently recorded by the Rural Seeds Network (Appendix B), an association of agricultural organizations that promotes the collective management of agrobiodiversity.

Developing AGNs is complex, requiring many steps from field to food or beverage product (e.g., bread, pasta, beer). Infrastructure needs are large, and the consolidation of farms is a risk. Increasing acreage on fewer but larger-scale farms may seem a necessary step to ensure supply, especially for the production of beer and distilled spirits, but then there tends to be less focus on social factors, such as affordability of end products, potential workforce development with diverse ethnic inclusion, and accessibility by those with lower economic means (Edwards, 2015; Forrest & Wiek, 2021; Hinrichs, 2003; Sacchi et al., 2022). AGNs may also remain small and isolated, lacking needed infrastructure to ensure quality and leveraging opportunities for brand development, and thus may not effectively address the issue of scalability (Navin, 2015). Scalability can also relate to shifting the focus to educational initiatives or community engagement, while not addressing the simple need for more farmers to grow grains, and engage in

production planning that offers greater diversity and supply stability, or establish regionalized infrastructure for grain handling and processing. These practices could promote collaboration, while also decreasing competition. Thus, AGNs clearly have both risks and opportunities.

Previous studies on organizing, scaling up and reducing failure risks of AFNs have demonstrated that customer engagement and transparency of operations significantly increase sales (De Bernardi et al., 2020). The pivotal role of trust and effective communication in European agri-food, including grain chains, has been described in detail in earlier literature (Fischer, 2013). More recently, it has been demonstrated that among the constraining and facilitating factors impacting emergence and consolidation of different types of AFNs, trusted relationships with people who share similar goals are not only important for their long-term success but are also critical preconditions for starting them (Poças Ribeiro et al., 2021). Active member participation in AFNs can foster and grow trusting relationships while absence of trust generally constrains collaboration. In this regard, a wide scope of actions such as capacity building and promotion and/or subsidies by governmental and nongovernmental actors are needed to support the emergence of more AFNs and to facilitate the growth of trust and the assurance of process transparency. Regarding scaling up AFNs, Navin (2015) concludes that increasing network size may not be desirable for various reasons (environmental, social, etc.). However, a critical mass of financial revenues, and more crucially, of profits for all or at least the most involved actors, is crucial to ensure network long-term commercial viability, meaning sufficient incomes for the network participants who depend on such payments (Corsi et al., 2018).

The design and operation of AFNs can differ in various ways. Based on previous literature, to compare different AFNs we use the indicators of (i) geographical proximity, (ii) cultural homogeneity, (iii) commercial viability, and (iv) community involvement. Geographical proximity is a characterizing feature of many AFNs as, for instance, physical closeness of producers to consumers defines the concept of short supply chains. More generally, geographical proximity is an argument in

the innovation literature that it enhances knowledge creation and exchange. For instance, Maté-Sánchez-Val & Harris (2018) show that geographical proximity favors agri-food firm innovation by fostering knowledge spill-overs via the interaction of economic agents operating close to each other. Cultural homogeneity is also considered a facilitator of AFNs; for instance, a comparison of eight AFNs indicates that a shared culture positively affects the development and continuation of the networks (Hubeau et al., 2018). Commercial viability is essential for the long-term existence of any business endeavor. Without a stable and sufficient income, network members generally cannot sustain activities unless they are participating for non-commercial reasons and live from other income or savings. Community involvement strongly characterizes some AFN types, such as community-supported agriculture (CSA), and more broadly constitutes the inner workings of most other AFNs (Miralles et al., 2017). Hence, these selected variables overall represent different performance dimensions that collectively cover large spaces of the operational spectrum of AFNs.

The following sections deal with the methods applied and the analysis of the two case studies. The next sections discuss findings and present our conclusions.

Applied Research Methods

This multiple case studies analysis involves an in-depth examination of a small number of cases (Stake, 1995; Yin, 2016). Case study analysis is commonly used in the social sciences, in education, and business research to explore complex social, organizational, or educational phenomena. Its purpose is to gain an in-depth understanding of a particular issue, phenomenon, or concept by examining it from multiple perspectives (Crowe et al., 2011; Leavy, 2020; Meyer, 2001). Case studies may be limited by low generalizability, but offer insights from multiple sources of data, including interviews, observations, and secondary data analysis. The richness of information can help researchers gain a comprehensive view of the topic being. Furthermore, in the present study, comparing the Italian and American experiences not only advances the understanding of strengths and challenges faced by

the two initiatives, but also has many other advantages. First, the comparison identifies best practices that can be adapted and implemented in other contexts, which could help improve the efficiency and effectiveness of AGNs in different regions of the world. Moreover, comparing case studies in various regions, as done here, can improve understanding the determinants of AGN success or failure. This can be particularly important when identifying strategies for engaging farmers, consumers, and other stakeholders. Finally, it can also generate new insights and ideas that can be applied to developing and improving alternative farming systems—a rapidly evolving field, where new ideas and approaches are constantly emerging (Altieri, 2009; Garibaldi et al., 2017; Majiwa et al., 2018).

Our case study interviewees were selected from existing membership lists of the Regiokorn and the CGC AGNs. Since not all members were willing to participate in the interviews, the recruitment strategy was based on convenience sampling techniques, a type of nonprobability-based data collection that involves the sampling units (here, network members) being drawn from a part of the population that is easy to reach (Morgan, 2008). There are different types of non-random (i.e., convenience) sampling methods such as voluntary sampling, snowball sampling, quota sampling, or judgement sampling. In our case, voluntary sampling was used: all network members were contacted by e-mail and those who agreed to participate were interviewed. In the case of consumers, as Regiokorn lacks consumer members we conducted voluntary interviews with general store customers at the point of sale of Regiokorn and CGC products. To allow for better comparability of the consumer responses, CGC consumers were not chosen from network members. While convenience samples may not fully represent the population of interest and therefore can be a source of bias, this data collection approach may in some cases be the only option, especially if interview participation can only be implemented on a voluntary basis (Morgan, 2008).

Taking these considerations into account, a systematic case study procedure and protocol were developed, based on the scheme in Table 1. This study was approved by the University of Colorado,

Colorado Springs (UCCS) Institutional Review Board.

Key actors were first selected through considering all steps in the grain value chain: from growing the wheat and milling the grain to the final product and its consumption. Semi-structured interviews ($N = 46$) and participatory observations were carried out between April and September 2022 with stakeholders recruited through voluntary sampling (e.g., producers, millers, bakers, and brewers) and during specific events in the AGNs. In addition, key informants ($N = 3$) who contributed to the development of the AGNs were also interviewed as important sources of information. Table 2 reports the number of members per AGN analyzed and the stakeholders involved in the analysis per professional category.

A cross-referencing system of annotations (Jackson, 2001) was used to analyze the on-site observations alongside a word-by-word transcription of the semi-structured interviews. In Italy, the interviews were conducted in Italian and answers were translated into English before data coding. Afterwards, a verbal analysis was conducted to discern codes, relying on word similarity (Bazeley & Jackson, 2013). This process unveiled recurring items, which in turn shed light on subtopics pertaining to stakeholders' viewpoints. Coding of data and identifying significant themes underwent comprehensive discussion and received approval from the research team members. This facilitated the analysis and interpretation of findings.

The verbal analysis revealed three dominant topics (Figure 1). The emerging themes were grouped into sub-themes based on co-occurrences and reciprocity, i.e., when similar terms were mentioned repeatedly under the same topics.

The following sections report outcomes of analysis and comparisons of the AGNs, based on the identified themes of (i) network functioning and organization from the producer/processor viewpoint; (ii) product flows and prices at different stages of the network; and (iii) consumers' knowledge and motivation in participating in AGN experiences. Where it seemed insightful to do so, we used direct quotations to illustrate and support our summary results.

