

Journal of Agriculture, Food Systems, and Community Development

Volume 7, Issue 2
Winter 2016–2017

*Shepherding
Community
Engagement*



www.FoodSystemsJournal.org
ISSN 2152-0801 (online only)

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



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The *Journal of Agriculture, Food Systems, and Community Development*, ISSN 2152-0801 (online only), is published quarterly (Summer, Fall, Winter, Spring) by the Thomas A. Lyson Center for Civic Agriculture and Food Systems, a project of the Center for Transformative Action (an affiliate of Cornell University). Journal office: 295 Hook Place, Ithaca, NY 14850 USA.

Online subscriptions: Farmer/Student/Sole Proprietor/Retiree: US\$40; Agency/Nonprofit Staffperson: US\$52; Faculty/Consultant/Corporate Employee: US\$72; Institutional Library: US\$255–US\$745 (based on FTE students).

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Contents | Volume 7, Issue 2 / Winter 2016–2017

On our cover: At the Bloomington (Indiana) Community Orchard, a long-standing volunteer and member of the Education Team teaches a new volunteer how to conduct dormant pruning of a peach tree during a winter work-and-learn day.

(Photo by Ann Schertz; used with permission.)



Editorial

IN THIS ISSUE: Shepherding Community Engagement / *Duncan Hilchey* 1

Columns

FREEDOM'S SEEDS: REFLECTIONS OF FOOD, RACE, AND COMMUNITY DEVELOPMENT:
Voices of the Food Movement in Detroit / *Monica M. White* 5

THE ECONOMIC PAMPHLETEER: Sustainability: Part of the New Women's Movement /
John Ikerd 9

Open Call Papers

A Preliminary Overview of Community Orcharding in the United States / *Megan Betz, Jacob Mills, and James Farmer* 13

On the Bleeding Edge of Farming the City: An Ethnographic Study of Small-scale
Commercial Urban Farming in Vancouver / *Sharla Stolhandske and Terri L. Evans* 29

Is Urban Agriculture Financially Sustainable? An Exploratory Study of Small-Scale Market
Farming in Philadelphia, Pennsylvania / *Christian Hunold, Yetunde Sorunmu, Rachel Lindy, Sabrina Spatari, and Patrick Gurian* 51

Reality Education: Agricultural Knowledge Exchange in the U.S. South / *Sarah Franzen* 69

Shepherding Community Engagement to Strengthen the Local Food System in Northeast
Iowa / *Arlene E. Enderton, Corry M. Bregendahl, and Alice S. Topaloff* 85

Implementing Collective Impact for Food Systems Change: Reflections from Michigan /
Lesli Hoey, Kathryn Colasanti, Rich Pirog, and Lilly Fink Shapiro 101

(continued)

Critical Reflections on the USDA Local Food Economics Toolkit / *David Conner, Florence Becot, and Diane Imrie* 117

Factors Influencing the Use of Food Storage Structures by Agrarian Communities in Northern Uganda / *Charles Owach, Godfrey Bahigwa, and Gabriel Elepu* 127

Reviews

Globalization and Food Systems Restructuring in the Caribbean Region (review of *Globalization, Agriculture, and Food in the Caribbean: Climate Change, Gender and Geography*, edited by Clinton L. Beckford and Kevon Rhiney) / *Review by Kristen Lowitt* 145

Building Communities While Building Food Systems (review of *Growing Livelihoods: Local Food Systems and Community Development*, by Rhonda Phillips and Christopher Wharton) / *Review by Gregory Zimmerman* 149

The Food Systems Textbook We All Have Been Craving! (review of *Food, Farms, and Community: Exploring Food Systems*, by Lisa Chase and Vern Grubinger) / *Review by Heather Johnson* 153

Landscape of Displacement and Place (review of *Real Pigs: Shifting Values in the Field of Local Pork*, by Brad Weiss) / *Review by Sarah J. Martin* 157

The Thomas A. Lyson Center for Civic Agriculture and Food Systems, a project of the Center for Transformative Action (an affiliate of Cornell University), is grateful for the support of JAFSCD's partners.



IN THIS ISSUE DUNCAN HILCHEY

Shepherding community engagement



Published online March 31, 2017

Citation: Hilchey, D. (2017). Shepherding community engagement [Editorial].
Journal of Agriculture, Food Systems, and Community Development, 7(2), 1–3.
<http://dx.doi.org/10.5304/jafscd.2017.072.015>

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I start by sharing some exciting news: We have just launched our [Community Supported Journal Shareholder pledge drive](#). This support will allow us to become an open access journal—eliminating journal subscriptions, fostering the broadest distribution of JAFSCD content. We are modeling our open access campaign on a model familiar to those involved with food systems—community supported agriculture (CSA)—to become a *community supported journal*. We are seeking pledges from food studies, food systems, sustainable agriculture, and other degree, research, and extension/outreach programs from around the world to purchase the open access shares in JAFSCD. The pledge campaign will run through August 31, 2017 (with payments due in September). If we meet our threshold of \$65,000 in pledges, we will become open access as of January 1, 2018.

As part of our effort to broaden JAFSCD’s reach and impact, we will soon begin to use *altmetrics* to look at our social media penetration as a measure of JAFSCD’s impact at the community level—especially in communities of intractable poverty and food insecurity. This is made possible with the support of the W.K. Kellogg Foundation. This quantitative data, along with a stakeholder survey and story telling, should help us gain valuable insights into what practical change JAFSCD is fostering at the forefront of the good food movement, along with how JAFSCD is becoming more diverse and inclusive in its content.

We hope you will join us in this endeavor by encouraging any program, organization, or department you are affiliated with to pledge now and annually, becoming a member of the JAFSCD Shareholder Consortium. Learn more at <http://www.lysoncenter.org/index.php/jafscd-shareholder-campaign>.

On our cover: At the Bloomington (Indiana) Community Orchard, a long-standing volunteer and member of the Education Team teaches a new volunteer how to conduct dormant pruning of a peach tree during a winter work-and-learn day.
(Photo by Ann Schertz; used with permission.)

In this issue we are very pleased to share not only an outstanding group of papers covering such fresh topics as community orcharding, shepherding community engagement, collective impact, and working with African American farmers in the South, but also the new work of two JAFSCD columnists—the first of Monica White’s columns, *Freedom’s Seeds: Reflections of Food, Race, and Community Development*, and news of a standalone collection of John Ikerd’s *The Economic Pamphleteer* columns.



Monica M. White

In *Freedom’s Seeds: Reflections of Food, Race, and Community Development*, **Monica White** introduces herself and her new column and shares the *Voices of the Food Movement in Detroit*, where residents are avidly rediscovering their agrarian roots. Dr. White is assistant professor of environmental justice at the University of Wisconsin–Madison with a joint appointment in the Gaylord Nelson Institute for Environmental Studies and the Department of Community and Environmental Sociology.

Next, **John Ikerd** explores how the good food movement is, in fact, largely a woman-led movement in *Sustainability: Part of the New Women’s Movement*. And for readers who can’t get enough of John Ikerd’s work, we present to you a collection of his 22 columns published in JAFSCD since our launch in 2010 in *The Economic Pamphleteer: Collected Essays by John Ikerd on the Economics of American Food Systems*. The collection includes a foreword by **Doria Robinson**, executive director of Urban Tilth in Richmond, California, in which she shares John’s influence on her work. This collection is a must-read in food systems seminars. Find the complete free collection at the [JAFSCD Columnists page](#).*

This issue of open-call papers introduces us to a number of cutting-edge food systems development themes. In *A Preliminary Overview of Community Orcharding in the United States*, **Megan Betz**, **Jacob Mills**, and **James Farmer** provide us with the first detailed look at community orcharding in the U.S. as a unique form of community development. This is followed by two papers drilling deep into the promise of commercial urban agriculture in two large North American cities:

Sharla Stolhandske and **Terri Evans’s** *On the Bleeding Edge of Farming the City: An Ethnographic Study of Small-scale Commercial Urban Farming in Vancouver*, and **Christian Hunold**, **Yetunde Sorunmu**, **Rachel Lindy**, **Sabrina Spatari**, and **Patrick Gurian’s** *Is Urban Agriculture Financially Sustainable? An Exploratory Study of Small-scale Market Farming in Philadelphia, Pennsylvania*.




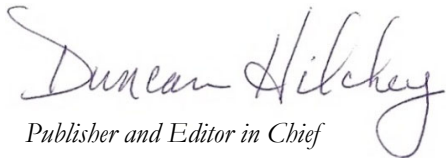
John Ikerd and Doria Robinson

Next is a set of reflective essays on the experience of working with stakeholders in four regions of the U.S. First, **Sarah Franzen** uses observational film-making to explore the critical role communication plays in the successful engagement between Cooperative Extension educators and African American farmers in *Reality Education: Agricultural Knowledge Exchange in the U.S. South*. In *Shepherding Community Engagement to Strengthen the Local Food System in Northeast Iowa*, **Arlene Enderton**, **Corry Bregendahl**, and **Alice Topaloff** present an evaluation of a unique approach to cultivating stakeholder empowerment in local food work. In their reflective essay, **Lesli Hoey**, **Kathryn Colasanti**, **Rich Pirog**, and **Lilly Fink Shapiro** explore the limitations and promise of using the collective impact framework in good food work in *Implementing Collective Impact for Food Systems Change: Reflections from Michigan*. Then **David Conner**, **Florence Becot**, and **Diane Imrie** test out the USDA’s new impact assessment toolkit and suggest tweaks in its application in *Critical Reflections on the USDA Local Food Economics Toolkit*. Our final paper in this issue is *Factors Influencing the Use of Food Storage Structures by*

Agrarian Communities in Northern Uganda, in which **Charles Owach**, **Godfrey Bahigwa**, and **Gabriel Elepu** explore the critical nature of food preservation in highly food-insecure communities.

We offer four book reviews in this issue: **Kristen Lowitt** reviews *Globalization, Agriculture, and Food in the Caribbean: Climate Change, Gender and Geography*, edited by Clinton L. Beckford and Kevon Rhiney. **Gregory Zimmerman** reviews *Growing Livelihoods: Local Food Systems and Community Development*, by Rhonda Phillips and Christopher Wharton. **Heather Johnson** reviews *Food, Farms, and Community: Exploring Food Systems*, by Lisa Chase and Vern Grubinger. And **Sarah Martin** reviews *Real Pigs: Shifting Values in the Field of Local Pork*, by Brad Weiss.

I wish to thank all our authors and especially our reviewers for their patience in the preparation of this issue. While we are very pleased with the our new website for sharing JAFSCD's content, we are less than enthusiastic about our new peer-review system, which, alas, has been confusing for all concerned. We will continue to use Open Journal Systems as our publishing platform (www.FoodSystemsJournal.org), but we are returning to our tried-and-true peer-review system, *Manuscript FastTrack*, for the time being. 


Publisher and Editor in Chief

* JAFSCD columnists page: <https://www.foodsystemsjournal.org/index.php/fsj/pages/view/columnists>



**FREEDOM'S SEEDS:
REFLECTIONS OF FOOD, RACE, AND COMMUNITY DEVELOPMENT
MONICA M. WHITE**

Voices of the food movement in Detroit

Published online March 2, 2017

Citation: White, M. M. (2017). Voices of the food movement in Detroit. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 5–7. <http://dx.doi.org/10.5304/jafscd.2017.072.009>

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Growing food in Detroit says...I can grow my own food and I can feed my community. The first step to rebuilding a culture is agriculture.
—Tee, Detroit urban gardener

Tee is a mother of four, born and raised in Detroit. She became an urban gardener one day in 2009 when she decided to take her

Monica M. White earned a Ph.D. in sociology from Western Michigan University. She is an assistant professor of environmental justice at the University of Wisconsin–Madison with a joint appointment in the Gaylord Nelson Institute for Environmental Studies and the Department of Community and Environmental Sociology. She is a former Chancellor's Postdoctoral Fellow in the Department of African American Studies at the University of Illinois–Urbana Champaign. Her research engages communities of color and grassroots organizations that are involved in the development of sustainable community food systems as a strategy to respond to issues of hunger and food inaccessibility. She can be reached at monica.white@wisc.edu.

lawnmower to a nearby abandoned, vacant lot filled with chest-high weeds and turn it into a community garden. Once she had cleared the space, she went door to door inviting neighbors to meet up to co-create a beautiful space. Where once pedestrians had crossed the street to avoid walking by a lot that seemed sinister, during the growing season it is now inviting, filled with fresh fruits and vegetables such as kale, tomatoes, collards, onions, watermelon, and zucchini the community grows. They also grow flowers, including lavender. Music can be heard while neighbors work in the garden, and artists are hard at work painting signs, building compost bins, and creating other garden decorations that together make this a community space.

The project has always involved Tee's four children and other children of the neighborhood; she sees their role in the project as crucial. While their parents did the heavy lifting in making the space ready, the neighborhood children played a primary role in determining what the garden would

grow. As she told me, it was more than a garden plan. Tee has used the garden to show children the “power of their own voice.” As she says,

To ask children their opinion in designing something that’s a fixture in a community, that’s powerful. Their faces are illuminated when they see the results: “I wanted the tomatoes there and they’re there!” That’s empowering. I want children to know that they are powerful. They are in the position to change things and they are worthy of being heard.

As many of us know, the current urban agriculture movement of which Tee’s garden is a part treats agriculture as a strategy not only to provide healthy and affordable food, but also to rebuild communities and to create sustainable, community-based food systems. By creating spaces for inter-generational exercise and interaction, they make an investment in their children’s confidence and hope for the future. Such gardens also demonstrate social, political, and economic agency.

There is a rich history of urban agriculture in Detroit, and yet this most recent moment has arisen in response to the ongoing decline of the automobile industry and the mass outmigration of Detroit’s population. City services have been drastically reduced, impeding the path to a healthy and sustainable lifestyle in the city its residents

love. Even before the 2009 financial crisis, the last major chain grocery store closed its doors to Detroit residents in 2007. For people like Tee, this created the perfect storm for action.

This movement does not demand a new major chain grocery store to extract further resources from Detroit. They did not petition public officials to provide shopping venues, having no expectation that they would succeed if they did. Instead, they returned to the agricultural traditions of many of their ancestors. Black Detroiters, by and large, are descendants of the migrants of the Great Migration, who came to Detroit seeking a better life working in the burgeoning automobile industry. Thus, putting their hands in the dirt to transform their community, reconnecting to agriculture, one growing space at a time, constitutes a return to their roots. They understand the truth of what an Alabama farmer whose family has farmed for generations told me: “You can free yourself when you can feed yourself.”

As Tee described her commitment to transforming the neighborhood, for her children and for all of the people in the neighborhood, the sincerity of her vision of a healthy community brought us both to tears. Like Tee, I grew up in Detroit. But I’ve lived primarily in college towns since my high school graduation. As grocery stores have dwindled and my aging parents have had to drive further and further from their home to access healthy food, college towns have offered a stark contrast.

Yet I have always understood that food is more than a commodity. My father always grew food in Detroit. My grandmother did too; even when confined to a wheelchair and lacking a yard, she tended to her tomato plants inside. My sister Ava continued the tradition, growing corn, eggplant, collards, and all sorts of other crops in her small back yard on the East Side of Detroit.

My family has always understood working with the earth to be a way to practice self-sufficiency. Tee spoke of the earth as a powerful ally in community transformation. She recognizes that the dominant food system does not offer families like hers access to healthy, affordable, locally grown, culturally appropriate food. As the urban agriculture movement has gained ground, media coverage



Tee in the “Sowin’ Seeds” community garden.

Photo by Monica M. White

of urban farmers has focused on “pioneering” and “intrepid” young white people who are supposedly breaking new ground in the city; I did not recognize my grandmother, father, my sister, or Tee, in these images. For my family and thousands of others, clearing a field and growing food is thus an act of resistance, a protest moment, and an opportunity to demonstrate our own self-reliance in a mainstream culture that at best ignores us. Tee reclaimed her own agency and empowered her community from the youngest members on up by reclaiming a space once treated as a garbage dump, and creating a symbol of the strength and resilience of the community.

In this column, “Freedom’s Seeds: Reflections of Food, Race, and Community Development,” I will introduce you to people who, like Tee, demonstrate that the acts of growing food and reconnecting with the environment are a strategy of freedom and liberation, of self-determination, and of self-sufficiency. Growing food allows community members to reclaim spaces for community needs and community wellness as a demonstration of collective agency and community resilience.