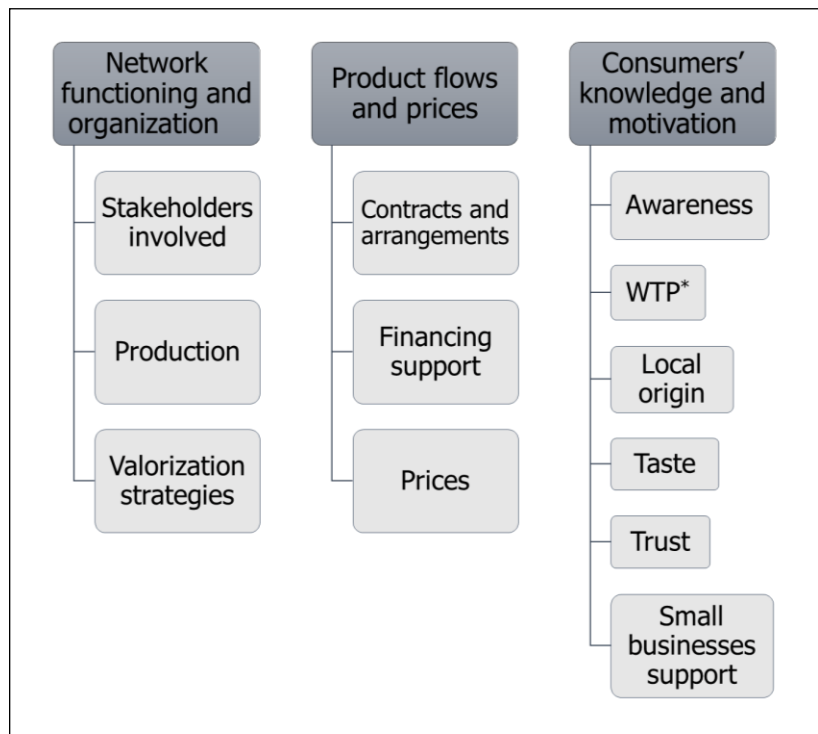
Table 1. Protocol Adopted in the Multiple Case Study Analysis

Process	Description
Study proposition 	To shed light on two different models of AGN using a comparative approach in a case study inquiry
Unit of analysis 	Two case studies: • Regiokorn, South Tyrol, Italy • Colorado Grain Chain, Colorado, U.S.
Study questions 	1. What are the main differences between the AGNs (i.e., organizational model, actors involved, structure, motivation in participating)? 2. Which are the main drivers and motivations for consumer participation?
Research procedure 	• Observation of naturally occurring interactions among AGN members • Participant observation of interaction and organizational activities of AGNs • Semi-structured interviews among AGN stakeholders and key actors • Semi-structured interviews among consumers on their knowledge/motivation
Timing 	April–September 2022
Data analysis 	• Cross-referencing system of annotations • Verbatim transcription of semi-structured interviews • Verbal analysis of data gathered from on-site observations and semi-structured interviews • Themes/sub-themes identification • Interpretation of findings

Table 2. Members of the Alternative Grain Networks (AGNs) and Number of Informant Stakeholders

Stakeholders	Members of the AGNs (2021–2022)		Stakeholders serving as informants	
	Regiokorn	Colorado Grain Chain	Regiokorn	Colorado Grain Chain
Farmers	55	11	4	3
Mills	1	1	1	on-site observations (1)
Bakers/Pasta makers	35	15	5	7
Brewers/distillers	0	3	0	3
Consumers	NA	members (50)	9	10 (non-members)
Key informants	NA	NA	2	1
Total	91	80	21	25

Figure 1. Topics and Subtopics Identified with the Verbal Analysis



* Willingness to pay

Comparison of Italian and American Case Studies

Regiokorn, South Tyrol (Italy)

Regiokorn is a project born in 2011 in South Tyrol, a northern Italian province near Austria. It was started by the local organizations of TIS Innovation Park (today IDM South Tyrol), the local Laimburg Research Centre for Agriculture and Forestry, the South Tyrolean Farmer Association, and the Advisory Service for Mountain Agriculture (BRING). The aims were to revitalize grain cultivation in South Tyrol and to develop and increase profitability of the grain network through the technical support and coordination of actors from cultivation to processing and marketing. For network structure and features see Tables 3 and 4.

Network functioning and organization from the producer/processor viewpoint. As of December 2021, Regiokorn farmers cultivated around 223 acres (90 ha), growing rye and an ancient variety of spelt called “Oberkulmer

Rotkorn.” These varieties were selected for their disease resistance and capacity to grow in alpine soils. The yearly production was about 330 metric tons with an average cultivated area of grains for each farm of about 3.5 acres (1.43 ha). The initial project was financed by the European Social Fund (ESF), through a start-up grant to cover network coordination activities. Today, Regiokorn is a successful, financially self-supporting and regionally established AGN.

At the beginning of the initiative, with the help of a lawyer a partnership contract among all Regiokorn partners was established under the name Regiokorn Interest Group. Through this written commitment, involved partners agreed to support the project and participate in a meeting at least once a year. One initial partner was a seed-growing cooperative which provided grain seeds to the involved farmers.

Organizationally and legally, Regiokorn today remains an informal network based only on the written partnership contract to coordinate production, price arrangements, and processing quantities. At the time of writing, the Regiokorn partnership comprised one mill, Molino Merano, acting as a central hub, coordination partner, brand holder and trademark owner, as well as 55 farmers and 35 bakers. The initiative falls under the umbrella brand Quality South Tyrol. The label is controlled by the South Tyrol Quality Control (SQK), a section of the Bolzano Chamber of Commerce, which regulates the specifications granted to products that meet precise rules of origin. In the case of bakery products, local flour content must not be below 75%.

The admission of new farmers and subsequent selection of their cultivated land for growing Regiokorn grains takes place every year. Due to the predominantly mountainous characteristics of the region and its alpine climate, land available for

growing cereals is limited. Inclusiveness policies in the admission procedure translate into acceptance of many small farms, often run by part-time farmers or beginners in the cultivation of cereals. The farmers who join Regiokorn take advantage of the convenience of having stable sales conditions as specified in the general partnership contract. This contract offers advantageous and consistent prices for grains and access to consulting and management support from the mill:

Cultivating grains has made my life easier. I own five hectares of land and the work involved is much less compared to when I used to have cows. As a result, I can work full

time in another sector and still manage my fields. I am the sole person responsible for the crops, so there is no need for me to hire anyone. Cultivating grains also allows me to alternate the fields with potatoes. This approach has proven to be quite beneficial for me.
(Farmer)

The partnership contract specifies that the mill and farmers must establish the quality criteria for the grains, the cultivation practices, and the price that the mill pays the farmer right after harvest. There was initially a formal, written price agreement between the mill and bakers guiding production planning for the following year. However, due

Table 3. Structural Data of the Two Alternative Grain Network (AGN) Case Studies (as of January 2022)

	Alternative Grain Network	
	Regiokorn	Colorado Grain Chain (CGC)
Network's geographical coverage	Province (2,856 sq mi; 7,397 km ²)	State (104,184 sq mi; 269,835 km ²)
Founding year	2011	2019
ACTORS		
No. of farmers	55	11
No. of mills	1	1
No. of bakers	35	15
No. of brewers & distillers	0	3
No. of others*	1	5
Support actors	• Local business associations (farmers, retailers) • Advisory service for mountain agriculture • Provincial research center	• 50 consumer members • Universities • Agriculture organization • Local organizations
PRODUCTION		
Total grain growing area	~ 223 acres (90 ha)	~ 1,853 acres (750 ha)
Grain varieties	Ancient and modern	Modern and ancient
Farming method	Organic	Mostly organic
Average farm size range	0.7–13 acres (0.3–5.5 ha)	20–600 acres (8–243 ha)
Annual harvest quantity	330 tons	Data not available
Certifications	Certified Organic • Mill (ABCERT) • Farmers (Bioland)	Certified Organic • Mill (USDA Organic) • Farmers (USDA Organic)
Logo		

* Others: Seed cooperative, educators and affiliates, restaurants.

Table 4. Network Features of the Two Alternative Grain Network (AGN) Case Studies, as of January 2022

	Alternative Grain Network (AGN)	
	Regiokorn	Colorado Grain Chain (CGC)
Network setup and governance arrangements	• Formal partnership contract between network members • Prices established every year at the board meeting • Grain cultivation guidelines and quality criteria	• Business membership, nonprofit 501(c)(3) status since 2022 • Co-brand agreement • Organization does not establish prices • Informal agreements among members • Use of co-brand requires binding agreement
Financing support & initiatives	• European Social Fund funds until 2013 (project start-up grant) • Currently none	• Multiyear USDA grant • Membership fees • \$130/year business • \$40/year consumer • Collaborative projects
Brand	• Private registered trademark	• Not-registered logo and co-brand
Network coordination	• Molino Merano	• Board of directors
Prices*		
Grains (paid to farmers)	• € 0.45/lb (€ 1.00/kg) + 4% VAT**	• \$0.35/lb–\$2.00/lb • (\$0.77/kg–\$4.41/kg)
Flour (paid to mill)	• Spelt € 1.34/lb (€ 2.95/kg) + 4% VAT • Rye € 0.75/lb (€ 1.65/kg) + 4% VAT	• Wheat \$0.60/lb (\$1.35/kg)
Bread (paid by consumers)	• € 3.63/lb–€ 4.40/lb (€ 8.00/kg–€ 9.70/kg)	• \$4.20/lb–\$5.80/lb (\$9.30/kg–\$12.85/kg) • “Affordable Loaf” \$2.50/lb (\$5.50/kg)
Pasta (paid by consumers)	• € 7.48/lb (€ 16.50/kg)	• \$9.00/lb (\$19.80/kg)
Beer (paid by consumers)	• Not applicable	• \$10.00/L–\$15.00/L
Whiskey (paid by consumers)	• Not applicable	• \$83.00/L–\$99.00/L

* As of September 2022, the euro-dollar currency exchange was 1:1. **VAT: Value added tax.

to the establishment of a strong and trusting partnership, the preference shifted towards an informal price-finding arrangement, reflecting the mutual trust and understanding that governs the current collaboration.