I’ve been involved in the food justice and food sovereignty movement for over a decade, and in that time I have spoken to many people like Tee. I am also assistant professor of environmental justice and teach at the University of Wisconsin–Madison, with a joint appointment in the Nelson Institute for Environmental Studies and the Department of

Community and Environmental Sociology. From 2011 to 2016 I served as president of the board of directors of the Detroit Black Community Food Security Network. As both an activist and an academic, I have cherished the opportunity to study generational farmers and urban agricultural activists from various vantage points. The chance to describe in this column how communities participate in food production and other strategies of community-based food systems and the amazing people who make up these communities gives me great joy.

While sociologists and historians have often examined agriculture as a force of oppression of African Americans, under slavery, tenant farming, and sharecropping, this space will celebrate those who participate in agriculture as a pathway to freedom. It will be dedicated to unearthing the voices of those who have engaged in agriculture as a way to resist, rebuild, and improve their lives and those of others around them. Here you will find stories about Black generational farmers, young urban farmers, and others who are engage in urban agriculture as a way to create healthy food options and develop sustainable communities around food.

I’m hoping that what you read here now and in coming columns will both challenge what you think and inform you about the relationships between race, farming, community development, and the environment.

**In this column, I will
introduce you to people
who demonstrate that the
acts of growing food and
reconnecting with the
environment are a strategy
of freedom and liberation,
of self-determination, and
of self-sufficiency.**



THE ECONOMIC PAMPHLETEER JOHN IKERD

Sustainability: Part of the new women's movement

Published online February 24, 2017

Citation: Ikerd, J. (2017). Sustainability: Part of the new women's movement. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 9–12. <http://dx.doi.org/10.5304/jafscd.2017.072.004>

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At recent local food conference in Toronto, Canada, I opened my presentation by commenting on the impressively large numbers of women, young people, and racial and ethnic minorities in the audience. I suggested that the stereotypical *old, white men* were not going to give up control of the food system without a fight, so we need to be prepared to take it away from them. When I sat down, a female fellow panel member remarked to me that the women's movement is very complementary to the sustainable food

John Ikerd is professor emeritus of agricultural economics, University of Missouri, Columbia. He was raised on a small farm and received his BS, MS, and PhD 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 <http://johnikerd.com> and <http://faculty.missouri.edu/ikerdj/>

movement. I replied, almost without thinking, "The sustainable food movement *is* a women's movement." I perhaps should have called it a *women-led* movement, for the sake of accuracy.

Even in the early 1990s, I had observed that leadership positions in sustainable agriculture educational programs were dominated by women. At an educational event hosted by a Native American tribe in Idaho, male and female participants were asked to sit at separate long tables for the evening meal—as was traditional for the tribe. We were to fill the chairs from the front toward

*Why an **Economic Pamphleteer**? Pamphlets historically were short, thoughtfully written opinion pieces and were at the center of every revolution in western history. I spent the first half of my academic career as a free-market, bottom-line agricultural economist. During the farm financial crisis of the 1980s, I became convinced that the economics I had been taught and was teaching wasn't working and wasn't going to work in the future—not for farmers, rural communities, consumers, or society in general. Hopefully my "pamphlets" will help spark the needed revolution in economic thinking.*

the back of the room. I quickly noticed that the women's table was filled to a length more than twice as long as the men's table.

Many of the sustainability program leaders in universities, government agencies, and nonprofit organizations are and have been female. Sustainable-minded farmers may still be mostly male, but the numbers of women farmers are growing. Young women farmers are providing leadership for national young farmer organizations such as the National Young Farmers Coalition (National Young Farmers Coalition, n.d.) and The Greenhorns (The Greenhorns, n.d.). The 5th Annual Women in Sustainable Agriculture Conference brought more than 300 women farmers, ranchers, and educators together in Portland, Oregon, in 2016 (Adams, 2016). At events I attend in the U.S., Canada, and elsewhere, the leadership of the sustainable/ local food movement tends to be dominated by women.

I believe many women have always been interested in farming and food-related issues, where positions of leadership traditionally have been reserved for men. Sustainable agriculture is seen by many of these men as a challenge to their positions of male privilege because it challenges their male-dominated way of farming. This has left opportunities open for bright, articulate, motivated women of all ages to take on leadership responsibilities. I believe also that the guiding principles and characteristics of sustainable farms and food systems are more in harmony with personality traits of females than males. Industrial agriculture is about forcing nature to produce more cheap commodities, whereas sustainable agriculture is about nurturing nature so it can produce enough good food.

I'm certainly not an expert on feminism. However, the global women's protest against President Trump's inauguration has returned public attention to the ongoing women's movement (Booth & Topping, 2017). During the late 19th and early 20th

century, the first wave of the movement addressed women's suffrage and other legal inequalities. The second wave, begun in the 1960s, focused on removing cultural and economic inequalities. The third wave, starting in the 1990s, expanded on the second wave by embracing religious, ethnic, and cultural differences among women. The new "Fourth Wave" of feminism, which emerged in the early 2000s, has been described as a "fusion of spirituality and social justice reminiscent of the American civil rights movement and Ghandi's call for nonviolent change.... At its heart lies a new kind of political activism that's guided and sustained by spirituality" (Peay, n.d., para. 2).

Some social scientists associate the Fourth Wave with the emergence of social media, which has allowed the women's movement to become a multi-ethnic global movement—empowering women around the world. Perhaps more importantly, social media have allowed the Fourth Wave to evolve without needing a single leader or set of female icons to speak for the movement. Women have been able to speak publicly for themselves, as well as to find and join a diversity of shared voices. This makes the women's movement more resilient and more difficult to coopt or suppress than ever before. I believe the current women's movement reflects a natural progression from equality, to identity, to empowerment, to leadership. Many women now seem to understand that the personality traits commonly associated with being female are the traits most needed for leadership at this time in human history.

Psychologists tend to rely on the "Big Five" personality traits to define gender differences (Weisberg, DeYoung, & Hirsh, 2011). They are Neuroticism, Agreeableness, Conscientiousness, Extraversion, and Openness/Intellect. Women tend to rank higher in *neuroticism*, which is generally associated with anxiety and self-consciousness. But related traits such as emotionalism and sensitivity

**Industrial agriculture is about
forcing nature to produce
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enough good food.**

can also sharpen intuition and insight. Males tend to be more rational and ideological, which can lead to conceit and rigidity. Women consistently rank higher for *agreeableness*, which is associated with empathy, altruism, and kindness. Men tend to be more egocentric, self-centered, and indifferent.

Women also rank higher in *conscientiousness*, which is associated with organization and self-discipline. Men tend to be more opportunistic and sporadic. Women rank only slightly higher in *extraversion*, as they relate more comfortably with others. Men are inclined to take more social risks. No significant gender differences have been found for *openness/intellect*, which reflect imagination, creativity, and intellectual curiosity. However, the focus of imagination, creativity, or exploration may well be different for men and women. These gender differences obviously do not apply to all women or men, which is confirmed by various studies showing significant overlap along the gender trait continua.

Regardless, the gender traits generally associated with being female are far more consistent with the requisites for sustainability than those of males. Old, white men have had a natural leadership advantage in the *mechanical* world envisioned during the Enlightenment and imposed upon the world during the industrial era of economic development. We now know that world is not sustainable. The worldview essential for sustainability is that of a resourceful, resilient, regenerative living organism rather than an inanimate mechanism. Living things must be conceived, nurtured, cared for, and renewed rather than built, managed, worn out, and discarded. Creating a sustainable food system is much more like raising a child than building an automobile. Communities and societies are sustained by considerate, cooperative, collaborative, consolatory, caring, compassionate relationships. The aptitudes, talents, and skills needed for sustainability are far more consistent with the

gender traits of females than males.

At the deepest level, the sustainability movement is a morally rooted movement born of a growing sense of our responsibility to take care of

each other and to care for the earth. It represents a “fusion of spirituality and social justice.” Sustainability will require a “new kind of political activism that’s guided and sustained by spirituality.” Hillary Clinton’s loss in her bid for the U.S. presidency was a deep disappointment for the women’s movement. She likely lost the votes of many old, white, men who felt threatened by the thought of a woman president. She probably lost the votes of even more who feared she would accommodate the “establishment”—the old, white, men. Many of today’s

women political leaders were elected because they lead like old, white men. I believe the American people ultimately will elect a woman president who has the courage to think and lead like a woman. I believe the sustainability food movement ultimately will succeed because it is an essential part of a global women-led movement that is creating a better future for humanity.

Creating a sustainable food system is much more like raising a child than building an automobile. Communities and societies are sustained by considerate, cooperative, collaborative, consolatory, caring, compassionate relationships.

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A preliminary overview of community orcharding in the United States

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Submitted August 9, 2016 / Revised November 11 and December 21, 2016 /
Accepted December 22, 2016 / Published online February 13, 2017

Citation: Betz, M., Mills, J., & Farmer, J. (2017). A preliminary overview of community orcharding in the United States. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 13–28. <http://dx.doi.org/10.5304/jafscd.2017.072.002>

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Abstract

Community orchards are a type of urban agriculture project bringing fruit- and nut-bearing trees and shrubs to neighborhoods across the U.S. While urban agriculture is receiving substantial attention in food studies literature, community orchards are still largely absent from academic conversations. We conducted a qualitative, inductive survey of community orchard organizations in the U.S. to establish a baseline understanding. This survey was addressed to orchard organizers and focused on two questions. First, what is driving the rise of community orcharding projects in the U.S.?

Second, how are the organizations affecting local food systems? Organizations were selected to be recipients of our survey, which garnered a 42.64% response rate, if they had an Internet presence and active e-mail account; identification of survey participants was Internet-based, and as a result, little is known about orchards that do not have an Internet presence. Findings showed that community orchards are primarily established on public land, often facilitated by municipal parks and recreation departments, and range in size from pocket orchards of just a few trees to multiple acres of diverse planting. Primary motivations for beginning community orchards include concern for the environment, education, and a sense of community. A preliminary understanding of this impact lies at the nexus of these final two motivations. Community orchard organizers predominately reported fruit and nuts produced in the orchard would feed residents in the geographic area

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Disclosure and Acknowledgments

We thank the orchards participating in our survey and the Indiana University School of Public Health–Bloomington for funding in support of the research.

immediately surrounding the site. This arrangement of public fruit and nut production and volunteer orchard management is leading to a novel form of community development that merits further research.

Keywords

Urban Agriculture; Local Food; Community Orchards; Community Development

Introduction and Background

Alternative food projects, which include activities like community-based agriculture and neighborhood foraging or gleaning groups, are capturing national attention as gardens fill decaying urban landscapes and fair trade products line shelves (Goodman & Goodman, 2009). Such projects are being increasingly regarded as “green infrastructure,” a term most commonly associated with storm water management; this language demonstrates a valuation of not only the goods produced by trees and plants, but their services as well (McLain, Poe, Hurley, Lecompte-Mastenbrook, & Emery, 2012). While this valuation makes projects more interesting to urban planners and public officials, participants in such projects seem drawn to intangible community development aspects—reconnection to each other, to nature, and to their food (Firth, Maye, & Pearson, 2011; Flachs, 2010; Ohmer, Meadowcroft, Freed, & Lewis, 2009). However, these potential community-building outcomes have been critiqued for reinforcing the existing corporate food regime, creating alternatives without combating the policies that support the neoliberal marketplace and without overcoming barriers of class and race to create a more inclusive environment (Agyeman & McEntee, 2014; Guthman, 2008; Holt-Gimenez, 2011; Slocum, 2006).

Understanding the potential community-building outcomes and overcoming these neoliberal tendencies of alternative food projects require an understanding of how minority communities organize. Unlike market logic-based projects that use urban agriculture to teach good food choices, communities of color are using urban agriculture as a tool to reclaim traditional ecological knowledge and combat environmental degradation

and enclosures of the commons (Norgaard, Reed, & Van Horn, 2011). Locally produced food and agriculture are not simply alternatives to the neoliberal marketplace, but offer an alternative form of community structure and governance (Alkon & Norgaard, 2009; Gottlieb & Joshi, 2010; Norgaard et al., 2011). Rather than food production as an end, it is a means to empowerment and, more importantly, valuation of a cultural identity.

A new alternative food project is on the rise in the United States. Community orcharding unites volunteers through fruit and nut trees to contribute to their community’s food security, knowledge of food production, and environmental health. While a growing literature has traced the history, goals, and motivations of participants in community gardens (Flachs, 2010; Ohmer et al., 2009; Pudup, 2008), the recent wave of community orchards remains largely absent from this literature (Nordahl, 2009). Community gardens are the alternative food project perhaps most widely known. These projects contribute to personal and public health, neighborhood beautification, and a connection to nature (Ohmer et al., 2009; Wakefield, Yeudall, Taron, Reynolds, & Skinner, 2007); they are also sites for community development (Firth et al., 2011; Saldivar-Tanaka & Krasny, 2004). Similarities exist between community gardens and community orchards, but conflating the two masks essential differences in style of production and harvest distribution and, more importantly, in the type of community they can develop. Community orcharding is distinct from community gardening in that plantings are largely perennials requiring long-term, rather than single-season, community and site management (Ames, 2013).

After the initial planting of trees, several years of maintenance are required before trees reach substantial fruit or nut production. This requires having access to volunteers who will stay in one place for several years and who have leisure time that can be committed to nurturing harvests that are years in the future. Further, community orchards are largely planted on public ground and function as an exempted use of public space. These sites allow for the planting of fruit trees otherwise prohibited on public grounds due to the messy,

hazardous, and aesthetically displeasing nature of fruit that goes unharvested. Municipalities are beginning to embrace the opportunity that public space offers to improve food security, defined as “daily access to an adequate supply of nutritious, affordable, and safe food” (Nordahl, 2009, p. 5).

Several works have discussed community orchards alongside other urban fruit forestry projects, which also include gleanings and foraging (Ames, 2013; Clark & Nicholas, 2013; McLain et al., 2012; McLain, Hurley, Emery, & Poe, 2014; Poe, LeCompte, McLain, & Hurley, 2014). However, these works take a sustainability science approach that focuses on fruit and nut production and ecosystem services, and do not account for the distinct community development challenges and opportunities that exist in the community orchard. Further, the limited research on community orchards means the community development potential for such sites, and their ability to overcome barriers of race and class facing other alternative food projects, are little understood.

This paper presents the results of a qualitative survey of community orchard organizers across the U.S. Research was conducted with a guiding objective of understanding what activities are conducted in community orchards, learning the stakeholders of community orchards, and gathering demographic data on organizational leadership. This research aims to establish a baseline understanding of what motivates communities to undertake community orcharding, and what the organizers believe these contribute to their communities. The goal of this research is not only to bring orchards into the growing alternative food literature, but also to contribute to the sustainable management of community orchards, aiding the projects in planning for resource longevity and organizational viability.

Methods

Community orchards were identified through a Google community orcharding group, Facebook groups for community orchard organizers, Internet keyword searches, and an initial list established using Clark and Nicholas's (2013) discussion of urban fruit forestry. Keywords included “community orchard,” “food forest,” and “urban fruit

trees.” This means that community orchard organizations identified had an Internet presence and an active e-mail account. As a result, it is unknown how community orchards have been planted by groups who either have limited or no access to the Internet, or who choose not to use the Internet to support their organization; this is discussed further in the limitations section. More than 70 orchards were identified and invited to participate in a web-based questionnaire developed in Qualtrics, online survey software. The survey included four sections: organization origins, size, plantings, location, and goals; organizational structure, decision-making, management practices, and funding; community outreach, information sharing, community partnerships, and harvest distribution; and demographic information (see Appendix).

Communication with potential respondents followed a modified tailored design method (Dillman, Smyth, & Christian, 2011). This included four separate communications between February 24 and March 23, 2016. Three were e-mails, and a final reminder and invitation took place by phone. As an incentive, those who completed the survey were given a chance to win one of two US\$250 Visa gift cards for their community orchard project. Of the 68 community orchards whose e-mail addresses received our survey, 36 followed the link; 29 were usable. The remaining seven surveys were looked at, but the survey responses were blank; these surveys were omitted. This resulted in a final response rate of 42.64%. We conducted descriptive analysis with the usable responses received. Responses to open-ended questions were thematically coded (Creswell, 2012). Inductive codes were developed with a hierarchical structure that focused on three themes: environment, education, and a sense of community. Prior to coding, materials were read multiple times to allow themes to emerge from the data. Preliminary themes were used to pull quotations, and quotations were clustered with those with like content to look for keywords. We then searched for alternate versions of these keywords to find additional quotations for further sorting and development of a hierarchy among themes, bearing in mind a primary interest in content related to motivations for starting an orchard and perceived outcomes.

Results and Discussion

An understanding of community orchards begins with an understanding of the “community” they create. Part of the community such organizations foster depends on public-nonprofit partnerships. Partnering with local government for land and resources means community orchards are open to all, often from dawn to dusk. These partnerships also result in community orchard sites’ position on land unsuitable for development—a fact with mixed implications, as the project offers a way to beautify the space but may also be subject to flooding, poor sunlight, or questionable soil quality. The orchard community appears to be driven by a concern for the environment—and with it the public-health implications of environmental quality—as well as skill- and knowledge-sharing. While food production is central to the act of community orcharding, affecting community food security may be a secondary outcome, with community development and improving the (social and natural) environment serving as primary outcomes. As we illustrate below, the orchard community includes a sense of care for nonhumans, such as pollinators, and for those who do not participate in orchard care.

Organization Profile

A majority of community orchards (21 respondents, or 72%) have land that was at least partially owned by the city, predominantly facilitated by departments of parks and recreation; other prominent owners were churches (at least seven) and schools (at least five). This adds up to more than 29, as many community orchard organizations had more than one planting site with a variety of land tenure structures across sites. Ten respondents represented unique community orchards—sites that functioned independently, for example, on church grounds and coordinated by the church. Nineteen respondents were affiliated with organizations that have multiple community orchard planting sites. These 19 organizations fell into two general categories: umbrella orcharding organizations, which work with neighborhoods, schools, and congregations to facilitate or manage orchards, and individual orchard sites, which fit under an umbrella orcharding project with varying degrees

of autonomy. While no statistically significant differences emerge in this preliminary analysis, we will explore these varying organizational structures further when data is gathered at the participant level. Umbrella organizations represented collaborations with multiple community partners across the sites that were most dedicated to community orcharding, with multiple sites dedicated to this type of project and with resources to support partners interested in planting fruit and/or nut trees. Organizational structure generally fell into three categories: nonprofits focusing on sustainable food production (two religious organizations are included in this category), neighborhood associations, and local government. Across these categories, community orcharding functioned as one component of how the organizations worked toward their missions, which included a combination of food production, neighborhood revitalization, and community development.

Responding community orchard organizations range in size from 0.12 to 5.5 acres (.048 to 2.25 hectares)—pocket orchards with as few as five trees to larger parks with diverse plantings numbering over 200. Most commonly planted fruits include apples (23), blueberries (20), pears (20), cherries (18), plums (17), raspberries (17), and serviceberries (17). Three respondents explicitly noted that community gardening is a component of their organization, but 22 additional respondents said plantings on site include vegetable, medicinal herb, or flower gardens. Planting decisions are based on, as one respondent stated, “what our gardeners and neighbors want to eat.” However, the survey failed to gather clear data on how input from the community is gathered to determine what they want to eat. Respondents said organizational leadership (83%) and community members (86%) both participate in determining what is planted.

Site selection, in many ways, reflects the goals of community orcharding discussed by the respondents. As previously noted, many sites partner with public agencies and therefore are located within public parks. The city agency grants permission to plant in spaces described as “vacant,” “unbuildable,” or “flood prone.” Other sites were described as “informal dumps,” “trashed freeways,” and in states of “disrepair.” The

community orchards' position within public parks and on otherwise unwanted public ground affected not only the size but also the way in which the site was accessed. Twenty-five respondents listed "dawn to dusk" or comparable parks hours as the times during which the community orchard is open to the public. Organizations with more agency in site selection still maintained these hours, but were able to be more accessible to those in need beyond having flexible hours. They could position themselves in neighborhoods where need was highest, rather than being at the will of the municipality and receiving a parcel of land ideal for neither their target population nor agricultural production. Environmental factors like soil conditions, sunlight, and water availability were considered where possible, as were human factors, such as high-traffic areas and a desire within the neighborhood to have green space and food production.

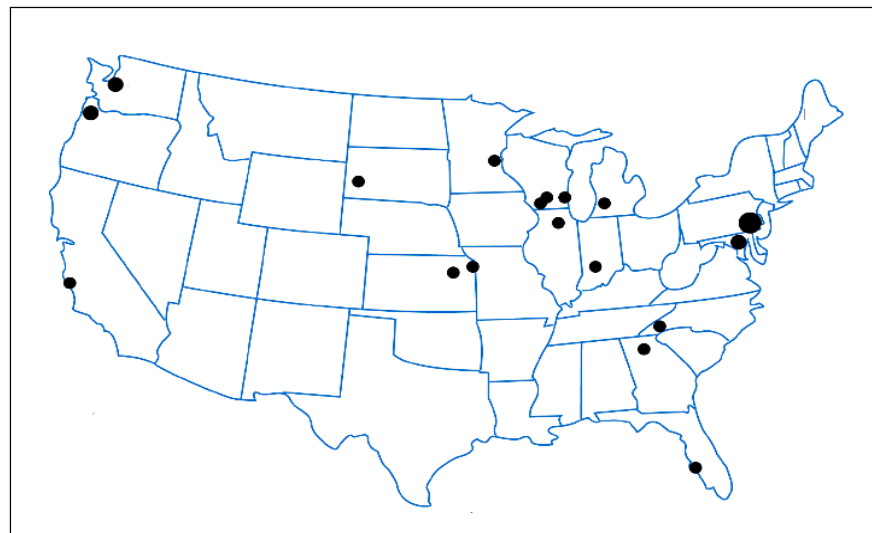
Limited agency in site selection and ambiguity of land tenure has had a substantive impact on the history of community gardens (Balmer et al., 2005; Domene & Sauri, 2007; Eizenberg, 2012; Emmett, 2011), and community orchards may face the same risks. Eight respondents (27%) said their organization received all its funding from one source (grants, community fundraising, or local government); sales of merchandise and produce played a very minor role in fundraising across participants. While this dependence on a small pool of resources reflects the charitable nature of the organizations, it may affect their financial viability over the long term.

Participant Profile

The survey asked organizers and leaders of community orchards to discuss three aspects of community orchard projects: the organization's origins (location, partnerships, goals), organizational structure (decision-making, agricultural practice, funding), and community outreach (site accessibility,

outreach, harvest distribution). While the geographic spread of respondents was considerable (see Figure 1), those in leadership positions reflected the core critique of alternative food movement projects: white, college-educated, and female. Alternative food projects have been criticized for prioritizing "good" foods and choices, but those foods and choices coded as "good" are also predominantly foods and choices coded as white and easiest to make in whitewashed spaces (Delind, 2011; Farmer, Chancellor, Robinson, West, & Weddell, 2014). A majority (96%) of respondents identified as white, and 48% of those who provided their annual household income earned over US\$50,000. Further, 45% were college graduates; an additional 48% held postgraduate a degree; and 64% identified as female. This alignment contrasts with national census averages, where 63% identified as white and 53.25% of households earned above US\$50,000 annually (U.S. Census Bureau, 2014). The national averages for educational attainment are 18.7% having bachelor's degrees and 11.4% having postgraduate degrees (U.S. Census Bureau, 2014). It should be noted here, however, that this bias may be partially the result of method used, as white, affluent city-dwellers are also the most likely to have Internet access and disposable time to commit to responding (Perrin & Duggan, 2015).

Figure 1. Map of Orchards Surveyed Nationwide. Larger dots indicate higher concentrations of orchards.



Before claims can be made regarding community orchards further pushing whitewashed “good foods” onto communities, we must gather demographic information on the communities they serve and what the communities desire, beginning with those who participate directly in the community orchard project compared first with the community more broadly and second with the target populations the organization aims to serve.

Drivers in Community Orchard Establishment and Organization

Our first research question was, “What is driving the rise of community orcharding projects in the U.S.?” Three themes emerged as motivations for community orcharding: concern for the environment, education, and a sense of community.

The motivation *concern for the environment* manifested in terms like “natural,” “native,” “pollinators,” and “restoration.” For example, one respondent said the goal of their community orchard was to “promote community orchards [and] demo organic methods of site remediation (previously had “invasive” blackberry on site).” Permaculture was claimed to be the most prominent orchard management style, with 13 respondents stating this best reflected their practices; others largely described their management style as sustainable or organic. It is worth noting that no respondent described management practices as conventional. Restoration of more diverse habitats and support for pollinators were common concerns when determining what should be planted on site. Five respondents discussed selecting native plants. Many of these plantings have edible components but are not typically planted in an orchard setting, including crabapples, pawpaws, and shellbark hickory. Others selected native plants to support pollinator habitats and, as one respondent stated, “extend the forage season and offer forage for a diverse range of pollinators” such as native mason bees. Participating in urban native restoration activities was a part of the community orchard’s activities for 10 respondents; these activities include educating residents about the benefits and uses of native plants. Such activities may contribute to the community development and connectedness that alternative food projects

aim to create. For example, one respondent said their community orchard aimed to “reintroduce our urban/suburban population to the native fruits and nuts of our region that can be grown with very few chemical inputs.”

The motivation *education* manifested in terms like “educate,” “educational,” and “demonstrate.” Educating the community was listed as an organizational goal for 90% of respondents. Topics of education included how to care for fruit and nut trees, when and how to harvest, and how to support native plants and pollinators. Many of the orchards host educational workshops and classes or have educational components at workdays; educational outcomes included sharing orcharding skills, mentioned by 72% of respondents. Sharing such skills has the potential to extend the impact of community orcharding beyond the primary site, so that community members can plant fruit and nut trees at home; this may magnify the impact of community orcharding on the local community.

The motivation *sense of community* manifested in terms like “community,” “neighbor,” “engage,” and “share.” This concept was closely tied to the motivation education. For example, one respondent stated, “As the orchard matures, we’ll use the site for community education about perennial native food plants, planting, pruning, harvesting, and food preservation.” Such statements lead us to believe that improving food security may function as a secondary outcome of the site; this is discussed further below. Of primary concern for respondents was a sense of care and trust, manifesting in the hours the site is open to the public and in how respondents discuss theft and vandalism. While concern over vandalism due to the public nature of the space was mentioned regularly, theft was far less of a concern. Even vandalism was discussed more as a misunderstanding of fruit and nut trees and orchard care than malicious behavior. Respondents generally argued that the fruit and/or nuts were open for the public and that rather than theft or vandalism, the greatest risk to the trees was a lack of knowledge on how to tend and harvest from the trees. One respondent described such damage: “Children have picked off all the green peaches, apples [before they are ripe] until the trees [are] big enough [and the apples are out of their

reach]; lawnmowers and overeager weed whackers have mown down the berry bushes repeatedly.” Educational programming was seen as a way to reduce instances of unintentional damage to trees. Three quotations demonstrate well the sentiment of using community education to protect the trees and having the harvest reach its intended audience:

Frankly, I expect the critters will harvest the produce before the people have a chance to. My objective is to show people alternatives to planting labor, space, and management-intensive nonnative fruit trees in their home foodscapes.

Ongoing community building, educational programming, and organizing is the number one way to prevent vandalism, though we often say, “You can’t steal free fruit!”

The orchard is open to all at any time. If there are items to be harvested, anyone can go in and harvest.

Community Orchards and the Local Food System

Our second research question was, “How are the organizations impacting local food systems?” Coding terms such as “local,” “health,” “healthy,” and “food” were used to explore how community orchards work within their local food systems. Terms used to explore the impact on the local food system are distinct from ideas of food insecurity or social injustice, instead focusing on overall food production regardless of the socioeconomic and nutritional status of the consumer. While 76% of respondents listed increasing food security as a goal of their organization, attempts to pull together excerpts on food security failed. In fact, the term “food security” appears just once, and “food desert” only three times. Terms like “access,” “nutrition,” and “poverty” were used minimally. Five respondents mentioned donating a portion of produce to food pantries, meaning the community orchard is affecting food insecurity indirectly, and those most in need of fresh produce may not be participating in the projects. Further research will show if this is because such themes are implicit in conversations about education and the environ-

ment, or if improving food security is, in fact, a secondary outcome of community orcharding.

A preliminary understanding of the impact community orchards have on the local food system lies at the nexus of education and developing a sense of community. When asked whom the community orchard served, 83% of respondents said the site would feed residents of the geographic area immediately surrounding the site. Remaining respondents served “anyone who participates” in aspects of community orcharding or members of a previously established community (a congregation or preexisting community garden on the site). In all cases, the sense of community motivation is attached to how respondents articulate community orchards’ potential impact on the local food system. While for a few sites this is about overcoming socioeconomic barriers, for most the impact stemmed from, as one respondent stated, “giving youth experience growing food” and “sharing healthy food in neighborhood.” Another telling example stated the orchards are abundant, “giving healthy food and happiness to many people.”

We anticipated “local” emerging in responses as it relates to food production; however, the term instead was one of the key words describing governance and organizational structure. Local governments own the land and function as community partners for 72% of respondents. In eight cases, local government helped determine what was planted on site. Other local stakeholders including extension agencies, nurseries, and gardening and orcharding experts were cited as sources of skills, knowledge, and other resources. The projects are working to increase access to healthy food, but whether such efforts reach those currently without access or who identify as food insecure is unclear.

Fourteen respondents (48%) indicated that they are currently able to distribute harvest, while 15 (52%) have yet to reach the distribution phase. This speaks to the relative youth of community orchard projects in the U.S., as many sites do not yet have mature trees producing substantive harvests. Of those orchards that have reached the distribution phase, four main means for distribution were reported: open harvest or gleaning by neighbors, community members, or passersby (4); distribution among volunteers (7); donations to

food banks or similar (5); and sales at farmers markets, stands, and carts (5). These methods have varying effects on community development and food security claims.

Limitations and Future Directions

The limitations of this research offer several opportunities for further study. First, the sample is inherently skewed to community orchards with a web presence, which tends to highlight more affluent urban and white populations (Perrin & Duggan, 2015). Additionally, some community orchards we may have missed through our solicitation method include those organized by primary and secondary schools; those managed by community centers or churches and serving closed communities, which therefore have limited need for web presence or outreach; those that serve communities with low interest in publicizing their site on the web, such as minority communities protecting their efforts from co-optation; those in communities with limited Internet access, such as those with low incomes; and populations not comfortable using contemporary communication technologies, such as senior citizens or those with anti-establishment political leanings. This may contribute to the lack of diversity among community orchard leadership found among respondents. Second, a sample size of 29 limits the degree to which these results could be seen as representative and the type of data analysis that could be performed. With fewer than 75 community orchards identified nationwide, even a 100% response rate would not have resulted in a large enough sample size for regression analysis. To overcome this limited sample size and gain a deeper understanding of the community orcharding movement in the U.S., more research should be conducted at the participant level. This allows for a broader sampling, a more accurate picture of whom the organization reaches, and an understanding of how the organization functions “on the ground” rather than in institutional discussion. Finally, much of the community orcharding experience is missed if survey research is the only method used. Expanding to a mixed-methods approach would widen the types of research questions that could be asked. Being “on the ground” in the orchard is an

essential next step to understanding motivations for community orcharding and the ways community orchards can impact local food systems.

Future research requires gaining a broader view of participation in community orchards throughout the U.S. A second phase of survey research was attempted, to enable comparison between those who participate solely in community orcharding and those who lead such projects. Unfortunately, the research resulted in a low response rate that prohibited representative statistical analysis or comparison between the two perspectives. The use of surveys as a method with this population should be reconsidered. Future research will also include mixed-method case study research, which will allow for an on-the-ground, embodied understanding of how the community orchard organization engages with those it aims to serve, its actual participants, the surrounding community, and those who identify as food insecure. This research model will provide a deeper understanding of how community orchards engage with ideas of food security and how the practice of communal food production is informed by, and in turn informs how, participants think about their local food system. While contributing to the local foodshed may be an implicit part of community orcharding practice, in that more food is produced and distributed locally, this does not mean that the fruit and nuts produced are contributing to organizational outcomes or to food security more broadly. Making these claims requires evaluating the mission of the organization in relation to institutional practice, as well as comparing the organization’s participants, harvest recipients, and the demographics of the community.

Recommendations for Community Orchardists and Their Partners

One of the greatest challenges community orchards may face is serving those who are food insecure and creating a more just, diverse food system when limited diversity exists in organizational leadership. Those most likely to be food insecure are also most likely to have limited leisure time to dedicate to volunteer activities (Miewald & McCann, 2013). Means of meaningfully incentivizing work with the orchard may allow these individual to participate.


Examples may include making paid internships available; working with high school, community college, and university programs to help students earn school credit for their work; or creating more structured professional development components, such as funding board of directors certification programs. These activities would require further fundraising but could easily be framed as within the scope and mission of the organization, contributing to antiracist organizational governance (Slocum, 2006). This is an imperative step for community orchards, whose partnerships with municipalities result in plantings on urban green spaces. The tree canopy in urban green space is least dense in neighborhoods of color, and communities of color also have less access to public parks (Heynen, Perkins, & Roy, 2006; Wolch, Wilson, & Fehrenbach, 2005). Practicing antiracism may include, for instance, actively seeking coalitions with communities of color to reclaim land for green space or repopulating the canopy.