Molino Merano is the center of Regiokorn’s handling of logistics and includes grain cleaning, milling, and quality testing, as well as marketing. In the network structure of Regiokorn, the privately owned and commercially managed mill mediates the interactions between farmers and processors, resulting in a possible imbalance of decision-making power in the management of the AGN. On the other hand, the mill ensures the success of the project due to the meticulous management of details, from harvesting to sale to quality assurance

and report drafting. Nevertheless, Regiokorn’s mill-centered network structure results in a high dependence of the other actors on the mill.

Product flows and prices at different stages of the network. The baker members of Regiokorn benefit not only from the local, quality-certified cereals but also from being part of an established and regulated collaborative structure that provides a value-added ingredient. The wholesale price of flour is established yearly by the mill, while the retail prices of Regiokorn products may vary at the discretion of each individual business. The profitability aspect of using local flours is not a driving factor for the bakers to be part of Regiokorn, as the profit margins are not high:

The grain we receive from Molino Merano is clean, high quality and guaranteed, something that we as bakers have no possibility of certifying. Regiokorn allows me to specialize and stand out from the competition; the profit is not an aspect that pushed me to join because the margins are low. (Baker)

In South Tyrolean grocery stores, Regiokorn rye bread is sold for about one-third more than the conventional version. However, production and distribution costs are also considerably higher than those in the conventional bread chain. Regiokorn pasta, made from rye and spelt, can be viewed as a specialty product with a price up to eight times higher than commercial durum wheat pasta. Its production and distribution costs are also significantly higher. Moreover, according to the interviewees the scarcity of the flour, due to the small growing area, destabilizes the continuous production of Regiokorn-branded bakery products:

The quantities of Regiokorn grains are minimal; this is the biggest problem in my opinion. We receive the Regiokorn grain in October, and in January it is already finished. Regiokorn will remain a niche, very interesting, but production must continue, and it is not possible to base a business on this with such small quantities. (Baker)

Consumer knowledge and motivation in participating in AGN experiences. For the consumers interviewed, the most important motive for buying Regiokorn products is their perceived particular taste and traditional production (Table 5). Moreover, especially in rural areas, consumers appreciate supporting local farmers, small businesses, and the community with their purchases:

It is important for me to buy bread here because I know who produces it and I have been going to this place for years and it also employs people I know. (Consumer)

Labels and logos are seen as unnecessary to communicate product message; personal explanations by sales assistants are preferred, which help to build relationships and trust. The interviewees know that as there are few grain fields in South Tyrol, Regiokorn consumers are willing to spend more money (about 10–20% more) to buy bread made with local grains in support of their community:

If I know that the flour is regional, then I would spend a little more because I am happy to support my community. (Consumer)

The limited availability of Regiokorn products also shows the lack in South Tyrol of consumer

Table 5. Consumer (N = 19) Perceptions of the Two Alternative Grain Network (AGN) Case Studies

	Alternative Grain Network	
	Regiokorn (N = 9)	Colorado Grain Chain (CGC) (N = 10)
Consumer willingness to pay	10–20% higher for Regiokorn-branded bread	20–100% higher for CGC bread
Local origin of grain or flour	Important but awareness that supply of local grain is limited	Very important for a subset of consumers
Project awareness in the general population according to interviewed consumers	There is little to no Regiokorn awareness	There is limited CGC awareness
Product attributes appreciated by consumers	Product taste and traditional production (local grain)	Bread taste and other sensory characteristics (texture, smell, etc.), nutrition, authenticity
Purchase motivations	Small business and community support, habitual purchases	Small business and community support, personal relationships, search for a different product

awareness of the Regiokorn AGN leading to low demand and the limited use of local grains and flours in bakery products.

The Colorado Grain Chain (CGC)

The Colorado Grain Chain is a membership-based nonprofit organization, inclusive of diverse farming practices, comprised of locally owned and operated businesses and consumers who produce and support grain and grain products from heritage, ancient, and locally adapted grain, also referred to as specialty grains. The founding members were farmers, millers, bakers, brewers, distillers, and chefs. The CGC is devoted to promoting member businesses and raising awareness and demand for their products throughout Colorado (Colorado Grain Chain, n.d.-a). The organization began in 2019 in Colorado. The organization grew out of the University of Colorado Colorado Springs (UCCS) Grain School and the Cooperative Development Center of the Rocky Mountain Farmers Union (RMFU), leveraging the platform of two 2019 Grain School workshops to form a value proposition for the organization, build consensus, and develop a steering committee according to cooperative formation practices. Several federal grants have supported the CGC launch and expansion. Initially, the CGC was set up as a 501c(5) Labor and Agricultural Organization, with beneficiaries being stakeholders in the grain value chain. Within a year of its formation the CGC began to explore converting to a 501c(3) Educational and Charitable Organization, due largely to inability to sell memberships to meet budget expectations. While a 501c(5) is also considered a type of nonprofit organization, it is ineligible for grants and donations. In 2022 the CGC became a 501c(3) organization with the mission to grow and connect a vibrant community-centered grain economy in Colorado (Colorado Grain Chain, n.d.-a). For network structure and features see Tables 2 and 3.

Network functioning and organization from the producer/processor viewpoint. As of 2022, it is estimated that CGC farmers cultivate about 1,853 acres (750 ha), growing modern and ancient varieties of drought-hardy grains, an important trait in Colorado's semi-arid climate. The average culti-

vated area of grains for each farm is approximately 168 acres (68 ha). As a nonprofit member organization, the CGC meets its budget through membership dues (\$130/year for business members and \$40/year for consumer members), federal and private grants, public fundraisers, and donations. The CGC Board of Directors acts on a volunteer basis according to CGC written bylaws and is elected by the members. As a network, the CGC collaborates directly with UCCS, the University of Colorado Boulder and RMFU, relying on their institutional partners for funding, marketing expertise, education/grain literacy, outreach to farmers, and legal and cooperative values advice.

While Colorado is one of the major commodity wheat producing states, the CGC is very small. As of September 2022, the CGC structure comprised 11 farmers, one mill, 15 bakers, which included home bakers operating under Cottage Food laws, (Department of Public Health & Environment, n.d.), three brewers/distillers and five others (Table 2). To qualify to join the organization, members must operate small to medium-size family businesses that follow CGC guidelines of regenerative and certified and non-certified organic production and processing practices. There is no written contract or binding agreement required for business members to join. After joining, business members obtain access to the CGC business network, which adds visibility, a marketplace for selling and purchasing Colorado-grown grains, and access to the co-brand logo. Informal interactions occur among individual business members, which are conducted at a local and state level, depending on the actors' proximity.

The CGC's co-brand logo "Colorado Grown Grains" (Table 3) was created with the aim of promoting products made with at least 20% Colorado-grown grains (non-enforced, but inclusion of Colorado-grown grains is recommended) and advocating for locally sourced, nutritious, high quality whole grains. The purpose of the co-brand is to increase awareness among consumers and assist businesses in product recognition, networking opportunities, and access to technical assistance, promotion, and collaboration within the CGC. Use of the co-brand is free and CGC membership is not required to use it (Colorado Grain

Chain, n.d.-b); however, users must sign a use agreement and meet the co-brand use criteria. The co-brand launched concurrently with the interview process for this study. Thus, while we discuss the co-brand in the CGC case study, we have no further data to share.

The co-brand logo integrates Colorado's four major watersheds (Arkansas River, Colorado River, Rio Grande River, South Platte River) to provide greater awareness of regionality and the links between water and production by the producer/processor using the co-brand. The organization hopes to offer transparency of grain sourcing while highlighting the producer's or product's watershed. While joining the organization offers networking benefits and other services, such as a member directory and marketplace, the co-brand is not exclusively for members and CGC membership does not require business members to carry the co-brand. For example, a spelt grower using regenerative farming practices in Pueblo, Colorado, may use the co-brand with the Arkansas River Watershed, with a signed co-brand use agreement, but may choose not to become a CGC member. Likewise, a producer member may choose not to carry the co-brand but include a short description of business practices and the location. From the consumer side, the co-brand aims to help assure product origin, including watershed, although producers and processors (for a value-added product) must also declare company location on the product label, as required by the state of Colorado.

Vertical integration can be implemented to leverage a farm's internal economic potential by manufacturing value-added products in-house with a higher profit margin, due to the inevitable large distances among businesses in the state and the difficulty of competing in grain commodity markets as small growers. It follows that being part of the CGC helps farmers located in remote areas develop relationships with other nearby businesses, gain infrastructure access for grain handling, or obtain technical assistance:

... the organization is really becoming a platform for people finding each other and for people that may be new [to the grain world].
(Farmer)

At the time of this work, there were 50 CGC consumer members, interested in locally grown grains. Consumer members have access to the educational and informational activities of the CGC. As the organization is continually evolving under nonprofit conditions, new membership categories are being created.