Developing partnerships with cooperative extension agencies may assist community orchards in several capacities. First, as several respondents described, extension agencies are sources of expertise in place to serve the public. Their knowledge of local species can help community orchards identify plants growing on site, connecting the organizations to Master Gardener volunteers, and offering resources for selecting plants that could thrive in the local environment. Second, extension agencies offer a unique opportunity to reach one of the community orchard's target demographics. Extension agencies, which provide resources through the land-grant university system, offer the Supplemental Nutrition Assistance Program Education Program (SNAP-Ed). In addition to offering opportunities for nutrition and food access programming, working with extension agencies can provide a way to connect with SNAP recipients and enable community orchards to serve one of their target demographics.

Lasting partnerships may play a key role in the long-term viability of community orchard management from an organizational perspective. Responses show a lack of diversity in fundraising portfolios that could put the organizations' operations at risk in future years. This makes a

wide volunteer base essential, both to support the organization in finding new funding sources and to continue labor at the orchard site. Partnerships can increase the number of volunteers and funding sources community orchard organizations have at their disposal, and also offer an opportunity to work actively to increase diversity within their organization so that those they aim to serve have an active role in shaping the organization.

Conclusions

Alternative food projects are being critiqued for reinforcing white, affluent spaces of "good" food and reinforcing a choice-based, neoliberal ideology in place of food system reform (Agyeman & McEntee, 2014; Guthman, 2008). By prioritizing individual choice, critics argue, other forms of community development are overlooked. Depending on distribution plans, organizational goals, and who can access and participate in orcharding efforts, community orchards may be subject to similar critiques. While demographic information gathered from community orchard organizers showed the organizations may indeed be sites where whiteness and affluence are performed, this must be explored further by looking at the locations of the orchards within their community and the demographics of those who participate in the community orcharding. The variety of distribution methods used and the goals beyond fruit and nut production, such as community building and orcharding education, discussed by our respondents demonstrate that food security and teaching individuals to select "good" foods are not the primary concern of community orchards in the U.S. Instead, the organizations are emphasizing the skills of fruit and nut production and restoration of the local environment. Therefore, the potential outcomes and outputs of community orchards may be distinct from those of other alternative food projects and require different questions to better understand the communities being built. 

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Appendix. Online Questionnaire Distributed to Community Orchard Organizers

Thank you for participating in this survey to help us understand communities' motivations for undertaking community orcharding projects. The questionnaire will take 15 to 20 minutes to complete. All participants must be at least 18 years old. If you are younger than 18, we apologize for taking your time. This survey is completely voluntary, and you may choose to discontinue your participation at any time during the survey. The survey is anonymous, and your name will never be attached to the answers that you provide. If you have any questions, please do not hesitate to send an e-mail to [Author's e-mail removed]. Thank you for sharing your time and experience.

As an incentive for completing our survey, your community orchard will have a chance to win one of two \$250 Visa gift cards. To be eligible, you must complete the full survey. To begin the survey, click **next**.

PART I: ORGANIZATION'S ORIGINS

1. What is the name of your organization? _____
2. What is the name of the community orchard site? (Please answer all remaining questions considering only this orchard site.) _____
3. Are you an organization that has only one site or multiple sites?
 - 1 single site
 - Multiple sites
4. What is the total size of the planting site(s) in acres? _____
5. The plantings are located in a[n]...
 - Urban area
 - Suburban area
 - Rural area
 - Combination of setting types
6. How were these sites selected? _____
7. Who owns the land on which the plantings are located? (Check all that apply.)
 - Local government (Please name department) _____
 - Private land owners
 - Volunteers Community members
 - Nonprofit organization (Please name organization) _____
 - Other (Please describe) _____
8. Do the private landowners attend or participate in orchard labor or events?
 - Yes
 - No
9. Please check all orchard crops planted on your site.

Apples	Citrus	Jujubes	Plums
Apricots	Elderberries	Kiwis	Raspberries
Blackberries	Figs	Peaches	Serviceberries
Blueberries	Hardy kiwis	Pears	Strawberries
Cherries	Hazelnuts	Persimmons	Other (Please list)

10. Are there additional plantings on site (culinary or medicinal herbs, flowers, vegetables)?

11. Which of the following best describe the site's goals? (Check all that apply.)

- Increase food security
- Increase ecosystem services
- Share orcharding skills
- Increase biodiversity of the community
- Build a sense of community
- Educate the community
- Other (Please describe) _____

PART II: ORGANIZATIONAL STRUCTURE

12. Which of the following groups helped determine what has been planted on site? (Check boxes for all groups that participated.)

- Organization leadership
- Extension agency
- Board of directors
- Local governments
- Volunteers
- Community members
- Other (Please describe) _____

13. Will the same stakeholders determine future plantings?

- Yes
- No
- Unsure

14. What is the single best description for the orchard's management practices? (Select one.)

- Sustainable
- Permaculture
- Organic
- Beyond organic
- Conventional
- Blend of organic and conventional
- Other (Please describe) _____

15. Is your orchard USDA-certified organic?

- Yes
- No

16. What are the orchard's sources of funding? (Total should sum up to 100%.)

- Government (Please describe) _____%
- Fundraising within the community _____%
- Grants _____%
- Sale of Merchandise (Please describe, for example t-shirts or mugs) _____%
- Sale of produce (Please describe, for example apples or honey) _____%
- Other (Please Describe) _____%
- Total _____%

PART III: COMMUNITY OUTREACH

17. When is the site open to the public? (Please list hours, for example 8:00 AM 8:00 PM.)

Monday _____
Tuesday _____
Wednesday _____
Thursday _____
Friday _____
Saturday _____
Sunday _____

18. How do people learn the rules of the site? _____

19. How is information shared with volunteers between workdays? (Check all that apply.)

E-Mail _____
E-Mail newsletter _____ Phone _____
Twitter _____
Facebook _____
Word of mouth _____
Other social media _____
Print materials _____
Other _____

20. How is information shared with the public (nonvolunteers) between workdays? (Check all that apply.)

E-Mail _____
E-Mail newsletter _____
Phone _____
Twitter _____
Facebook _____
Word of mouth _____
Other social media _____
Print materials _____
Other _____

21. How many people receive your email newsletter? _____

22. On average, how many events do you host per month? _____

23. How many individuals volunteer with the organization? _____

24. Of this number, how many volunteers attend at least one event per month? _____

25. Does the orchard have a relationship with the county extension agency?

Yes _____
No _____

26. Please describe this relationship. _____

27. Does the orchard primarily serve the people in the neighborhood(s) immediately surrounding the site?

Yes _____
No _____

28. Whom does the orchard serve? _____

29. Is the site currently distributing harvests?

Yes _____
No _____

30. What is the current distribution plan? _____

31. Please describe any challenges your orchard has experienced with site management and distribution. For example, how does the community orchard anticipate dealing with theft, vandalism, or inappropriate harvesting?

32. Please indicate the extent to which the community orchard's activities extend beyond its designated fruit trees/orchard sites.

	Not Planned / No Intention	Planned	In Process	Completed or Perpetual	Not Applicable
Participation in a planting/ urban greening nonprofit					
Participation in neighborhood street tree planting project					
Participation in state-level activities in urban forestry					
Participation in urban native restoration activities					
Engagement with municipal agencies to direct local policy					
Other					

PART IV: DEMOGRAPHICS

33. What is your title with the organization? _____

34. Is this a paid position? _____

35. If you have another occupation, what is it? _____

36. With which gender do you most identify?

Male

Female

Other

37. What is your age? _____
38. Are you of Hispanic, Latino or Spanish origin?
No, not of Hispanic, Latino, or Spanish origin
Yes, Mexican, Mexican Americano, Chicano
Yes, Puerto Rican
Yes, Cuban
Yes, another Hispanic, Latino, or Spanish origin (Please describe) _____
39. What is your race or origin? Check all that apply.
White
Black or African American
American Indian or Alaska Native
Native Hawaiian or Pacific Islander
Other (Please describe) _____
40. What is your relationship status?
Married
Widowed
Divorced
Separated
Single
Member of a partnered couple
Other
41. What is the highest level of education you have completed?
Some high school
High school graduate
Some college
College graduate
Trade, technical, or vocational school
Some postgraduate work
Postgraduate degree
42. What is your annual household income?
Less than \$25,000
Between \$25,000 and \$50,000
Between \$50,000 and \$75,000
Between \$75,000 and \$100,000
More than \$100,000

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On the bleeding edge of farming the city: An ethnographic study of small-scale commercial urban farming in Vancouver

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Submitted August 23, 2015 / Revised December 9, 2016 / Accepted January 23, 2017 /
Published online March 21, 2017

Citation: Stolhandske, S., & Evans, T. L. (2017). On the bleeding edge of farming the city: An ethnographic study of small-scale commercial urban farming in Vancouver. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 29–49. <http://dx.doi.org/10.5304/jafscd.2017.072.010>

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Abstract

In this study, we explore the emergence and early development of small-scale commercial urban farming in metropolitan Vancouver, British Columbia. Commercial urban farming represents a grassroots entrepreneurial activity, spearheaded by individuals and groups, who combine the practices of growing *and* direct marketing fresh food products, in urban spaces for urban consumers. Considered as part of the agricultural renaissance occurring in cities and an example of the incremental shift toward more place-based food systems, commercial urban farming transforms

underutilized and unproductive land traditionally zoned for residential, commercial, or institutional use into intensive food-producing spaces.

Those pioneering this activity reported many benefits, including high job satisfaction, increased health and wellness, and making positive contributions toward the environmental health of the planet. Despite these advantages, they also faced many challenges in moving this model forward, including a lack of land tenure, low financial return, and the challenge of earning a living solely from farming activities.

We employed an ethnographic methodology to assess the practice, opportunities, challenges, and responses associated with this emergent model of urban food production and retailing. In capturing the lived experience of growers over a five-year period, we are also analyzing and understanding how and why the very first innovators trying to move this model forward in metropolitan Vancouver are negotiating and staking claim to

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new spaces in the city for intensive food production. We are also interested in why these early adopters were choosing to make their lives through pioneering small-scale commercial enterprises and systems, and creating and engaging in new forms of work connected with the local food economy.

Keywords

Commercial Urban Farming; Urban Farmers; Urban Agriculture; Vancouver; Local Food Economy

Introduction

We use this study to support two claims. The first claim is that a more comprehensive analysis of the economic realities of small-scale commercial urban farming is needed to better understand why some enterprises flourish while others flounder, and to determine how and if these commercial enterprises can become financially self-sustaining over the long term. Secondly, we assert that further research is needed to explore the degree to which these enterprises can move beyond the narrow white, middle-class demographic that largely initiates and supports local food and alternate food networks (Newman, 2008; Vickery, 2014).

Local food is enjoying a modern-day renaissance in our cities; many factors help explain this. According to Evans and Miewald, the growing local food movement reflects public concerns about “food safety and quality, the need to protect farmland from the impacts of suburban and exurban development, and [is] complemented by questions about how growing cities and regions will feed themselves” (Evans & Miewald, 2010, p. 130). The resurgence of local food is also aided by an intergenerational interest: “the younger generation is looking forward with an eye toward food security and nutrition concerns, while the older generation is reclaiming memories, meaning, and tastes from previous decades” (Ackerman-Leist, 2013, p. 3).

The most visible expression of this burgeoning local food movement is seen in the explosion of farmers markets, community and rooftop gardens, public orchards, and edible trails that find increasing presence within our urban environments. They

represent an interest by a subset of urban residents in eating food grown closer to home, food that represents somewhere—a particular *terroir*—where the distance between farm (or garden) and plate is greatly reduced, and one where the relationship between consumer and producer is valued and prioritized.

To address this growing interest in local food, individuals and groups in metropolitan Vancouver saw an opportunity to diversify and deepen the production and marketing of local food to urban consumers. Moving beyond the casual call to “eat your lawn,” challenging the disconnect between urban agriculture and economic activity, and reimagining where farming may take place (i.e., a rural activity extended into urban space), these grassroots entrepreneurialists established small-scale commercial urban farming enterprises in atypical city spaces—on land traditionally zoned for residential, commercial, and institutional use. This was no easy task as many of the urban farmers studied faced challenges related to resource mobilization and related constraints (financial, human, time, land).

It is the experience of these “urban farmers” in creating new spaces in the city for intensive food production, and who are pioneering new forms of work connected with the local food economy, that forms the basis of our case study.

Background

Small-scale commercial urban farming is a growing area of research and practice within urban agriculture in general, and the local food economy in particular.

The local food economy is an economy that supports the re-localization and socialization of food production, distribution, and consumption (Jarosz, 2008) and is built on the desire for local, fresh, organic, and specialty foods (Blay-Palmer & Donald, 2006). Its attractiveness is evident in the “demand for food production-consumption chains that involve trust and transparency” (Blay-Palmer & Donald, 2006, p. 391) and the resultant social connections between producer-consumer transactions that develop as a result (Hinrichs, 2000). For small-scale farmers, local food networks provide a niche market within which large-scale, global

agribusinesses cannot compete, and allows the farmers greater profitability through direct marketing and value-added production than is achieved through traditional marketing pathways (Alden, 2008). Therefore, local food networks reflect place-based responses to the pervasive, yet unsustainable and increasingly risky, global food economy—one that disconnects place, and producer-consumer relations, in order to make food from *anywhere* available *everywhere*.

There appears agreement in the literature of Kaufman and Bailkey's early observation that those leading the for-market city farming movement, as they named it in 2000, include a diverse collection of individuals and groups. These include, "community gardeners, community development corporations, social service providers, faith-based organizations, ... coalitions for the homeless, farmers with a special interest in urban food production, and profit-making entrepreneurs," among others (Kaufman & Bailkey, 2000). These "early adopters" of what Newman (2008) later characterized as "extreme local food" provide "an array of social, aesthetic, health, and community-building benefits" (Kaufman & Bailkey, 2001, p. 3), thus attracting more activity and attention in this field and to this work. The attraction to and importance of urban farming lies in "conventionally unacknowledged forms of value" in that "people who cultivate urban land to supplement their income, feed neighbors or build job skills create economic value that purely commercial farming does not. They are also place makers" (Vitiello & Wolf-Powers, 2014, p. 520). This point reinforces an insight raised by Cohen and Reynolds (2015) that for many urban agriculturalists, urban farming represents a multifunctional activity, embedding a variety of goals (economic, environmental, community development, social justice), and expressed not only in the cultivation of food, but also in the related activities and programs connected with it.

Yet, despite these advantages, many scholars also underscore that small-scale commercial urban agriculture carries many burdens in meeting these wider objectives. The challenges are well identified across numerous studies, and include: agricultural knowledge and skills deficits among growers, high start-up and operating costs, concern around the

potential exploitation of labor, insufficient access to land, issues relating to land tenure, seasonal and scale limitations on production, soil contamination and remediation, engaging residents, and local government impediments, among others (Angotti, 2015; Newman, 2008; Vickery, 2014). More recent scholarship also questions civic intentions around urban agriculture initiatives and the degree to which they help municipal governments "[perform] sustainability without addressing who actually benefits" (McClintock, Miewald, & McCann, in press).

There is much potential to increase food production in urban areas, including in cities where land costs are high, as they are in our case study site. For example, Angotti draws on city planning data to reveal that in New York City, land that could be activated for urban agricultural production could be found in residential backyards (20% or more of the land base), city parks (14%), and through "reclaiming portions of the city's street and sidewalks, which account for 25% of all land" (Angotti, 2015, p. 337). Similarly, in the city of Vancouver, the central and most populous city within the metropolitan Vancouver region, studies have long highlighted where additional space for growing food and increasing local food access could be found. For example, as early as 2001, a study conducted by City Farmer estimated that at least one third of the land space in each standard Vancouver block could be used to grow food. The value was potentially much greater if paved surfaces, balconies, and decks were used (Houston, 2001; Levenston, Blecha, Schendel, & Houston, 2001) and if rooftop gardens emphasized food production over ornamental uses (Davis, 2002; Kaethler, 2006).

While Vickery (drawing on conclusions reached by Vitiello and Wolf-Powers), highlights that "the most successful [urban farming] projects are mission-based and includes multiple goals outside of simply growing food for sale" (2014, p. 16), this study examines a different trend. In metropolitan Vancouver, British Columbia, individuals and groups are pioneering small-scale commercial urban farming as a new form of work connected to the local food economy, and on land not zoned for this activity. There is value in pro-

viding “‘thick’ descriptions of local practices,” according to Angotti, as these “inform the needed dialogue on urban agriculture policy among the public health, food, land use, zoning, environmental planning and economic development sectors” (Angotti, 2015, p. 337). The site of our study is metropolitan Vancouver (see Figure 1), a region that comprises 21 municipalities and one unincorporated area and, at 2.3 million people, represents the third largest city-region in Canada (B.C. Stats, n.d.-a).

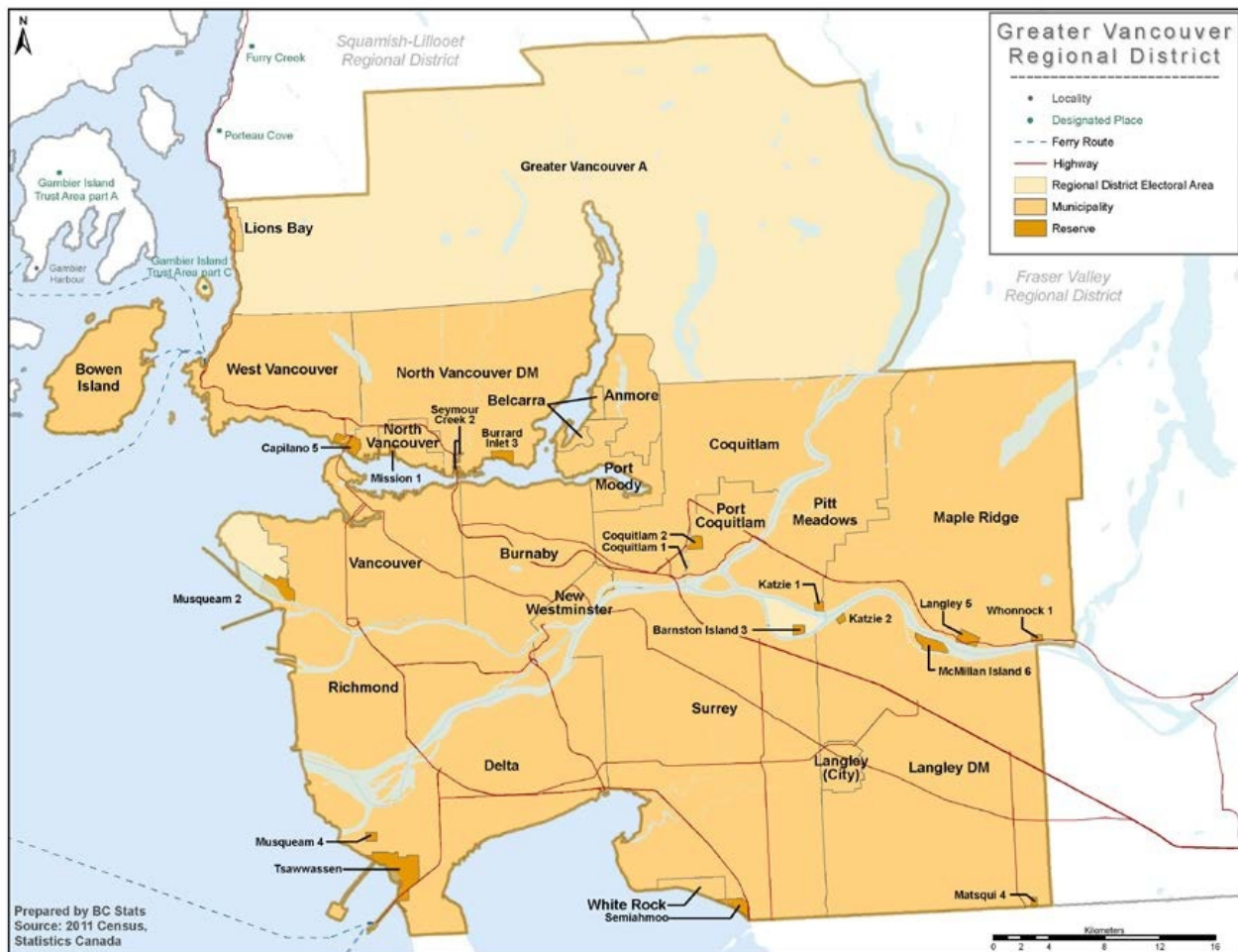
Study Methodology

When this research study was first initiated in 2008, individuals and groups operating small plot, intensive, commercial enterprises on land not zoned for agricultural production in metropolitan Vancouver,

were virtually unknown. To capture research participants, a snowball approach was employed. Media searches of local newspapers, blogs, and the websites of local urban agriculture organizations were conducted. Extensive networking within metropolitan Vancouver’s urban agriculture and local food scene (for example, with vendors at Vancouver-based farmers markets and businesses associated with commercial urban growers, such as restaurants and edible landscaping consultants) helped identify contacts who could then provide connection with and referral to other contacts. This approach proved useful in identifying urban farmers, and in sufficient numbers (eight), to conduct this study.

There were a number of ways in which these urban farm operations were different from other

Figure 1. Metropolitan Vancouver



Source: Greater Vancouver Regional District reference map (B.C. Stats, n.d.-b).

forms of farming taking place within the metropolitan Vancouver region. Five criteria in particular helped delineate urban farming enterprises:

1. The urban farmers grew and sold mostly food products;
2. The urban farmers produced all of their products in the city where they lived, without relying on imports to supplement their markets;
3. The urban farmers sold their products predominantly (if not exclusively) in urban markets in the same city;
4. The urban farm was established on land recently transformed from urban residential, commercial, or industrial use to agricultural use; and
5. The urban farm operated as a private enterprise, with the intention to make a living from the farming activities.

To test these assumptions, and ensure any potential study participants were not being overlooked, we overlaid these five criteria against the 2618 urban farms in metropolitan Vancouver, as identified in the 2006 Census of Agriculture. Criterion one eliminated potential commercial urban farming operations, such as the commercial greenhouses in Burnaby, located in the “Big Bend Area” on Marine Drive. These operations grew a significant amount of bedding and nursery plants in addition to food products. Criteria two and three eliminated farming operations integrated into existing food distribution channels; for example, a restaurant that sources most of its produce elsewhere but might grow specialist herbs or vegetables that cannot be easily obtained in local markets. Criterion four eliminated a number of urban farms which were part of the Agriculture Land Reserve (ALR), as this land has historically been used for agricultural purpose. Most urban farms in the ALR are only urban in the sense that some sections of the ALR fall within the administrative jurisdiction of a Metro Vancouver member municipality; not now nor at any time in the past have these lands been used for urban activities. Examples of these urban farms can be found in Richmond between No. 5 and No. 6 Road south of

Westminster Highway. An exception is Southlands in Vancouver, where the land is designated as ALR, but has been used more recently for urban residential purposes. Criterion five eliminated a well-known urban farm in Vancouver, UBC Farm, as their agricultural activities center primarily on education, with the marketing of produce grown onsite being a secondary activity (UBC Farm, n.d.). When tested against the five criteria, all 2618 urban farms identified in the 2006 Census were eventually eliminated, and generated no additional research study participants.

Through applying these various methods, and especially the snowball effect, we determined that there were eight urban farms in operation across the region, and concentrated primarily in the cities of Vancouver and Richmond. Of these, seven individuals and groups were approached to participate in the research study, and of these, six were recruited (see Table 1 and Figure 2). The eighth individual identified was subsequently dropped as there were questions about their fit with the criteria.

The urban farmers and leaders of the farm groups were then contacted with requests for interviews and to arrange times where direct and participant observation could take place. The number of interview and observation sessions per farmer or farm group ranged from three to 10, depending on the size of the group and farmer availability over the 2009 growing season. Each session ranged from one to four hours in length and took place across multiple locations (e.g., farm sites, marketing venues). Notes were taken both during the sessions (as feasible) and following the sessions. These were then transcribed to record both manifest data (data that emerged through direct conversation and direct observation) and latent content (observations and points from conversations that would require further understanding and meaning). As the notes were coded and recoded, themes began to emerge, and a portrait of the farmers took shape, one which explored their background and history, marketing and/or selling approaches, land use issues, business practices, and planting regime. Convergent and divergent themes were then identified. The confidentiality of the urban farmers was important. Since this was a small group of farmers

Table 1. The Urban Farmers

Farmer / Farm Group	Number of Farmers Involved in Organization	Year of Operation in 2009	Primary Food Products Grown	Type of Land Farmed and Approximate Total Size	Marketing Products	Land Tenure
Eva's farm group	5	First year	Vegetables, herbs, flowers	Front lawn of institutional property, 10,000 ft ² (929 m ²)	Farmers markets, Harvest share	Borrowed
Marivec's farm group	3	Second year	Vegetables, fruits, herbs	Backyards in residential area, 3 sites, 3,000 ft ² (278 m ²)	Harvest share, Farmers markets	Borrowed
Frieda	1	First year	Vegetables, fruits, herbs	Front and back yards in residential area, 2 sites, 3,200 ft ² (297 m ²)	Harvest share, Farmers markets	Borrowed, Co-owned
Nazanin	1	Fourth year	Vegetables, herbs	Front, back yards, patios in residential area, 13 sites, 8,000 ft ² (743 m ²)	Harvest share, Farmers markets	Borrowed
Sabine	1	Second year	Vegetables, herbs	Front and back yards in residential area, 7 sites, 3,000 ft ² (278 m ²)	Harvest share, Farmers markets	Borrowed
Kim	1	First year	Vegetables, herbs	Front and back yard in residential area, 400 ft ² (37 m ²)	Harvest share	Borrowed

on the bleeding edge¹ of a movement to grow *and* market local food in highly urbanized environments, a number of actions to protect the farmers and ensure anonymity were implemented. For example, all names used are pseudonyms and denoted with the pronoun “she” so to not reveal their individual identities. We then contacted these same farmers five years later with follow-up surveys and interviews to assess how their work had changed over time, and what factors informed their current practice; all but one of them participated in these activities.

Main Themes

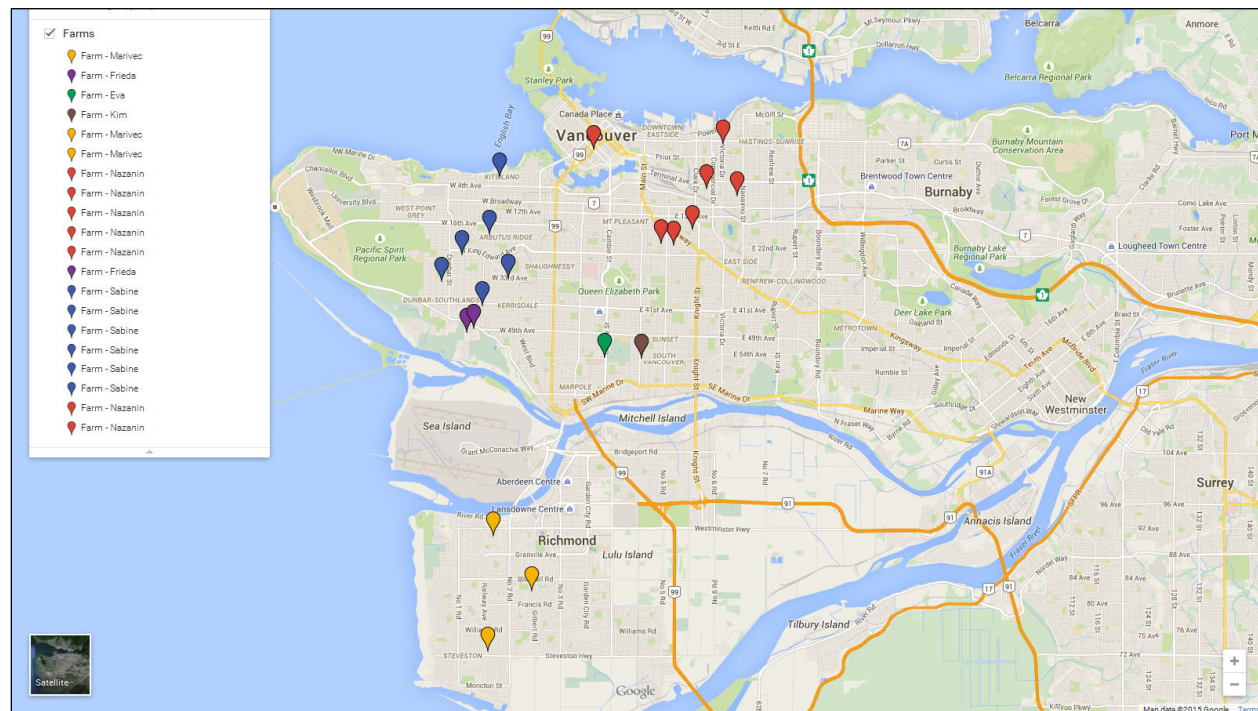
In this section, we explore the main themes which emerged from the data gathered. These include the urban farmers' motivations, access to land, growing techniques and practices, marketing strategies, and revenue and/or income generation schemes.

Motivations

The motivations for these individuals and groups of farmers to enter the emergent field of commercial urban farming were numerous. The top motivation related to lifestyle—the farmers were able to work close to home, which reduced (or eliminated) commuting time, and allowed them more time with family and friends. The farmers also sought autonomy over their work schedules, and found working outside and engaging in physical activity to be appealing. For example, one farmer in Eva's farm group saw an increased fitness level, achieving “buff arms, without having to go to the gym.” Nazanin claimed that picking weeds was therapeutic. Similar health gains were also evident with Sabine, Kim, and members of Marivec's farm group who cycled regularly for tasks associated with their farming business. In addition to contributing positively to health and wellness, urban farmers also enjoyed the self-reliance of growing their own food and the autonomy of being self-employed. As Kim explained, “My goal is to meet my needs doing something I love that is good for my community and leaves the ecology around me better than I found it.” She added that with urban farming, “I don't have work and life. Just life.”

¹ In technological innovation, the term “bleeding edge” refers to businesses that assume a high degree of risk and uncertainty in being the first-movers to bring a product or service to market; see <http://www.investopedia.com/terms/b/bleeding-edge.asp>

Figure 2. Urban Farm Sites in Metropolitan Vancouver (pins indicate approximate locations)



Finally, there was also strong consensus among the urban farmers that they were making positive contributions to the future environmental health of the planet through choosing urban farming as a profession. For example, many of the farmers' business practices revealed a commitment to having low environmental impact. This was demonstrated by them in numerous ways: by using hand tools rather than power tools, choosing bicycles as a primary mode of travel and transport, incorporating food waste into locally gathered compost to improve soil conditions, and practicing organic farming methods. As Kim disclosed, the urban farmers saw themselves and their work as part of a larger ecosystem, one in need of repair: "a big part of what I do is look at how...to make linear streams of production-use-disposal look more like [natural] cycles that are self-renewing. The first step [in this process] was to convert the [unproductive] lawn into usable gardening space." Nazanin expressed a similar motivation, having spent a career working in the landscape industry: "North Americans are crazy about our grass and backyards...spraying fertilizer and grass seed on all of this good soil—most are modified soil, but still

good soil—just to have their grass *managed*." She thought she could "offer a *garden* service rather than a *grass* service."

Access to Land

Interviews with the farmers indicated that access to affordable, high-quality land is paramount to urban farming. The lands used by the urban farmers included existing garden spaces, raised beds, converted lawns (front and back yards), and patio space, primarily on residential property. The size of each farm site ranged from 400 ft² to 10,000 ft² (37 m² to 929 m²).² The urban farmers described desirable farm sites as including some or all of the following physical characteristics:

- Size greater than 400 ft²;
- Good sun exposure (usually south facing);
- Contained few weeds and rocks (as removing these was time consuming); and
- Productive soil with high organic matter, good drainage, and used previously for growing garden plants (as opposed to

² 10,000 ft² is equivalent to about 0.23 acre, or .08 hectare.

recently converted lawn space). It was noted that amending soil was time consuming and costly.

There was minimal concern expressed by the urban farmers about soil contamination, despite research indicating that urban soils commonly contain metallic and organic impurities. The farmers also lacked access to soil maps and surveys to help inform and guide site selection decisions, as these were unavailable in the Vancouver region at this time (Iverson, Krzic, & Bomke, 2014). When interviewed, many of the farmers explained that their activities weren't taking place on industrial land or near high traffic corridors, areas they considered to carry a higher risk of contamination than residential properties or institutional lawns. Only one farmer, Nazanin, often tested for metals in the soil as part of her site assessment analysis, choosing not to take on sites that were contaminated.

In addition, each urban farmer mentioned that distance from home was an important variable when deciding whether or not to accept land. For example, to keep transportation time and carbon emissions to a minimum, one farmer, Nazanin, took on new sites primarily if they were within a one kilometer (.62 mi) distance from her home; she explained, "I didn't want to drive for hours and hours" between farm sites. Another farmer, Marivec, declined a large site in part because it was too far from her home and the other sites that she farmed.