Product flows and prices at different stages of the network. The wholesale prices of grains are set by individual farmers (Table 4) and depend on the grain species and/or organic/regenerative farming certification, with conventionally grown modern varieties on the lower end of the price range and specialty grains, such as certified organic, ancient, or landrace varieties, on the higher end. Business relations are built across individual grain chains from farmer to miller and baker, involving general price expectations of individual buyers (e.g., bakers) and learning from other AGNs across neighboring regions about less known grain varieties (e.g., flour corn). However, farmers are pressured by low commodity prices and depend on millers and bakers to purchase their crops at a higher price:

It's just hard to find the people that are willing to pay. Because you're competing with commercial guys. (Farmer)

As of 2022, there was only one CGC mill located in the San Luis Valley (Rio Grande River watershed), a remote region in Southern Colorado along the northern border of New Mexico. The predominantly agricultural landscape and presence of several independent farms ensure the constant supply of grains. At the same time, most of the adjacent land is cultivated as corporate contract farming, which feeds into the commodity market and cannot be a source for the mill. The stone mill, which also contains a grain handling facility, processes certified organic grain into flour and supplies processors in the valley and regionally at a competitive price due to proximity and shared interests in organic varieties of grain (Table 4). There are currently no other CGC grain handling and milling facilities that work with multiple small and medium-scale growers, bakers, and other

processors, although there is momentum regionally, especially originating from the beverage industry. Because of only one independent mill that processes regional grains and acts as an intermediary and flour supplier in a vast territory, most CGC bakers have had to invest in in-house mills, working individually on sourcing local grains and/or stocking up on flour from other sources and/or out-of-state milling operations. Popular suppliers are in Utah and Kansas. There is a shortage of small to medium-size scale regional cleaning and milling facilities in Colorado that produce a consistent high-quality product, especially for bakers:

My main concern was that we had bread that was consistent and usually getting a grain that's milled from a small mill it meant that it wasn't tested enough. (Baker)

CGC bakers, distillers, and brewers share the desire to create a system that could support them and that shares the same values regarding the use of local grains, the meaning of local food, and sense of community. They would also appear to benefit from creating a network of grain professionals, as it may facilitate access to local cereals as well as flour:

I think there's a need to fix the gap regarding mills and quality of flour, especially for people like me who don't mill in-house. A plus is going to be the connection that is created with this project. (Baker)

The retail prices of bakers are set in sales units and/or by weight, depending on the business and location. In general, rural locations have less expensive options than urban areas, with the lowest bread price of bread found in the San Luis Valley to be an "Affordable Loaf" baked for a local food bank, thus mitigating food insecurity in the region through bread. The baker states that one of her regular loaves has an affordable retail price because due to proximity the miller maintains a consistently less expensive price point:

Our Mountain Mama is always \$5 and that is because the price of that flour is the same and

has not changed. So why would we raise our price if our ingredient price hasn't? (Baker)

Comparable prices in Colorado can be summarized as follows: a loaf of conventional fresh white bread is 20%–50% lower in price than CGC bread; domestic conventional beer is 60%–90% lower in price than CGC beers; commercial brand whiskey is 15%–30% lower in price than CGC whiskey. Moreover, most of the pasta sold in Colorado grocery stores is imported from Italy with a retail price of around \$1.80/lb. (\$4.00/kg), 130% lower in price than CGC pasta.

The greatest difficulties that bakers face include logistics, a sense of isolation due to geographic distance, lack of adequate CGC online support for connecting with each other and other markets, and lack of quality control; for example, the lack of needed infrastructure for quality handling and sourcing of grains:

... a lot of bakers want the grain, but there needs to be a step between the farmer and the baker. (Baker)

Consumer knowledge and motivation in participating in AGN experiences. We found a general agreement among Colorado consumers that taste, whole grain content, and healthy nutrition are the most important aspects when buying goods such as bread. Consumers are looking for originality and artisanship and are willing to spend 20–100% more, and even travel further, to make the purchase (Table 5):

[Buying bakery products made with regional/local flours] is very important and I'm willing to come here to get it, and I drive at least five miles, maybe more, and I have to get on the highway to come here. (Consumer)

Flour origin is an essential trait for most consumers. Knowing that the product is made with Colorado-grown grains is perceived as an added value of the product, but this is not the case for everyone:

[It is important at a certain extent, I support this bakery because it is a very cool business

and I like the community around it, but I'm not very into the local food stuff though.]

Furthermore, supporting small businesses and being part of a community around the bakery has substantial meaning for consumers, some of whom stated that they “established a personal relationship” with the baker.

Interviews also included consumers in general; when asked about their awareness of the CGC as an AGN, only of ten consumer interviewees reported being aware of the network.

Discussion

The AGNs Regiokorn and CGC have similar goals yet operate quite differently. While distinct in geographic location, scale, and organizational arrangement, they share comparable values about purpose and impact. More fundamentally, and considering success and failure risks of AFNs, both Regiokorn and CGC can learn from each other regarding long-term viability, community engagement, and leveraging environmental, sociocultural, and socioeconomic diversity.

Geographical Proximity

Both AGNs cover regional territories. Using the term “regio” by Regiokorn together with the name of the province (“Südtirol”), and including the state (“Colorado”) by the CGC, and using them in their logos provide a reference linked to a specific region. However, their spatial areas and densities differ significantly. While the CGC is a young organization and still expanding, it extends over a territory more than 35 times larger than that of Regiokorn (Table 3). In relative terms, with about 70 members, Regiokorn has one member per 100 km². In contrast, with 85 CGC members, there is roughly one member per 3,100 km² of the AGN territory. Network density matters in terms of transaction costs and social cohesion (De Bernardi et al., 2020).

Despite modern communication tools, physical proximity is essential for coordinating activities, creating synergies, achieving a critical collaboration mass, and leveraging business success. Regiokorn's relative commercial success so far may be attributed, at least in part, to the close physical proximity

of its members and customers. Business meetings can be arranged more often due to lower travel costs, and can be attended by more members more regularly. Meeting business partners in person helps to build and maintain trust. As physical distances become too large for meeting in-person on a regular basis, it may be advisable to create organizational subgroups or regional hubs that operate autonomously to achieve social cohesion and contribute to business success. The CGC network is physically much more widespread and decentralized in both urban and rural regions. Due to the infrastructure needed to successfully move grain from the field to various businesses, regional infrastructure for grain handling and milling is essential. A good example is the San Luis Valley, with its small-scale commercial mill. The miller works closely with farmers and bakers in the valley. However, due to the shortage of other regional processing and milling facilities in Colorado and the extra capacity of the miller, the miller has accounts with other bakers outside of this regional network. Thus, Regiokorn's geographically concentrated network structure may be a useful comparison, as multiple regional mills could contract with regional farmers and bakers also in Colorado. One drawback of additional regional mills and processing facilities, in the case of Colorado, is increased competition within a small-scale AGN. Nevertheless, if consumer demand is increasing, including from institutional markets, a major barrier is not having enough supply. An expansion based on Regiokorn's model and cooperative values would be warranted in Colorado.

Cultural Homogeneity

Network success is also a function of intuitive mutual understanding and minimizing internal friction. Cultural diversity within a network has many advantages in the long term, such as building on a broader view and a larger experience base to identify solutions for problems. Nevertheless, cultural diversity may also create conflicts and tensions in the short term, due to socially innate differences in problem solving approaches and solution implementation styles (Vangen & Winchester, 2014). Regiokorn has the advantage that its members are predominantly from the

German-speaking community of South Tyrol, which assures a common language and building on a shared cultural identity. For example, this is reflected in the selection of AGN grains cultivated and processed: rye is more commonly used in German and Austrian culture, and most Regiokorn grain products, such as rye bread and strudel pastry products, are part of the local German/Austrian culinary tradition. By creating a culturally narrowly defined AGN, Regiokorn may have strengthened its resilience and assured its relative business success. However, Regiokorn products are not much different from many similar products which are available locally but made from imported grains and flours. Thus, buying Regiokorn is not a boycott or protest towards the national Italian culture and eating habits but rather seem to be a social status indicator based on the financial possibility to buy premium local products.

In contrast, the CGC deals with greater heterogeneity regarding many factors, such as farm type and scale, regional on-farm grain diversification opportunities according to altitude, precipitation and irrigation, and urban versus rural location. While Colorado is predominantly White (86.5%), there is significant cultural diversity in both urban and rural regions (U.S. Census, 2021), with highly variable density of non-White racial groups, especially Hispanic and Latino. In addition, Colorado has always attracted many people not born in Colorado but who migrated there to live and work (Bilek, 2019). This is especially true for urban centers such as the Front Range Urban Corridor (including cities like Boulder, Denver, and Colorado Springs) and mountain towns. Rural regions, both eastern and western/southwestern, particularly where agriculture has been a significant form of income and livelihood, are mostly home to Colorado-born residents. While there is currently no clear understanding as to how the network may take advantage of diversity among its members and within the state, there have been initial communications. Agreeing on a decentralized model and specialization in grain production, handling, and processing may help increase diversification and reduce the AGN's internal competition, increase interdependence, promote cooperation, and strengthen the regional food system. Alternative grain

networks can also consider the grains suited to the regional food culture, besides making environmentally or economically based decisions in grain production. For example, much of southern and southwestern Colorado is inhabited by Hispanic, Latino, and Native American populations, whose cultural diets align with corn, amaranth, quinoa, and soft white wheats like Sonora. Other ethnically diverse populations in Colorado's urban corridor may be more interested in finding local millets, such as teff or sorghum. Finally, Colorado's active urban and mountain communities, most of whose residents have migrated from elsewhere, may be open to an expanded offering in grain diversity, including heritage or ancient varieties of wheats, culinary barleys, and rye, and their diverse product applications.

Commercial Viability

The central node of a network is crucial for effective and successful member coordination (Nassimbeni, 1998). Regiokorn's core coordinator is a successful commercial enterprise, the mill Molino Merano. With the mill's competencies focused on commercial processing and marketing activities, the underlying AGN may benefit in terms of commercial viability and business success. For AGNs whose activities are coordinated by nonprofit partners, a lack of business and financial experience may reduce long-term commercial viability and resilience (Poças Ribeiro et al., 2021). The CGC recently transitioned its organizational character from a trade to a nonprofit organization, shifting its focus while pivoting the economic goals of its business members to (re)organizing independently of the CGC with greater focus on infrastructure building, while also leveraging the Colorado Grown Grains co-brand as a central marketing tool in partnership with CGC. A decentralized grain hub structure, led regionally by competent business-oriented professionals, may solidify long-term success for the Colorado AGN.

Regarding economic growth potential, purchasing power in the two locations differs. South Tyrol is one of the wealthiest provinces in Italy, with a median household income of €/\$39,000, compared to the national average of €/\$31,000 (ASTAT, 2019; ISTAT, 2019), resulting in high

purchasing power and a privileged economic status. In Colorado, the median household income is \$81,841 (U.S. Census, 2021), but with a wide disparity among counties, ranging from \$92,466 in Boulder to \$35,000 in Costilla County. The CGC, as a statewide organization with members in both urban and rural regions, can adjust to this economic landscape based on regional purchasing power. In addition, while production occurs in more rural areas, there is great opportunity for farmers and processors to take advantage of markets in urban centers, such as the most densely populated region, the Front Range Urban Corridor.

While our qualitative-based data does not allow us to unequivocally validate our interpretation, it appears that within the Regiokorn AGN the farmers benefit most from the network's financial success. This is mostly because the network was created for and with farmers to assure a fairer remuneration for them, while extending the range of regional products to meet the demand of local consumers. In the case of the CGC, it seems that the involved bakers, brewers, and distillers, working independently with producers and grain handling/milling facilities, are remunerated based on negotiated prices that work for everybody, including the farmer. It has been shown to be easier to start a brewery or bakery than to expand grain production (Forrest & Wiek, 2021). Before the inception of the CGC, farmers and bakers in Colorado had already begun to work together, with bakers emphasizing Colorado-grown grains. The Colorado Grain Chain grew out of these early relationships as consumer awareness grew and interest in local grains expanded. Given the short history of the CGC and its current nonprofit status, it is impossible to determine from our data who ultimately benefits, if not everyone involved in the grain chain, including consumer members. As noted previously, in the long run sufficient income streams need to be generated for all network participants who depend on revenue to ensure AGN success and resilience. In particular, financial stability of farmers involved is crucial since the rest of the downstream chain depends on the raw material the farmers provide. As long as the prices are fair and stable among producers and processors, end products can also be marketed to consumers in a

fair and stable way. The CGC has been drawing on trust along the grain value chain, and has built its network from shared values, including those of community involvement.

Community Involvement

Regiokorn and CGC networks also differ in the degree to which they interact with local stakeholders. At the time of this study, the CGC had about 50 fee-paying consumer members while Regiokorn had none (Table 3). AFN sales depend crucially on active consumer involvement and customer loyalty leading to value co-creation (De Bernardi et al., 2020). If customers are also network members, higher product involvement and purchase commitment can be achieved, and support fatigue may be reduced. Moreover, having consumer members within an AGN may generate spill-over effects on the wider community and expand awareness of the AGN (Navin, 2015). In this regard, Regiokorn may learn from the CGC. The CGC is in part supported by consumer membership fees, but the amount is a fraction of what an organization requires for viability. Stronger approaches to community involvement may consist of access to discounted co-branded products, courses or educational materials, and other structures such as consumer ownership. With the CGC as a nonprofit organization, however, cooperative approaches independent of CGC may well become more feasible regionally for grain production, handling, and processing. Nevertheless, the CGC's early success story is, in part, due to the relational values found in the community, including consumer member involvement even when CGC was still a 501(c)(5) trade organization. As has been previously shown with transformational system change—and which may apply as well to food systems—experience with nature, as in agriculture or gardening, increase relational values, through sensory contact, emotions, meaning, beauty, and compassion (Richardson, 2020). Trust in alternative production and in the specific farmer is another important relational value for consumers actively participating in a network (Carfora & Catellani, 2023). The CGC, with UCCS Grain School as part of its origin, stimulated interest in Colorado-grown grains along the grain chain, from farmer and grain handler to artisan miller, baker,

maltster, brewer, and distiller. Outreach and inclusion were cultivated early as UCCS Grain School invited consumers to participate in their annual public forums.

AFNs have been shown to be instrumental in strengthening community social processes (Corsi et al., 2018). In addition to building social capital (De Bernardi et al., 2020), both Regiokorn and CGC create cultural value beyond mere food supply and income generation by preserving and promoting resilient crop production, offering traditional products, and providing alternative distribution and consumption processes. Community life is supported, and cultural capital enhanced. Some rural regions have also engaged in bread value chains through supporting food security causes, which seems to address not only cultural and community needs but also rural economic development (Lurie et al., 2019).

Finally, it is well known that limited availability also reduces awareness and knowledge of local products (Carfora & Catellani, 2023) which seems to be a severe problem for both networks, although in different ways. To increase consumer awareness of the networks, there is a need for expansion, especially of production. More consumers are becoming interested in traditional bread products and appreciate flavor, nutrition, and authenticity. There is a great potential for increased awareness and consumption if availability of grain, flour, and end products can increase.

Conclusions

In a world with a globally growing population and increasing interconnectedness, as witnessed by high levels of multi-country business collaborations, intercultural exchanges, international trade and cross-continental travel and migration, a significant number of people worldwide feel the need to support alternative food provision channels. Consequently, AFNs seem to be increasing, with a large variety of products including grains. With the likely ongoing demand for diversified food supply channels, generating knowledge on how to successfully establish and operate these value-based food chains is important.

Building on a comparative case study approach, our qualitative assessment of two AGNs

has provided insights into their structures, operations, and evidence of their multiple impacts in their local regions. While neither case may be taken as *the* role model or design template for further initiatives, both offer valuable lessons about potential pitfalls and effective practices. While there is no universal recipe on how to start, grow, or maintain an AFN and successfully collaborate or coexist with others, our case studies show that similar objectives can be achieved in different geographical and cultural contexts. This may also be the biggest lesson from our assessment: there is no “one size fits all” approach.

The northern Italian, close-to-Austria Regiokorn AGN was initiated to fulfill the local population’s preferences for preserving traditional bakery products made from grains of their native mountain territory. Regiokorn is characterized by members with close geographic proximity and a high degree of cultural homogeneity. It achieved commercial viability by targeting a rather price-insensitive and tradition-valuing customer base, involving the community, and gaining approval and support from public subsidies. At this time this regionally established producer and processor network does not include consumer members. In contrast, the CGC has so far operated successfully in a geographically dispersed territory with a culturally diverse membership that includes consumers. The CGC has achieved some commercial viability through its internal and external community activities, governmental support, and sponsored events, but it is young and still relatively unstable. Different approaches lead to similar goals and outcomes, and our results may suggest a compass for other AGNs to find their own paths.

Future research can build on our results and add more case study evidence to broaden the knowledge base for further AGN initiatives. While no new AGN will be able to replicate success by simply copying existing experiences, being able to learn from previous examples should help to increase the likelihood of AGN success and resilience, and thus expand the impact of AGN benefits for producers, consumers, communities, and natural ecosystems.



Acknowledgments

We thank Bettina Schmid, the former coordinator of the Regiokorn AGN, for helpful insights and valuable support during this research. We gratefully acknowledge the busy grain chain professionals giving us time for interviews. We dedicate this

publication to Andy Clark, owner of Moxie Bread in Louisville, Colorado who unexpectedly passed away during the data collection period. He served as chair of the Colorado Grain Chain at the time of this work and is greatly missed.