All of the individuals and groups operated their farms on borrowed land. Only one farmer, Frieda, had a high degree of control over the land she farmed as the property was owned by her immediate family. The farmers used a number of strategies to solicit land from landowners, including conducting media interviews, placing flyers around the community, posting notices online via their own website and others (e.g., CityFarmer and Craigslist), and spreading by word of mouth through other urban farmers and networks of community involvement. Landowners ranged from young professionals with families to single, widowed, or married seniors. According to Marivec's farm group, seniors were the most desirable landowner because they wanted to see their land put to

"good use" and didn't need to be educated about the value of growing food since most had home gardens growing up. Seniors also consumed less food from their host site, as compared with other demographics, and they were pleased to have someone take care of their yard and make the property look active, which helped to promote safety and gave the landowner a sense of security. Favorable landowners were also characterized as being "easy-going" and ones who gave autonomy to the urban farmer to decide what should be grown and where to do so on the farm site.

The farmers and landowners created land-use agreements that ranged from one to five seasons; some of these agreements were verbal and thus, informal, while others took the form of written, although not legally binding, contracts. Nazanin and Sabine sought a three-year commitment because of the investment of time and resources required to convert a site into a productive growing space. As farming on borrowed land is tenuous, in that landowners can sell their property or pull out of the agreements at any time, urban farmers did not plan long-term for the sites they managed. For example, Nazanin did not put up permanent structures on the properties she farmed unless the landowners paid for the materials. This idea also extended to the type of food grown on the sites. While the urban farmers grew a plethora of crops,³ they tended to steer away from planting slow-growing, long-living crops on land they did not own, such as fruit trees or asparagus. One farmer and both farm groups also grew flowers (edible and nonedible). In addition, most farmers did not pay for water; this expense was borne by the landowner.

Another feature of the landowner agreements was that no money be exchanged. Nazanin, Sabine, and Marivec's farm group offered their landowners access to the food that was grown on the land they hosted; the owners could either help themselves or receive a full or partial harvest share. Eva's farm group, who managed an institutional site, described

³ Crops grown by the urban farmers included arugula, green beans, fava beans, beets, bok choy, carrots, cauliflower, chickweed, chili peppers, comfrey, corn, cucumbers, dill, eggplant, fennel, garlic, green peppers, kale, leeks, mint, peas, potatoes, squash, Swiss chard, tomatoes, and turnips.

their written agreement as a “classic feudal arrangement” requiring them to provide, in food harvested from the site, the equivalent of 10% of the revenue to the landowner. Kim, Sabine, Frieda, and Marivec’s farm group had verbal agreements with their landowners. However, Sabine later switched to written agreements after losing a farm site after just one year of production. Marivec also considered establishing written agreements after experiencing a landowner who intruded too much in her farm operations (e.g., had strong ideas about what should be planted and over-gleaned produce from the host site, leaving Marivec on occasion without enough produce to sell or include in harvest boxes); however, in the end, she never brought these on. Despite this, both Sabine and Marivec saw written agreements as a better way to manage landowner expectations.

Land agreements between the landowner and urban farmer could be mutually beneficial without the exchange of money. According to the urban farmers, landowners benefited by receiving food, having a maintained yard without paying for a landscaper, and, if they were so inclined, learning about urban farming. For the farmers, having access to lawns and yards in the community to grow food helped reduce their business operation costs, such as transportation and time spent traveling between sites, to markets, and potentially to more distant municipalities where land may be available. It also helped them to remain close to their home and customer base. Despite the tenuous land arrangements and the challenges they pose for urban farmers, there appeared to be no shortage of land available for urban farming, as each farmer was offered more land than they chose to farm.

Growing Techniques and Practices

There was a consensus among the urban farmers that possessing knowledge of growing techniques was a critical skill for being a successful urban farmer. Five of the six farmers or farm groups contained at least one person with a combination of academic training and work experience in agriculture. The amount of academic training ranged from undergraduate courses in agriculture to the completion of a graduate degree in agriculture. Agriculture-related work experience varied among

the farmers: only one farmer grew up on a commercial farm, the remaining five farmers or farm groups did not have direct ties to a farm. One farmer gained experience in small-scale agriculture production by WWOOF-ing.⁴ One farmer did not have any academic training in agriculture when starting her business; she acknowledged that acquiring the appropriate growing knowledge was one of the greatest challenges to urban farming.

All of the urban farmers studied practiced organic growing techniques. This practice, however, did not extend fully to certification. None of them were interested in seeking organic certification; they shared the viewpoint that customers knew them and trusted them to be honest about their practices. Farm visits were extended to customers who wanted to see their operations and learn about their practices first hand.

Achieving good quality soil was important to the farmers. Earthworms were used as one means to improve the quality of the soil, and organic matter was also added. All of the farmers brought in compost from offsite facilities while also producing compost onsite at one or more of their sites. Some farmers added their personal kitchen scraps to the compost. Eva’s farm group used grass and leaves collected from the site in the compost. Nazanin composted weeds, and plants which had finished producing marketable products. Only Marivec’s farm group actively solicited organic matter offsite to add to their compost; they collected (at no cost to them) approximately 100 lbs. (45 kg) per week of organic kitchen scraps from a local café, soy mash from a local factory, and coffee bean chaff from a local roaster. Alpha pellets, as a nitrogen source, were purchased from a local feed mill to balance the carbon to nitrogen ratio of the compost. None of the farmers intentionally used composting worms, preferring instead to have the compost mature naturally using the sun’s heat.

They also practiced organic pest control methods, choosing not to use pesticides to control

⁴ WWOOF-ing refers to participating in the World Wide Opportunities on Organic Farms, a volunteer-based program where individuals gain experience working on organic farms worldwide (WWOOF Canada, n.d.). Positions range from a few weeks to many months.

insects nor herbicides to control weeds. When pests were first noticed, they were either removed or killed by hand. On occasion, traps were used; for instance, Nazanin used a sugar water and meat trap to catch wasps. Marivec's farm group experimented with companion planting mustard with lettuce to keep another pest, wireworm, off the lettuce plants. It was observed that plots at higher elevations (e.g., on patios) experienced fewer pests. Weeds were controlled mostly through hand-picking, employing crop rotation, and using bark mulch.

All of the farmers used starter plants to extend the growing season and maximize the amount of food produced. Starter plants were grown from seed in a protective, controlled environment such as a greenhouse or growing room, providing conditions which optimized sunlight, warmth, and moisture. When these plants displayed hardiness, they were transplanted into the bed. Additionally, all farmers used a type of cold frame to extend the growing season, growing plants such as beets, peppers, and lettuce.

Five of the six individuals or groups practiced intensive growing techniques. Most farmers had two or more plantings of fast-growing crops (leafy greens, spinach, radishes, some herbs) per plot, per season. Once plants had produced their last harvest, most farmers removed them immediately and replaced them with other crops. Kim demonstrated the least intensive practices, allowing plants to go to seed and spread without interference from the farmer. Slow-growing crops, such as potatoes or garlic that can only be harvested once per season, were favored by farmers for their popularity, and in the case of garlic, high value.

All of the farmers watered their plots at least once per day, and often more depending on the plants and time of year. Sprinklers and drip systems were common irrigation tools. All but one farmer used timers on their irrigation systems; this freed the farmer and the landowner from the obligation to water the plants and provided the farmer with an efficiency to direct their time toward other tasks. One farmer chose to water by hand, citing the cost of timers and irrigation equipment to be too expensive. This task consumed two hours of her time each day.

Marketing Strategies

The urban farmers and farm groups used harvest share (CSA) programs and Vancouver-based farmers markets as the main marketing channels to sell their produce. Nazanin, Sabine, and Marivec's farm group grew primarily for a harvest share program then offered and sold any surplus produce at farmers markets. According to Marivec, it was a straight-forward choice: "We were so busy with other lives (work, kids), we would have gotten a higher return going to farmers markets. But farmers markets take a lot of prep work and consume a full Saturday with selling. With harvest shares, you know there is a home for all of your produce, it was easier to do it that way." Kim directed all of her produce toward harvest shares as she found farmers markets to be too regulated an environment in which to participate. She reported that "the farmers market system in Vancouver is geared toward bigger operations, and toward appeasing the city bureaucracy with all its permits, rules, and inspections. It takes so much energy to deal with all that stuff that it squeezes out really small producers like me." Frieda initially grew primarily for farmers markets and directed excess produce not sold at market to supply her harvest shares.

There were variations in how the farmers organized their harvest share programs. Five of the six urban farmers or farm groups offered a weekly harvest share program, similar to those found in community supported agriculture projects.⁵

A seasonal harvest share subscription ranged in price from CA\$400 to CA\$750 for a 20-week period between May and October. Kim required that her customers pay a CA\$100 deposit at the beginning of the season to help offset her initial planting costs; subscribers then paid the balance in CA\$30 instalments weekly as the produce was delivered. Two other farmers, Marivec and Frieda, charged their customers CA\$20 and CA\$30 per weekly share, and Marivec sold a double share for CA\$50. One farmer reported that through a har-

⁵ In community supported agriculture projects, customers buy a share in the farm's harvest. The amount of produce they receive depends on the bounty of the harvest in a given season, and thus the customer and farmer share in the risks associated with the growing season.

vest share program, it was easier to sell produce for a price that reflected the true cost of bringing the produce to the marketplace. She remarked, “It’s hard to sell a three-dollar head of lettuce to some customers at the [farmers] market. In the harvest share box, it is ‘disguised.’”

The number of harvest share subscriptions varied between the farmers. Nazanin had enough customers to do two sets of weekly subscriptions, and confessed that harvesting twice per week “was a lot of work.” Each set initially contained 15 subscriptions, and as Nazanin took on additional sites, she increased these to 20 per set. Subscribers collected their harvest share from Nazanin’s home. Sabine had six subscriptions, but grew enough produce that she could have supported up to 20. The remaining farmers who participated in a harvest share program had between one and five subscriptions per week. Frieda expected her neighbors to participate more strongly as harvest share subscribers and was surprised when they showed little interest in purchasing a share. Instead, most of her harvest shares were sold to residents in more distant neighborhoods across the city.

To ensure that their patrons received the freshest quality of produce, the farmers harvested produce as close to the harvest share pick-up or delivery date/time as possible. Nazanin picked most of the products within hours or minutes of the pick-up. Sabine picked anywhere from a few hours to two to three days in advance as she had access to a refrigerator to cool her produce; this allowed her to harvest at an earlier point without sacrificing the quality of the produce she offered.

In addition to harvest share programs, the urban farmers also sold their fresh produce at area farmers markets. Farmers markets represented secondary retailing avenues as they were considered time consuming entities with large overhead costs and no guarantee of sales. When produce was destined for a farmers market, it required cleaning, preparation (e.g., greens needed to be bundled and standardized), and potentially refrigeration and packaging; this was due to the stronger emphasis placed on product presentation at farmers markets. Farmers also had to construct price lists and be present at market for at least six hours per market day, and often more. They were also required by

market organizers to select dates for attending markets well in advance of knowing what the growing season would yield and when, diminishing the flexibility to tailor their participation around their production schedule.

Aside from the time investment, farmers markets also required a financial investment in order to participate. For example, market fees for the season ranged from CA\$800 to CA\$3,000 per farmer, paid up front in advance of the season. They also required the farmers to source banners, tents, and tables, which can be expensive. The farmers reported that at a farmers market, it took longer to recoup the expenses they had to pay in advance, as monetary transactions are very small (i.e., only a few dollars per transaction). For Kim, “the cost of the market was completely prohibitive—a market table cost a third of what I was making each week.”

The revenue generated by urban farmers at farmers markets ranged from CA\$180 to CA\$500 per market day depending on the time of season, the variety and volume of produce offered for sale, and whether the person(s) staffing the vendor booth (be it a farmer or volunteer) had an introverted or extroverted personality. Nazanin and Sabine occasionally shared stall space; this helped them overcome two barriers facing small-scale farmers by having enough produce to fill a large stall they might not fill individually and reducing somewhat the cost of participation.

Farmers markets represented competitive environments for farmers in general, and for urban farmers in particular. Urban farmers considered their competition to be small-scale rural organic farmers, who were able to offer higher volumes and greater variety of local produce for sale. The urban farmers also reported price sensitivity among farmers market shoppers. For example, Frieda received comments from customers that some of her produce was priced too high. However, the urban farmers also saw farmers markets as valuable places to solicit harvest share subscriptions and advertise the full spectrum of their businesses (e.g., workshops, farm tours), as Nazanin, Sabine, and Marivec’s farm group did. Frieda initially started selling solely through farmers markets, however, by mid-season, she decided to offer harvest shares in

addition to attending the farmers market. While Frieda experimented with harvest shares in subsequent seasons, she ultimately discontinued them, citing them as a “pain in the ass” to organize. She instead lent the land—a 1,500 ft² (139 m²) plot—to a newer entrant to urban farming to use in their CSA program in exchange for help around the farm. Frieda also passed her harvest share patrons on to this urban farmer. Eva’s farm group sold their produce only at farmers markets in 2009, but began arranging harvest share subscriptions from 2010 onward, including to a local school interested in incorporating local food into their home economics curriculum and to a local church for use in their food bank program. The change in their marketing strategy came about when they realized that their farm site held strategic advantage being located in the heart of the city of Vancouver. Eva’s group saw customers coming to their farm site (versus the farm group going to them, as in a farmers market model) as an opportunity to establish a “deeper, richer relationship” with their customers. It was a successful strategy as they tripled their harvest share subscription program from 12 clients in 2009 to 36 shares in 2013. While the subscription service became their primary marketing avenue, Eva’s farm group continued to use farmers markets as secondary spaces to retail their produce through the 2014 season; they were the only urban farming operation among the studied farmers and farm groups that still relied on farmers markets for revenue generation when surveyed in 2014.

In addition to selling produce through harvest shares and at farmers markets, urban farmers also explored other retailing opportunities. Frieda, Kim, and one farmer in Eva’s farm group dabbled in selling produce directly from a stand at their farm sites with limited success. Another farmer conducted sales using an honesty box system where produce was placed outside unsupervised with a suggested price displayed, and customers left money they deemed appropriate in a box provided by the farmer. The farmer noted that there was no theft from the honesty box and believed this was a good way to sell extra produce without an additional time commitment. These retailing initiatives were experimental in nature and carried few

expectations on behalf of the farmer; any revenue generated was welcomed.

Sabine and Frieda also sold their produce into pocket markets in the 2009 season. Pocket markets represented small-scale portable local food markets where nonprofit organizations act as local food brokers, purchasing food from area farmers and selling it to urban consumers on their behalf (Evans & Miewald, 2010). Pocket markets offered the benefit of bulk sales and a lower time commitment from the farmer.

Nazanin experimented with selling to wholesalers; she reported that “they paid a fair price for produce, but you didn’t get paid for 90 days, so that was kind of a hassle.” Marivec’s group solicited restaurants with their excess produce. This action led to a local coffee shop taking on a weekly harvest share and one restaurant asking them to grow specific produce (a particular varietal of radish, alternative greens, edible weeds). Marivec sold this specialized produce to the restaurant at a higher price as these items couldn’t be directed into harvest share boxes.

In order to generate sales, all of the urban farmers advertised their business. Websites and blogs were used to communicate the details of their harvest share programs, the dates and locations of the farmers markets they attended, and news about what was growing at the farm sites. Social media marketing was only used by two of the urban farmers. Marivec used Twitter to update her customers about the operations of the business and to educate her customers about the positive social and environmental implications of urban farming. Kim additionally used her blog as a discussion forum about urban farming.

The farmers indicated that word of mouth was an effective means for promoting and attracting business and, in the instance of Marivec’s farm group, mitigated paying for advertisements. Only one farmer paid for advertising, taking out ads in local newspapers, such as the *Georgia Strait*, and in a transit pamphlet called the *TransLink Buzzer*. The farmers also took advantage of opportunities to speak at local events and festivals and viewed these as opportunities to advertise their business, inform audiences about urban farming practices, promote harvest shares, and, on occasion, sell

products directly to attendees.

Many of the urban farmers also participated in media interviews and these resulted in greater public exposure for the farmers as a result. For example, after an interview with a prominent media outlet was published, Nazanin received many offers from landowners of land to farm. When advertising their business, there were three attributes which all the farmers promoted: firstly, the localness of their produce, because everything was grown in metropolitan Vancouver; secondly, the freshness of the produce, since it was harvested within the last few hours or days; and thirdly, the low carbon footprint of their operations. These attributes added value to the produce being sold.