References

- Altieri, M. (2009). Agroecology, small farms, and food sovereignty. *Monthly Review*, 61(3).
<https://monthlyreview.org/2009/07/01/agroecology-small-farms-and-food-sovereignty/>
- ASTAT. (2019). *Redditi e condizioni di vita delle famiglie 2018–2019 e stima 2020* [Income and living conditions of families 2018–2019 and estimated 2020]. Istituto provinciale di statistica—Provincia autonoma di Bolzano, Alto Adige.
https://statistics-astat.provincia.bz.it/EK/index_i.html
- Bazeley, P., & Jackson, K. (2013). *Qualitative data analysis with NVivo* (2nd ed.). Sage.
- Bilek, C. (2019, January 17). *Being a Colorado native is a big deal. So how many are there, actually?* CPR News.
<https://www.cpr.org/2019/01/17/being-a-colorado-native-is-a-big-deal-so-how-many-are-there-actually/>
- Brunori, G., Galli, F., Barjolle, D., van Broekhuizen, R., Colombo, L., Giampietro, M., Kirwan, J., Lang, T., Mathijs, E., Maye, D., De Roest, K., Rougoor, C., Schwarz, J., Schmitt, E., Smith, J., Stojanovic, Z., Tisenkopfs, T., & Touzard, J. M. (2016). Are local food chains more sustainable than global food chains? Considerations for assessment. *Sustainability*, 8(5), Article 449. <https://doi.org/10.3390/SU8050449>
- Carfora, V., & Catellani, P. (2023). Psychosocial drivers influencing local food purchasing: Beyond availability, the importance of trust in farmers. *Frontiers in Nutrition*, 10, Article 1204732.
<https://doi.org/10.3389/fnut.2023.1204732>
- Colorado Department of Public Health & Environment. (n.d.). *Cottage Foods Act*.
<https://cdphe.colorado.gov/cottage-foods-act>
- Colorado Grain Chain. (n.d.-a). *Colorado Grain Chain: Growing and connecting a vibrant community-centered grain economy in the state of Colorado*. <https://www.coloradograinchain.com>
- Colorado Grain Chain. (n.d.-b). *Colorado Grown Grains Co-brand: Growing our community one grain at a time*.
<https://www.coloradograinchain.com/co-grown>
- Corsi, A., Barbera, F., Dansero, E., & Peano, C. (Eds.) (2018). *Alternative food networks: An interdisciplinary assessment*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-90409-2>
- Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC Medical Research Methodology*, 11(1), Article 100. <https://doi.org/10.1186/1471-2288-11-100>
- De Bernardi, P., Bertello, A., Venuti, F., & Foscolo, E. (2020). How to avoid the tragedy of alternative food networks (AFNs)? The impact of social capital and transparency on AFN performance. *British Food Journal*, 122(7), 2171–2186.
<https://doi.org/10.1108/BFJ-07-2019-0537>
- Democracy at Work Institute. (2021). *Worker Cooperative State of the Sector Report 2021*.
<https://institute.coop/resources/2021-worker-cooperative-state-sector-report>
- Edwards, F. (2015). Alternative food networks. In D. M. Kaplan (Ed.), *Encyclopedia of food and agricultural ethics* (pp. 151–157). Springer. https://doi.org/10.1007/978-94-024-1179-9_513
- Fischer, C. (2013). Trust and communication in European agri-food chains. *Supply Chain Management*, 18(2), 208–218.
<https://doi.org/10.1108/13598541311318836>
- Forrest, N., & Wiek, A. (2021). Growing a sustainable local grain economy in Arizona: A multidimensional analytical case study of an alternative food network. *Journal of Agriculture, Food Systems, and Community Development*, 10(2), 507–528. <https://doi.org/10.5304/jafscd.2021.102.031>
- Garibaldi, L. A., Gemmill-Herren, B., D'Annolfo, R., Graeub, B. E., Cunningham, S. A., & Breeze, T. D. (2017). Farming approaches for greater biodiversity, livelihoods, and food security. *Trends in Ecology and Evolution*, 32(1), 68–80. <https://doi.org/10.1016/j.tree.2016.10.001>

- Gualandi, G., & Williams-Gualandi, D. (2021). Transformative change through ecological consumption and production of ancient wheat varieties in Tuscany, Italy. In T. T. Maiko Nishi, Suneetha M. Subramanian, Himangana Gupta, Madoka Yoshino, Yasuo Takahashi, Koji Miwa (Eds.), *Fostering transformative change for sustainability in the context of socio-ecological production landscapes and seascapes (SEPLS)* (pp. 95–114). Springer.
https://doi.org/10.1007/978-981-33-6761-6_6
- Halloran, A. (2015). *The new bread basket: How the new crop of grain growers, plant breeders, millers, malsters, bakers, brewers, and local food activists are redefining our daily loaf*. Chelsea Green.
<https://www.chelseagreen.com/product/the-new-bread-basket/>
- Hergesheimer, C., & Wittman, H. (2012). Weaving chains of grain: Alternative grain networks and social value in British Columbia. *Food, Culture and Society*, 15(3), 375–393. <https://doi.org/10.2752/175174412X13276629245803>
- High Level Panel of Experts on Food Security and Nutrition. (2019). *Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition: Summary and recommendations*. Committee on World Food Security, Food and Agriculture Organization of the United Nations.
<https://www.fao.org/family-farming/detail/en/c/1200043/>
- Hinrichs, C. C. (2003). The practice and politics of food system localization. *Journal of Rural Studies*, 19(1), 33–45.
[https://doi.org/10.1016/S0743-0167\(02\)00040-2](https://doi.org/10.1016/S0743-0167(02)00040-2)
- Hubeau, M., Marchand, F., Coteur, I., Debruyne, L., & Van Huylenbroeck, G. (2018). A reflexive assessment of a regional initiative in the agri-food system to test whether and how it meets the premises of transdisciplinary research. *Sustainability Science*, 13(4), 1137–1154. <https://doi.org/10.1007/S11625-017-0514-5>
- ISTAT. (2019). *Condizioni di vita, reddito e carico fiscale delle famiglie* [Living conditions, income and tax burden of families]. Istituto Nazionale di Statistica. <https://www.istat.it/it/archivio/252026>
- Kremen, C., Iles, A., & Bacon, C. (2012). Diversified farming systems: An agroecological, systems-based alternative to modern industrial agriculture. *Ecology and Society*, 17(4), Article 44. <https://doi.org/10.5751/ES-05103-170444>
- Leavy, P. (Ed.). (2020). *The Oxford handbook of qualitative research*. Oxford University Press.
<https://doi.org/10.1093/OXFORDHB/9780190847388.001.0001>
- Lurie, S., & Brekken, C. A. (2019). The role of local agriculture in the new natural resource economy (NNRE) for rural economic development. *Renewable Agriculture and Food Systems*, 34(5), 395–405.
<https://doi.org/10.1017/S174217051700062X>
- Maenpaa, M. (2022, August 18). Filling gaps in our food system: Colorado's Grain Chain highlights community over commodity. *Boulder Weekly*. <https://boulderweekly.com/news/filling-gaps-in-our-food-system/>
- Majiwa, E., Lee, B. L., & Wilson, C. (2018). Increasing agricultural productivity while reducing greenhouse gas emissions in sub-Saharan Africa: Myth or reality? *Agricultural Economics*, 49(2), 183–192.
<https://doi.org/10.1111/AGEC.12407>
- Maté-Sánchez-Val, M., & Harris, R. (2018). The paradox of geographical proximity for innovators: A regional study of the Spanish agri-food sector. *Land Use Policy*, 73, 458–467. <https://doi.org/10.1016/J.LANDUSEPOL.2018.02.024>
- Meyer, C. B. (2001). A case in case study methodology. *Field Methods*, 13(4), 329–352.
<https://doi.org/10.1177/1525822X0101300402>
- Michel-Villarreal, R., Hingley, M., Canavari, M., & Bregoli, I. (2019). Sustainability in alternative food networks: A systematic literature review. *Sustainability*, 11(3), Article 859. <https://doi.org/10.3390/SU11030859>
- Miralles, I., Dentoni, D., & Pascucci, S. (2017). Understanding the organization of sharing economy in agri-food systems: Evidence from alternative food networks in Valencia. *Agriculture and Human Values*, 34(4), 833–854.
<https://doi.org/10.1007/S10460-017-9778-8>
- Morgan, D. L. (2008). Snowball sampling. In L. M. Given (Ed.), *The SAGE encyclopedia of qualitative research methods*, vol. 2 (pp. 816–817). Sage.
- Nassimbeni, G. (1998). Network structures and co-ordination mechanisms: A taxonomy. *International Journal of Operations and Production Management*, 18(6), 538–554. <https://doi.org/10.1108/01443579810209539>
- Navin, M. (2015). Scaling-up alternative food networks. *Journal of Social Philosophy*, 46(4), 434–448.
<https://doi.org/10.1111/josp.12128>