All six farmers and farm group leaders highlighted the low carbon footprint of their business. Low carbon practices included using hand tools, cycling to farm sites and to markets, composting, not using refrigeration for harvested products, organic growing, rainwater conservation, and reusing materials or using recycled materials for infrastructure. Eva's farm group, working with a nonprofit cycling organization, delivered the produce to market by bicycle. The delivery services were free as the nonprofit organization was paid by a grant for its services. Sabine travelled by bicycle between all her farm sites.

Revenue/Income Streams

Most farming households in Canada rely on nonfarm or off-farm income to ensure their economic well-being, and urban farming is no different (Jetté-Nantel, Freshwater, Beaulieu, & Katchova, 2011). The gross revenue from the farming activities varied between farmers. One farmer estimated CA\$25,000 on 8,000 ft² (743 m²); while another, less experienced farmer, estimated CA\$60,000 on one acre (43,560 ft², 4,046 m²). Gross revenue per average farm site was similar for Nazanin and Kim; Nazanin estimated CA\$3,000 per average site (400 to 600 ft², 37 to 55 m²), and Kim approximated CA\$3,500 per 400 ft² (37 m²).

To cover the startup expenses, the farmers invested personal money in their operations. This ranged from CA\$100 to CA\$1,000 within a farm group to thousands of dollars by individual farmers. The urban farmers reported that most of the

investment was recouped by the second year of production through the profits of their operations.

Growing inputs, such as fertilizers and seeds, were a significant expense for Marivec, whose farm group bought seeds in bulk and stored them in a freezer; Sabine; and Kim. Irrigation infrastructure, (removable, above ground) was one of the main expenses for Marivec and Nazanin; its nonpermanent nature meant it could be easily moved to other farm sites.

Eva and Frieda noted wages as their top expense. Most of the farmers commented on the desirability of having additional labor support; however, they added paid staff selectively. This was due to the time needed to train a new hire and the additional expenses beyond wages that might come as a result, such as increased insurance costs for vehicles that the employee would operate. On occasion, some of the farmers took on volunteers to assist with land clearing, bed preparation, building infrastructure, transplanting, picking weeds, harvesting crops, and, periodically, selling produce. Not all farmers were interested in volunteer assistance. Nazanin explained that volunteers were too hit and miss: "Sometimes they'd weed out the wrong thing in the garden; if it was rainy, they wouldn't show up; if it was nice, they would go to the beach. They'd also expect something in return—for example, education, and rightly so—so that took up more of your time." Frieda found volunteers to be largely "unproductive" and instead preferred to have paid staff who were skilled and engaged in their work. Sabine felt she was too disorganized to accept volunteers. One farmer, in Eva's farm group, said they preferred financial donations and guaranteed customers (markets) than volunteer support. Despite this, Eva's group experimented with running a volunteer intern program in 2012 and 2013, recruiting three to five people each year "who had time and would work for vegetables," committing one day per week at the farm. In 2013, they hosted and provided mentorship to eight UBC Farm practicum students who took over the harvest share operations throughout the eight-month season. Having interns with some experience helped compensate for the departure of one member of Eva's farm group at the end of the 2012 season.

In addition to farming, four of the six farmers or farm groups were also involved in income-generating projects related to their urban farming business to help make ends meet. Nazanin, Sabine, and Eva felt that urban farming was not financially viable on its own, but only if done in conjunction with other related value-added activities. Eva emphasized, “We can’t charge enough for the food we are growing, so we must increase the value-added side of the business.”

Workshops were the primary means of additional income generation. Nazanin, Frieda, and Kim offered workshops to recreational gardeners, prospective urban farmers, and even tourists. These workshops often included farm tours and covered topics such as permaculture, raising chickens in the city, growing food for personal consumption, and growing food for market.

Beyond workshops, the urban farmers also explored other means of generating additional income. For example, Nazanin offered garden consultations for CA\$90 for urbanites interested in converting their yards into food-producing spaces; these services included advisory, planning, design, and construction, especially of raised beds using high-end construction materials. Nazanin noted that these efforts, however, were largely in vain: “the consulting work would pay off if it turned into paid work, but it never did.”

Eva’s farm group constructed ten community garden plots at their farm site as a means of connecting the community to the farm. They charged CA\$60 per plot and used the revenue generated to offset the cost of materials such as wood boxes and soil; in the end this project broke even. Eva reported that she had a greater demand for garden plots than plots available to rent; this was a reality echoed by community garden organizers across metropolitan Vancouver.

Frieda earned extra monies at a less busy time of year by offering field trips of her pumpkin patch to K-7 school classes. These tours proved popular and were expanded in subsequent years to meet word-of-mouth demand. In 2014, Frieda welcomed 90 groups—three per day—to the pumpkin patch.

Additionally, Frieda acquired (with a family member) a large lot residential property with an orchard of approximately 20 trees on one section

of the property. The land was used to grow apples, pears, and soft fruits and provided additional space for related income generators, such as tours, summer camps, and workshops. Despite Frieda’s initial motivation to generate income solely from farming, it was these income generators, especially those related to educational programming, which made up 85% of the money she earned from her urban farming enterprise.

Marivec considered establishing income-generating projects (e.g., conducting lectures on how to operate a small farm, targeting individuals interested in small-scale, peri-urban farming), however, her farm group decided to instead direct their time and energies toward earning more money from the land they farmed. For example, they made better crop choices by planting higher value crops, and, with the exception of tomatoes, crops that would mature in a maximum of 60 days so they could turn them under and replant, with a goal of three crop plantings per season.

Kim reported that “growing revenue was never a priority” as she “always had enough.” During her brief urban farming tenure, Kim was hesitant to increase her business; she believed that, historically, as rural farmers increased their businesses, they took on more work, but did not necessarily earn more income as a result.

It was evident throughout the study that income-generating projects were seen as important, even critical, components of an urban farming enterprise. They provided the urban farmers with (much needed) additional income while offering value-added services connected with their farming enterprise.

Three farmers, Frieda, Kim, and Nazanin, earned a living solely from their urban farming business; that is, they did not have jobs off the farm to supplement their annual income. However, only one of the farmers studied lived on her own; the farming business was her only source of household income for the entire year. Two other farmers lived in households where at least one other family member contributed to the household income through holding a job “off the farm,” which helped with household expenses.

For Frieda, farming the land on which she lived, and that was under her control, was an

important component of being able to make a living from urban farming. She reported that it developed into a lifestyle: “My whole life is the farm.”

Kim noted that her “financial needs were very, very small as I operate as much outside of the money economy as I can. With no car, no cell phone, not desiring to spend money on things like consumer goods and expensive entertainment, as well as sharing an inexpensive rental with three to five other people, I never needed much money.” For her, “farming in Vancouver ... was a way to keep the landlord and the bill collectors off my back so that I could get on with living my life without having to do some pointless task making some boss richer so he can throw me some crumbs at the end of the day for doing the work that he makes money off of.”

The other farmer, Sabine, and members of both Marivec and Eva’s farm groups held part-time or full-time jobs either in the off-season or throughout the entire year in order to supplement the income they earned from urban farming. For example, Sabine did graphic design contract work in the off-season. The farmers in Marivec’s farm group held part-time or full-time jobs during the entire year (mechanical engineer, teacher, and civic employee), which contributed to the majority of the income they earned for the year. Marivec’s farm group indicated that their business model could only work because each member had a job flexible enough (i.e., a nonstandard work week) that allowed the group to meet together every Thursday and Friday to plant and harvest. Eva earned her on-farm income from one grant to another. She was successful in receiving grants to initially coordinate the farm group, to establish a horticultural therapy program in 2011 (in conjunction with the facility where their farm is sited), and to develop a garden where a dozen low-income families could learn to grow, harvest, and cook from the garden. Eva noted that this was part of a larger strategy to create a community-integrated urban farm. To supplement her income, Eva also worked part-time two days per week off-farm, doing film-related work. The other members of Eva’s farm group either held part-time service-sector jobs over the winter months or spent time

raising their young families.

Most of the farmers claimed that one of the greatest challenges to urban farming was generating enough revenue to pay themselves a decent wage after all the expenses were paid. One farmer worked out her average wage throughout the season to be CA\$1.60 per hour. Marivec explained that for her group, “the goal wasn’t to make money—we got in it to figure out how to farm—the biggest goal was to not lose money doing it, to break even.” She admitted that the one year they made a profit, they were “busting our guts.” Nazanin echoed this sentiment, stating that her best year of urban farming—pocketing CA\$30,000 after paying bills, taxes, and salaries—was when she was working “flat out.” Nazanin also spoke of the challenge in finding income in the off-season, adding that the “seasonality of [urban farming] was driving [her] nuts.” Eva reported that for her farm group, there “wasn’t a strong sentiment about making money,” yet they were mindful that the space they farmed (for their harvest share subscriptions) could only support the equivalent of one full-time position.

Leaving the Urban Farm

Several farmers in this study have since left urban farming (see Table 2). Sabine wound down her enterprise after several seasons, resigning that “just selling produce isn’t working.” For Nazanin, it was a big summer vacation being planned, combined with the feeling of “spinning your wheels at the end of the day” that prompted her to stop farming. She added “you work hard, look at how much money you made, and it didn’t amount to much.” She reflected: “I felt like a sharecropper, working the land but not making any money from it. Working a 10,000 ft² [929 m²] plot is fine for one’s own self, but it was too much, in the end to manage so many different plots—tenants moving in, they’d see your hose and use it...having dogs and cats digging up the garden...it all accumulated over time.” Nazanin reported that some of the properties she farmed were passed on to other urban farmers, some she let go of altogether as “the people were just too crazy [i.e., unpredictable] to deal with,” and some were taken over by the property owners themselves—some of whom kept the

Table 2. Status of the Participating Urban Farmers in 2014

Farmer / Farm Group	Number of Farmers Involved in Organization in 2009	Still Farming?	Key Factors Explaining 2014 Farming Situation
Eva's farm group	5	Yes	<ul style="list-style-type: none"> • Most of original group continued to farm on institutional farm site. • Group refined their practices to centralize most aspects of their urban farming business, especially the growing and marketing of food, from their farm site. • Income generators (e.g., community garden plots, horticultural therapy program) were introduced and expanded over time. • Part-time jobs held off-farm helped group members to supplement on-farm income.
Marivec's farm group	3	Yes	<ul style="list-style-type: none"> • Farm group leader, Marivec, purchased land on Vancouver Island and left group to farm in a more rural setting where she would have control of the land. • Remaining two farmers continued to farm as a group, but downsized their operations to one large site, as a response. • Farming on borrowed land and inefficiencies of working on and across multiple farm sites contributed to farm leader's exit and rightsizing of farm site to meet needs of remaining group members. • Part-time jobs held off-farm helped group members to supplement on-farm income.
Frieda	1	Yes	<ul style="list-style-type: none"> • Secured an additional property. • Expanded operations beyond farming (e.g., educational programming, workshops); generated more income from associated side ventures than from farming. • Transferred farming portion of work to another urban farmer. • Was able to make a living solely from income earned on-farm and through related revenue-generating activities.
Nazanin	1	No	<ul style="list-style-type: none"> • Was able to make a living from urban farming, but financial compensation was low. • Income earned from income generators (e.g., workshops, consulting activities) was limited, and securing work in the off-season proved challenging. • Lack of efficiency working on and across multiple farm sites, ones not under her direct control, took its toll over time.
Sabine	1	No	Unknown.
Kim	1	No	Disenfranchised with food movement in Vancouver; moved to Sunshine Coast, British Columbia, to farm in a rural setting.

land in production for personal consumption, while others didn't (for example, one owner built a garage over the farm site).

Kim left urban farming, and the Lower Mainland, following the 2009 season, relocating to the Sunshine Coast of British Columbia to farm in a more rural environment. She expressed disenchantment with the direction that the urban farming movement had taken in Vancouver, calling it "just another fluffy window dressing for the existing unsustainable paradigm." She explained that

"urban farming had become a fad...yet another way for university-educated middle-class white folks to get a bigger share for themselves of the money, space, and resources of the city without putting their work in solidarity with the struggles of folks who are displaced by the rampant development and gentrification of Vancouver. This deepens inequalities in access to land, to food, to livelihood, and it adds fuel to the fire that is burning up all hope of an ecologically sustainable city. It saddens me, and it angers me." The site that Kim was

farming in Vancouver remains in production, although the food products grown are used only for personal consumption by the individuals renting the property.

Marivec purchased a property to farm on Vancouver Island in 2012. In looking forward to having control of her own land, she reflected on the challenges that her group experienced with urban farming: “Running around between plots, it takes up so much brain space, keeping track of the sequence of things—getting product at one plot that needs to be secured ahead of cutting another, watering (put the water on, go do another [task], then forget that you had the water still running...); dealing with odd land owners that have weird, quirky things about the control of the land; [and] not having the time and space to rest the land (crop cover, manure) as every square inch needed to be in production.” Marivec noted that two remaining members of her farm group decided not to bring on another farmer to replace her as “they got along well, and it was hard enough to farm, let alone bring other personalities on board.” They also downsized their operations to farm one 2,000 ft² (185 m²) site, and service a smaller number (five to six) of harvest share subscriptions.

Conclusion

In 2009, urban farming—taking land traditionally zoned for residential, commercial, or institutional use and repurposing it into intensive food-producing spaces where grown food is primarily offered for sale—was a largely nascent activity in metropolitan Vancouver. Those on the bleeding edge, the six individuals and groups studied here and pioneering this work, saw it as an opportunity to use unproductive lands to enhance the local food supply, sold what they grew through relationship-based retailing arrangements, and sought lifestyle benefits by choosing urban farming as a profession.

However, our study revealed that for half of the urban farmers, the lifestyle benefits they anticipated didn’t materialize, despite evolving their approaches and practices as they engaged further in this work. Much like rural farming, urban farming offers an environment in which it is challenging to earn a living. These small-scale growers of highly

perishable, non-nutrient-dense, high-cost, low-value produce experienced difficulty making ends meet solely from growing and marketing local food. Many of the urban farmers thus supplemented these efforts with value-added income generators, and/or relied on off-farm employment to supplement their annual earnings. Despite this, mounting small-scale commercial urban farming enterprises remained financially tenuous for many of them. Some self-exploitation was evident in their practices as they tested and refined components of their business models to find a successful combination of farming practices, marketing strategies, and related income generators that would allow them to make a living through urban farming, thus achieving the lifestyle benefits they sought by pursuing this work. Many of the farmers also lived in households where other members contributed to the household income from off-farm jobs, which helped to lighten the risk of their participation in urban farming.

Five years after the initial study, only one urban farmer (Frieda) and two farm groups (Eva and Marivec’s reconstituted group) were still in operation. Kim and Marivec were farming on the Sunshine Coast and Vancouver Island, respectively. Two other urban farmers, Sabine and Nazanin, left urban farming altogether.

Our study revealed that the farm groups were able to withstand the challenges of urban farming more so than individual farmers. The one successful solo farmer had control of the land she farmed, which afforded her a degree of security to arrange her business enterprise as she needed. Another attribute that contributed to the success of these farmers was the large size of the spaces they farmed and that they farmed fewer sites than most of the unsuccessful farmers. They were also able to adjust their business models to take advantage of income generators and value-added activities, which helped reduce the risk of relying on selling produce alone and further reinforced urban farming as a multifunctional activity. Members of the farm groups also relied on part-time jobs off-farm to provide predictable incomes rather than relying solely on the proceeds of urban farming; this also worked to reduce the risk of engaging in this activity.

While this initial group of entrepreneurialists experienced mixed results in establishing and growing their urban farming enterprises, this has not diminished people's interest in working toward a more localized food system in metropolitan Vancouver. The total number of urban farming operations has increased more than threefold since 2009 to include 21 urban farming operations as of 2015. This further emphasizes the important role that these early initiators of urban farming had in advertising and educating others about local food and emergent trends, thus "encouraging the diffusion of local growing" (Newman, 2008).

Recommendations

As the appetite for local food continues to grow in metropolitan Vancouver, urban farming can fill a niche. However, a more comprehensive analysis of the economic realities of small-scale commercial urban farming is needed to better understand why some enterprises succeed while others flounder, and to determine how and if these commercial enterprises can become financially self-sustaining over the long term. Due to land tenure constraints, small-scale commercial urban farmers grew mostly highly perishable, high-cost, low-value vegetables, yet how might the economic viability of their work change if farmers could invest long-term in cultivating high-value fruit crops, honey, and meat products? Other research questions relate to the work undertaken by individuals and groups, teasing out the dynamics of individual vs. group organizations, and the type and size of land parcels that they have access to farm. More research might add further insight into who can withstand, and perhaps overcome, the burdens associated with small-scale commercial urban farming and help us better understand what resources should be mobilized to help these agriculturalists find success. Scholars also highlight the noneconomic value associated with urban farming, so quantifying and tracking these contributions would better reveal the true impact of this work.