- Poças Ribeiro, A., Harmsen, R., Feola, G., Rosales Carréon, J., & Worrell, E. (2021). Organising alternative food networks (AFNs): Challenges and facilitating conditions of different AFN types in three EU countries. *Sociologia Ruralis*, 61(2), 491–517. <https://doi.org/10.1111/SORU.12331>
- Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*, 360(6392), 987–992. <https://www.science.org/doi/10.1126/science.aag0216>
- Pretty, J. (2018). Intensification for redesigned and sustainable agricultural systems. *Science*, 362(6417), eaav0294. <https://doi.org/10.1126/science.aav0294>
- Rasmussen, W. D. (1991). *Farmers, cooperatives, and USDA: A history of agricultural cooperative service* (Agricultural Information Bulletin 621). U.S. Department of Agriculture.
- Renting, H., Marsden, T. K., & Banks, J. (2003). Understanding alternative food networks: Exploring the role of short food supply chains in rural development. *Environment and Planning A: Economy and Space*, 35(3), 393–411. <https://doi.org/10.1068/A3510>
- Richardson, R. (2020). Bending the arc of COVID-19 through a principled food systems approach. *Agriculture and Human Values*, 37(3), 653–654. <https://doi.org/10.1007/S10460-020-10048-2>
- Sacchi, G., Belletti, G., Biancalani, M., Lombardi, G. V., & Stefani, G. (2019). The valorisation of wheat production through locally-based bread chains: Experiences from Tuscany. *Journal of Rural Studies*, 71, 23–35. <https://doi.org/10.1016/J.JRURSTUD.2019.09.006>
- Sacchi, G., Stefani, G., Romano, D., & Nocella, G. (2022). Consumer renaissance in alternative agri-food networks between collective action and co-production. *Sustainable Production and Consumption*, 29, 311–327. <https://doi.org/10.1016/J.SPC.2021.10.018>
- Stake, R. E. (1995). *The art of case study research*. Sage.
- Stevenson, G. W., Clancy, K., King, R., Lev, L., Ostrom, M., & Smith, S. (2011). Midscale food value chains: An introduction. *Journal of Agriculture, Food Systems, and Community Development*, 1(4), 27–34. <https://doi.org/10.5304/jafscd.2011.014.007>
- Testa, F., Iovino, R., & Iraldo, F. (2020). The circular economy and consumer behaviour: The mediating role of information seeking in buying circular packaging. *Business Strategy and the Environment*, 29(8), 3435–3448. <https://doi.org/10.1002/BSE.2587>
- U.S. Census Bureau. (2021). *QuickFacts: Colorado*. <https://www.census.gov/quickfacts/fact/table/CO/INC110221#INC110221>
- Vangen, S., & Winchester, N. (2014). Managing cultural diversity in collaborations: A focus on management tensions. *Public Management Review*, 16(5), 686–707. <https://doi.org/10.1080/14719037.2012.743579>
- Witter, A., Murray, G., & Sumaila, U. R. (2021). Consumer seafood preferences related to alternative food networks and their value chains. *Marine Policy*, 131, Article 104694. <https://doi.org/10.1016/J.MARPOL.2021.104694>
- Yin, R. K. (2016). *Qualitative research: From start to finish* (2nd ed.). Guilford Press.

Appendix A. Alternative Grain Networks in the U.S. (Selection)

Initiative name	Year founded	Location	Involved actors	Size*	Aim	Website
Whole Grain Connection	2000	California	• Farmers • Bakers • Consumers	Small	Enhancing the desirability and availability of whole grain breads and other whole grain products from organically, sustainably grown grains and thereby connecting farmers and bakers.	http://wholegrainconnection.org
Carolina Gold Rice Foundation	2004	South Carolina	• Breeders • Farmers • Millers • Chefs • Bakers • Educators	Large	Rebuilding the fundamentals of local culinary heritage through scholarship, research, farming, exploration, pro bono rare seed distribution, and good wholesome food.	https://www.thecarolinagoldricefoundation.org
Maine Grain Alliance	2007	Maine	• Farmers • Millers • Malsters • Bakers • Brewers • Processors • Consumers	Large	Inspiring and empowering people who are building local grain economies by connecting people and supporting the economic, environmental, and nutritional importance of establishing regional grain economies.	https://www.kneadingconference.com
GrowNYC Grains	2009	New York City, New Jersey	• Farmers • Processors • Bakers • Chefs	Medium	With our partners, and through our farmers market retail program, we built the marketplace for grains grown and milled in the Northeast. We are educating and connecting growers, processors, bakers, and chefs—sparking a rise in demand for local grains while helping ensure that the crop supply and processing infrastructure are there to meet the demand.	https://www.grownyc.org/grains
WSU Breadlab	2010	Skagit Valley, Washington	• Breeders • Farmers • Bakers • Millers • Washington State University	Medium	Bringing more affordable, great tasting bread to the world one loaf at a time. Or maybe faster than that.	https://www.breadlab.wsu.edu

Community Grains	2010	California	• Farmers • Millers • Bakers • Chefs	Small	Restoring a vibrant local grain economy in California, improving the health of the community and the environment.	https://www.communitygrains.com
Tehachapi Grain Project	2014	Tehachapi, California	• Farmers • Chefs	Small	To preserve and grow heritage organic grains that are naturally drought-tolerant and low in gluten.	https://www.tehachapigrainproject.org
Artisan Grain Collaborative	2016	Upper Midwest	• Farmers • Millers • Maltsters • Bakers • Chefs • Food manufacturers • Brewers • Distillers • Researchers	Large	Facilitating a network to create and strengthen relationships along the grain supply chain throughout the Upper Midwest region by connecting farmers, processors, makers, and advocates, developing resources, and building awareness of regional grains.	https://www.graincollaborative.com
River Valley Community Grains	2016	River Valley area, New Jersey	• Farmers • Millers • Bakers	Small	Encouraging farmers to use regenerative agricultural methods and helping meet the growing demand for nutrient-dense grains, local flour, “real bread,” and healthy cereals in the region.	https://www.rivervalleycommunitygrains.com
Common Grain Alliance	2018	Mid-Atlantic region	• Farmers • Millers • Bakers • Chefs	Medium	Connects and supports farmers, millers, bakers, and grain artisans to build a vibrant, integrated, equitable and regenerative grain economy in the Mid-Atlantic.	https://www.commongrainalliance.org
Southwest Grain Collaborative	2018	New Mexico	• Farmers • Millers • Bakers • Chefs	Small	The Southwest Grain Collaborative, in partnership with the NMSU Cropping Systems Research Program (SGC/CSRP), uses a participatory plant breeding approach to work with farmers across the region to propagate and increase seed stocks of traditional Southwest food crops such as ancient corn, bean, and small grain cultivars, scaling production for new market opportunities. SGC/CSRP provides practical guidance on agroecosystem management and crop rotation planning focused on soil health, water conservation, and farm business viability.	https://www.southwestgraincollaborative.org

Rio Grande Grain	2018	New Mexico	• Farmers • Millers • Bakers • Chefs	Small	Our mission is to create interest in and demand for ancient and heritage grains in northern New Mexico.	https://www.riograndegrain.org
Colorado Grain Chain	2019	Colorado	• Farmers • Millers • Bakers • Distillers • Malsters • Brewers • Other makers • Educators • Consumers	Medium	To grow and connect a vibrant community-centered grain economy in the state of Colorado.	https://www.coloradograinchain.com
Northeast Grainshed Alliance	2020	New England	• Farmers • Millers • Maltsters • Brewers • Bakers • Distillers • Restaurants • Educators and researchers	Large	A diverse stakeholder-driven partnership, connecting grain-related businesses and organizations in the Northeast pledging to connect and strengthen regional farms, mills, and malthouses with craft food and beverages.	https://northeastgrainshed.com/

* Small < 20 members; medium 20–50; large > 50; This list is not an exhaustive list of U.S.-based alternative grain networks, and U.S. mills, such as Hayden Flour Mills in Arizona and Anson Mills in South Carolina, are not listed. Nevertheless, mills play a central role in alternative grain chains, as shown in this paper.

Appendix B. Alternative Grain Networks in Italy (Selection)

Initiative name	Year founded	Location	Involved actors	Size*	Aim	Website
Spiga & Madia	2006	Brianza (Lombardy)	• Farmers • Critical consumers • Agricultural cooperative • Miller • Baker • Solidarity purchasing groups (GAS)	Large	Rebuild an organic bread supply chain.	https://www.spigaemadia.it
Filiera corta bio dei cereali antichi	2007	Veneto region	• Farmers • Mills • Bakeries • Social cooperatives • Fair trade • Restaurants	Small	Recovering ancient grain varieties, recognising their genetic heritage as a source for safeguarding health and the environment.	https://www.crescent.bio
Filiera del Pane DES Altro Tirreno	2008	Pisa Province (Tuscany)	• Farmer • Millers • Solidarity Purchasing Groups (GAS)	Small	Respect fields and protect their fertility, for the benefit of territory and consumers towards environmental conservation.	https://www.desaltrotirreno.org
Filiera del Grano DESR PASM	2008	Parco agricolo sud Milano (Lombardy)	• Farmers • Bakers • Social cooperatives • Processors • Solidarity Purchasing Groups (GAS)	Large	Producing healthy goods and sustainable bread with gluten-free flours, with sourdough and long leavening, distributed at an affordable price.	https://www.desrparcosud.it/la-filiera-del-grano-del-parco-sud-milano/
Gran Prato	2011	Prato province (Tuscany)	• Farmers • Bakers • Millers • University of Florence	Medium	Support local agriculture and enhance one of the pillars of Prato's culinary and gastronomic tradition, which is based on flour and its products.	https://www.granprato.wordpress.com
Regiokorn	2011	South Tyrol	• Farmers • Miller • Bakers	Large	Revitalizing cereal cultivation by creating a close cooperation network between farmers, millers, and bakers.	https://www.meranermuehle.it/business/it/prodotti/regiograno

Il Biricoccolo	2012	Valsamoggia (Emilia-Romagna)	• Farmers • Critical consumers	Small	Spreading the concept of 'Ethical Agriculture': a model of agriculture that pursues the common good according to solidarity economy principles.	https://www.ilbiricoccolo.it
Cum-Panatico Sud	2013	Campania region	• Farmers • Regional association • Processors • Critical consumers	Large	Rebuilding a self-managed short supply chain of grains from organic 'local varieties' entirely managed in the region.	https://www.cumpanatico-sud-20172018.jimdosite.com
Pane Virgo	2013	Emilia Romagna region	• Farmers • Millers • Bakers • University of Bologna • Critical consumers	Medium	Recover ancient wheat varieties and study their properties, with the aim of making the resulting products available to the community through creation of a short supply chain.	https://www.nelnomedelpane.it/progetto-virgo
Consorzio Terra di San Marino	2014	Republic of San Marino	• Farmers • Critical consumers	Small	Protecting and enhancing the flavors and authenticity of local production.	https://www.terradisanmarino.com
Associazione Grani Antichi di Montespertoli	2014	Montespertoli (Tuscany)	• Farmers • Municipality • Miller • Baker • Agrarian technician • Critical consumers	Large	Creation of a virtuous local supply chain, involving and engaging farmers, processors, and also embedding critical consumers.	https://www.graniantichitoscani.com

* Small < 20 members; medium 20 – 50; large > 50.

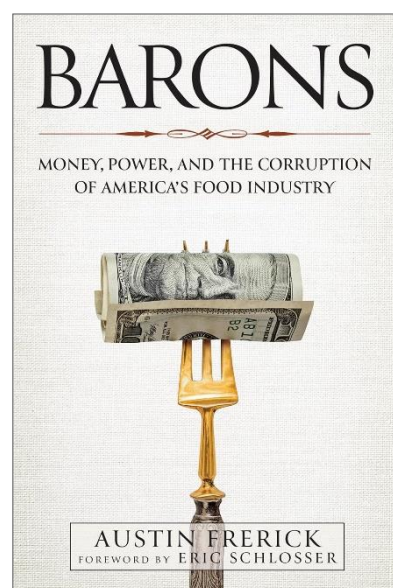
From market concentration to political corruption

Book review by

Review by Leland Glenna*

The Pennsylvania State University

Review of *Barons: Money, Power, and the Corruption of America's Food Industry*, by Austin Frerick. (2024). Published by Island Press.
Available as hardcover and E-book; 248 pages. Publisher's website:
<https://islandpress.org/books/barons>



Submitted June 14, 2024 / Accepted June 14, 2024 / Published online July 3, 2024

Citation: Glenna, L. (2024). From market concentration to political corruption [Book review]. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 363–365.
<https://doi.org/10.5304/jafscd.2024.134.030>

Copyright © 2024 by the Author. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

The government and the press in the United States tend to define corruption narrowly as the misbehavior of individual politicians. They turn a blind eye to systematic corruption such as, for example, the wealthiest people and corporations using campaign contributions to buy political influence. A politician who takes a cash bribe in exchange for a political favor might be deemed corrupt. In contrast, a politician who derails a piece of legislation after receiving a large campaign con-

tribution is operating within the limits of the U.S. campaign laws and is, therefore, not deemed corrupt.

As I write this review, U.S. Senator Robert Menendez is standing trial for accepting bribes of gold, cash, and other gifts in exchange for directing weapons to Egypt and for blocking criminal investigations in the United States. A U.S. citizen might wonder why Senator Menendez did not just ask those seeking to bribe him to simply run the money through a political super PAC, which would make the corruption legal. A U.S. citizen might also wonder why it is not in fact illegal to buy political influence through campaign contributions and why the press does not call it corruption.

Frerick's *Barons* is a breath of fresh air because it repeatedly calls out the corruption in the U.S. agriculture and food system and the U.S. political

* Leland Glenna is professor of rural sociology at The Pennsylvania State University, where he teaches courses on social theory, corporate social responsibility, and international development. His research interests focus on the sociology of science and technology. He can be contacted at The Pennsylvania State University; University Park, PA 16802 USA;  <https://orcid.org/0000-0003-0112-9140>; LLG13@psu.edu

system. When he describes how the owners of a mega-pork production operation donated US\$300,000 to the campaign to reelect Iowa Governor Kim Reynolds, he calls it what it is: corruption.

It has become fashionable to use the term *socialist* to describe this kind of book. Many political commentators who use that word do not know what it means, and it would be especially inappropriate to assign the term to this book. In the foreword, Eric Schlosser describes how Adam Smith's idea of a self-regulating market was contingent on having laws in place to prevent the emergence of monopolies. After all, the point of capitalism, from Smith's perspective, is that companies improve social welfare when they compete to produce more and more goods and services, which drives down the price for customers. Smith observed that monopolies stifle innovation and limit competition, enabling them to raise prices and extract excessive profits, while also gaining political power. Furthermore, Schlosser observes, the American Revolution was as much a rebellion against the East India Company's monopoly control over tea and other goods as it was against the British government.

Despite its establishment as a nation opposed to corporate control, the U.S. since then has experienced periods of rising corporate monopolies, followed by government regulations to foster more competition, which have then been followed again by more monopolies. Frerick credits Robert Bork with the current stage of monopolistic and oligopolistic control in the U.S. and in the global agriculture and food system. The anti-trust laws of the early 20th century, combined with the New Deal, helped to expand social welfare in the U.S. after the Second World War. However, while the U.S. middle class was expanding, economics and law professors at the University of Chicago were devising the intellectual justification for weakening anti-trust laws. One of those law professors was Bork, who argued that antitrust policies should focus only on consumer prices when determining if a monopoly was detrimental to society. When the Reagan Administration converted this economic theory into policy, monopolies and oligopolies became more common. And this is evident in the U.S. agriculture and food sector.

Frerick mixes his personal experiences of growing up in rural Iowa with carefully documented case studies of corporate consolidation in the pork, grain, coffee, berry, meat packing, and grocery sectors. The most captivating case study, from my perspective, was the chapter on the meat-packing barons, the Brazilian brothers Joesley and Wesley Batista, who run the JBS company. The chapter starts with a 2017 story of how Joesley Batista was part of a bribery scheme in Brazil that involved funneling money to an oil company to advance the interests of the Brazilian president and his political allies. Batista managed to save himself from jail and his company from anything more than modest fines by working with government investigators who eventually arrested the Brazilian president on corruption charges.

Starting as a small family butchering company in Brazil in the 1950s, the Batista's JBS company is currently the largest beef and chicken processing company in the world, and it is also the world's largest leather producer. It operates in many countries, including the U.S., where JBS entered the market by purchasing Swift & Company and parts of Smithfield Foods and Pilgrim's Pride.

Frerick's contention is that the weakened U.S. anti-trust laws have enabled companies like JBS, Iowa Select, Cargill, JAB Holding, Fair Oaks, Driscoll's, and Walmart to concentrate control in their respective sectors, which gives them the power to undermine competition, inflate prices, ignore labor laws, weaken environmental and workplace regulations, undermine small farms and locally owned business, and escape meaningful punishments when they are occasionally charged with violating laws.

Although a reader might feel tempted to romanticize the post-war period of the 1950s and 1960s, Frerick is careful to point out that not everyone benefited equally from the anti-trust laws and other regulations directed at building a middle class. For example, farm subsidies were limited to white farmers, which they often used to take advantage of Black farmers. The key takeaway is that there is no such thing as a self-regulating market. Laws and regulations are necessary to protect the environment and benefit people. When policies are in place to promote competition and innova-

tion, people tend to benefit. Politicians today could develop policies that benefit more people than they did in the 1950s.

Frerick's proposed solutions are reasonable and practical. It is hard to imagine any average U.S. citizen being opposed to them. Unfortunately, establishing these policies will not be easy. Those corporate barons got rich by using their power to gain advantages. And that political corruption that has enabled them to gain power will also help them maintain their power. Still, the struggle is worthwhile, even if it is only aspirational. Frerick con-

cedes that it will not be easy and argues that achieving a better agriculture and food system will require a movement.

The book is well written and accessible for multiple audiences. One can read the chapters as quickly as a *New Yorker* article. At the same time, it is filled with endnotes referencing scholarly books and articles for those readers who want to explore specific topics in more depth. This combination makes the book valuable for undergraduate and graduate courses. In fact, I intend to assign the book in my undergraduate courses.