There is also a concern in the literature, and echoed throughout this study, about the self-exploitative nature of small-scale commercial urban farming, both to the farmers as paid labor and to the volunteers and interns who trade their time and

labor for mentorship, education, and skills development. It raises questions, aptly summarized by Angotti, and still being reconciled within the scholarship about whether "the small bunch of enthusiastic volunteer farmers [will] give way to a new generation of underpaid peons? Can unpaid labor be regenerative without being exploitive?" (Angotti, 2015, p. 339).

Further research is also needed to explore the degree to which these enterprises can move beyond the narrow white, middle-class demographic that largely initiates and supports local food and alternate food networks (Newman, 2008; Vickery, 2014), and be more transformative through reaching a broader citizenry. As Newman suggests, "if the concept of local food production and consumption is to be a viable alternative to industrial food production for more than a few members of a community, it must demonstrate this ability to the broader population; it must be an example of the process of sustainable development at work" (Newman, 2008, p. 40). This step also provides an opportunity to evaluate whether a cultural shift is taking place over time in metropolitan Vancouver and elsewhere. This shift is away from people being what Wendell Berry characterizes as "passive, uncritical, and dependent" consumers of food (Wilkins, 2005, p. 269), and toward practicing food citizenship where "consumers move beyond [mere food] shopping to a broader engagement with the food system in its many dimensions" (Wilkins, 2005, quoting the Polson Institute for Global Development, 2003, p. 7).


Cohen and Reynolds, in their study of urban agriculturalists in New York City, New York, highlight that "many urban agriculture programs and the organizations that run them, require substantial resources to remain viable and provide the multifunctional benefits that practitioners and supporters hope to achieve" (2015, p. 103). To that end, what resources can cities offer to better support the work of urban farmers (e.g., facilitating access to larger plots of land to capture operating efficiencies and incorporate value-added activities, or embedding and supporting urban farming in local and regional plans and policies)? Over the past 20 years, many studies have urged the city of

Vancouver to more strongly support food producing entrepreneurialists: from Robert Barrs advocating urban gardening as a for-profit venture (Barrs, 1997), the adoption of a motion in July 2003 to support a ‘just and sustainable’ food system (Mendes, 2006), the city’s own 2005 Vancouver Food System Assessment report recommending an entrepreneurial approach to urban agriculture be taken to encourage social enterprise development (Barbolet et al., 2005), the inventorying of 77 potential sites available in the city suitable for (commercial) urban agriculture (Kaethler, 2006), to the city’s 2013 adoption of the Vancouver Food Strategy with identified goals including connections with the green economy and increasing neighborhood-level food assets (City of Vancouver, 2013). Yet the city of Vancouver continues to proceed cautiously in supporting the commercialization of urban agriculture more broadly and urban farming more specifically. This uncertainty extends to the policy and regulatory environment. For example, urban farming was only acknowledged as a legitimate activity in the city through zoning bylaw amendments enacted in March 2016. These bylaws, however, placed restrictions on what may be grown (fruits and vegetables only), where sales may take place (e.g., limited to institutional land in areas zoned for residential use), and what could be sold (restricted to what was grown onsite) (City of Vancouver, 2016a; City of Vancouver, 2016b). Compliance with these regulations would have proved problematic for many farmers in our study, especially those who harvested from multiple properties to fill the subscriptions they offered to the public, some of which also included value-added products such as edible and nonedible flowers, and where onsite sales took place on land zoned for residential use. Walker characterizes this hesitation to demonstrate fuller support for urban farming as an example of the city engaging only selectively with the urban agriculture movement (Walker, 2015, p. 7). This is a different approach than is provided by the city of Victoria, British Columbia, for example, where growing food on both public and private lands is a goal embedded in their Official Community Plan (City of Victoria, 2012, updated October 1, 2015) and, effective September 2016, is a per-

mitted use in all land-use zones of the city (City of Victoria, 2016).

This reinforces a broader point raised by Angotti in his study of New York City, that municipal (and in metropolitan Vancouver’s case, municipal and regional) governments must move beyond “incremental reforms” where “public interventions in the food system [are] largely geared towards changing consumption patterns instead of increasing local food production” (Angotti, 2015, p. 338). He recommends that “efforts to scale-up local food production need to learn from these community-based practices” and see initiatives such as using city-owned land for urban agriculture and providing tax incentives to private landowners who lend their land for urban farming as examples where city governments can move more aggressively (Angotti, 2015, p. 338).

But cities aren’t the only actors whose resources need mobilizing for urban farming to achieve successful outcomes. As Cohen and Reynolds recognized in their *Five Borough Farms* research, to achieve the broader goals set out by urban agriculturalists requires “the support of government and networks of practitioners, non-profit organizations, and philanthropies” (2015, p. 103). How might these networks and coalitions (and including the private sector) be activated, so that urban farming may also contribute a solution to other urban challenges around climate change, resiliency, transportation, economic development, livability, health, and social inclusion, while also meeting imperatives of public education and engagement of citizens? As McClintock argues, “promoting the growth and vitality of these agricultural spaces through coordinated policy, planning and action across scales—from individual decision-making to municipal planning to national and global policy—“takes us one step closer to the “creation and protection of a new agrarian commons,” and works to reduce the “antithesis between town and country,’ intellectual and manual labor, humans and nature” (McClintock, 2010, pp. 203–204). Doing so will also help recognize and value agri-food as an important urban system (Travalline, 2008). It is to these wider ends that small-scale commercial urban farming has a place in the future of our cities.



Acknowledgements

The authors would like to thank the urban farmers under study for giving generously of their time and insight so that we may understand the motivations, practices, challenges, and rewards associated with reintegrating local food systems into our urban environments. Thanks also to Peter V. Hall, Duncan Hilchey, and the anonymous JAFSCD reviewers for their constructive feedback on earlier versions of this paper.

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Is urban agriculture financially sustainable? An exploratory study of small-scale market farming in Philadelphia, Pennsylvania

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Submitted June 8, 2016 / Revised December 5, 2016, and January 31, 2017 /
Accepted February 13, 2017 / Published online March 22, 2017

Citation: Hunold, C., Sorunmu, Y., Lindy, R., Spatari, S., & Gurian, P. L. (2017). Is urban agriculture financially sustainable? An exploratory study of small-scale market farming in Philadelphia, Pennsylvania. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 51–67. <http://dx.doi.org/10.5304/jafscd.2017.072.012>

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Abstract

Existing research on the economic sustainability of urban agriculture in the United States tends to emphasize a multifaceted conception of urban agriculture's return on investment as a combination of revenue and less quantifiable positive externalities. A more business-oriented advocacy literature, however, sees urban agriculture as a way to

generate income for farmers and farm workers. The purpose of this study is twofold. First, we estimate the economic returns of urban farming in Philadelphia, Pennsylvania, based on data obtained from urban farmers involved in market farming. Here our goal is to better understand the contribution of market farming to the economic viability of urban agriculture. Second, we hope to improve understanding of how the farmers themselves perceive and navigate commensurabilities and tensions between predominantly market-oriented and more heavily social-service oriented forms of urban agriculture. Home to more than a dozen farms, Philadelphia is a suitable location for such an exploratory study of the financial sustainability of urban agriculture.

Keywords

Urban Agriculture; City Farming; Market Farming; Entrepreneurial Urban Agriculture; Profitability of Urban Agriculture

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Disclosure

This project was funded by Drexel University's Urban Sustainability Initiative.

Introduction

In the United States, studying urban agriculture as a business has not been a research priority. Existing studies of entrepreneurial city farming have emphasized an expansive conception of urban agriculture's return on investment as a combination of revenue and less quantifiable positive externalities beyond growing food (Kaufman & Bailkey, 2000). The economic and community development literature tends to frame urban agriculture as a social enterprise (e.g., Vitiello & Wolf-Powers, 2014), a framing that reflects many U.S. urban farmers' aspirations to advance various economic, environmental, and equity goals (Wachter, Scruggs, Voith, & Huang, 2010). There is little argument that urban agriculture's contribution to conventional economic development goals—attracting capital, generating income, creating jobs—will likely remain modest (Vitiello & Wolf-Powers, 2014; Sadler, Arku, & Gilliland, 2015). Unlike rural farms, urban agriculture spaces are designed to be multifunctional, with market farming rarely the main objective (Lovell, 2010).

That said, market farming is part of the portfolio of many urban agriculture operations. Moreover, the financial sustainability of urban agriculture would seem to be an important condition of its long-term stability and of its capacity to contribute to wider community and economic development goals. Some urban farms generate sufficient revenue from crop sales to pay their farmers and other employees a living wage, but profitable urban farms appear to be rare. On the one hand, the scarcity of profitability is unsurprising, given urban agriculture's improvisational, do-it-yourself origins, strong social enterprise mission, and the small size of most urban farms. From this perspective, urban agriculture is not about turning a profit; to treat it as a conventional entrepreneurial venture is to miss the point. On the other hand, the scarcity of profitability does raise questions insofar as urban agriculture has been advanced, for some time, as a community and economic development tool for supplementing pantries as well as wallets.

The purpose of this study is twofold. First, we seek to estimate the economic returns of urban farming in Philadelphia, Pennsylvania, based on data obtained from urban farmers. Many, if not most, urban farms derive their income from a combination of crop sales, external grants, and ancillary activities. Our goal is to better understand the contribution of market farming to the economic viability of urban agriculture. Second, we hope to improve understanding of how the farmers themselves conceptualize and navigate the pursuit of urban farming as a profit-seeking enterprise, a social-benefiting endeavor, or both. To this end, we use the well-known small plot intensive (SPIN) farming method as a lens through which to get the farmers and farmworkers in our study to reflect on the role of market farming in urban agriculture. Our analysis of the collected quantitative and qualitative data contributes to a clearer understanding of the factors that shape the financial viability of urban agriculture in Philadelphia. Our goal is modest but important: to replace speculation about the financial sustainability of urban agriculture with empirical evidence. The data have some limitations; we cannot gauge the extent to which our findings reflect the financial reality of urban farming in other cities or that of farmers in Philadelphia who did not participate in our study.

Following a background section that describes the historical and political context of urban agriculture in Philadelphia and that connects our study to social science debates on urban agriculture, we discuss our qualitative survey research design. We then discuss our results and conclude with some policy recommendations for improving the financial sustainability of urban agriculture.

Background¹

The United States' fifth-largest city is fertile ground for exploring the financial viability of urban farming with a vibrant urban agriculture community. Following massive job and population loss associated with the deindustrialization of the mid-20th century, the number of community gardens in the

¹ Parts of this section have been adapted from Chapter 1 of Rachel Lindy's Mathematics-Economics honors thesis, "Carrots in Concrete and Corner Stores: Two Analyses of

Tools to Mitigate Urban Food Insecurity," submitted to Wesleyan University in April 2015.

city greatly increased in the 1970s, supported by Penn State's Urban Gardening program and the Pennsylvania Horticultural Society's Philadelphia Green program (Vitiello & Nairn, 2009, p. 27). A significant number of these garden spaces has since been lost to development and/or the retirement or death of their caretakers. Still, in 2016, there were "at least 470 gardens on almost 600 parcels, distributed citywide and concentrated in historically disinvested neighborhoods" (Philadelphia Food Policy Advisory Council, n.d., para. 4). Included in this count are more than a dozen urban farms that engage in some form of market farming. Present-day urban market farming arguably got its start in 1998, with the founding of Greensgrow Farms on a capped Superfund brownfield in the city's Kensington section. Since then, the number of urban farms has grown, and municipal support for urban agriculture has become somewhat institutionalized. In 2007, the mayoral administration of Michael Nutter (2008–2015) was elected, in part, with a mandate to reimagine Philadelphia through the lens of an urban sustainability agenda, prompting some observers to speculate about a transformation of the city's decades-old "growth machine" governing coalition by "the progressive ideas, values, beliefs, and practices of a grassroots movement composed of middle-class residents" (McGovern, 2009, p. 663). While enthusiasm for Nutter's agenda was somewhat dampened by the Great Recession, municipal commitment to urban agriculture was reflected in the inclusion of expanding food production as a measurable policy target in the city's sustainability plan, Greenworks Philadelphia. In 2012, a revised zoning code declared gardening and farming permissible activities on most land in the city; the Philadelphia Land Bank Law of 2013 identified urban agriculture as a priority community beneficial use for vacant land; and, in 2016, City Council approved a stormwater fee exemption for gardens (Philadelphia Food Policy Advisory Council, n.d., para. 6). Several nonprofit organizations including, among others, the Pennsylvania Horticultural Society, the Food Trust, the Neighborhood Gardens Trust, and the Public Interest Law Center provide technical advice and legal resources for urban farmers while also engaging in policy advocacy. A Food Policy

Advisory Council, established in 2011, bundles expertise for urban agriculture policy development.

In terms of the recognition by government agencies and nonprofit organizations of urban agriculture as a potentially valuable community and economic development tool, Philadelphia reflects the ongoing transition from "radical" outsider role to "reformist" insider status observed across the country. A prominent (if not predominant) point of contention among social scientists concerns the capacity for urban agriculture to contribute to building a more just society, due to the individualization of poverty and the rollback of the state associated with neoliberal capitalism. This context has prompted scholars to draw very different conclusions about urban agriculture's significance. A largely celebratory perspective contends that growing their own food empowers marginalized communities to fight against systematic food injustice and food insecurity (Cockrall-King, 2012; Kingsley & Townsend, 2006; Nordahl, 2009; Ladner, 2011; Winne, 2009). By treating urban agriculture as somehow insulated from neoliberal politics and economics, this "civic agriculture" perspective likely overstates urban agriculture's potential to redress wider societal injustices. More critical scholars, however, are often quick to discount urban agriculture as a self-limiting (if not self-defeating) response to the privatization of social policy and the welfare state's withdrawal from economic and community development (Allen & Guthman, 2006; Guthman, 2008). In this view, city farming projects are caught up in an endless cycle of pursuing capricious grant funding in the hope of repairing some of the wounds inflicted by deindustrialization and disinvestment. The place-based, self-help ethic of urban agriculture is left with the responsibility for the neoliberal state's withdrawal by making life in some low-wealth neighborhoods somewhat less intolerable.

Recent work in urban geography has sought to replace this bifurcation of research perspectives with a more nuanced assessment of urban agriculture's role in the struggle for urban sociopolitical and economic change (Classens, 2015; McClintock, 2014; Tornaghi, 2014). Forging a path between naïve celebration and categorical dismissal, these authors engage urban agriculture's "simultaneous

push pull of possibility and precariousness” (Philadelphia Food Policy Advisory Council, n.d., para. 5). McClintock (2014), for example, concludes “urban agriculture is not simply radical or neoliberal, but both, operating at multiple scales” (p. 165). While agriculture projects themselves cannot achieve systemic change, McClintock contends, the fact that urban agriculture has become increasingly institutionalized and incorporated into urban revitalization efforts nonetheless signals a paradigm change: the idea that cities should produce some of their own food has become a more widely shared norm.

Until recently, commercial urban agriculture has not attracted much attention from researchers. Market farming has typically been discussed as one of several manifestations of urban agriculture (e.g., Pearson, Pearson, & Pearson, 2010). A pioneering exception was Kaufman and Bailkey’s 2000 analysis of entrepreneurial urban agriculture, which drew on case studies of Chicago, Boston, and Philadelphia. Its discussion of the interplay between vacant land, entrepreneurial farms, and urban governance remains relevant to the discussion of city farming today. Equally insightful was its broad framing of entrepreneurial urban agriculture: not limited to profit-maximizing or even profit-seeking producers, the study placed as much weight upon “social service providers” as it did on “individuals with farm backgrounds” (Kaufman & Bailkey, 2000, p. 6). This broad framing acknowledges U.S. urban agriculture’s prevailing self-conception as social entrepreneurship combining for-profit farming with not-for-profit education and outreach endeavors, a framing that also informs recent studies (for examples, see Dimitri, Oberholtzer, & Pressman, 2016; Sadler, Arku, & Gilliland, 2015; Vitiello & Wolf-Powers, 2014).

The same cannot be said for popular advocacy literature that promotes urban agriculture as a pathway to a livelihood for do-it-yourself farmers and is notably more vehement about urban agriculture as a commercial business proposition. One of these works declares: “With relatively little capital investment, unemployed citizens can turn vacant land into something productive in a relatively short time” (Hansen, Marty, & Hansen, 2012, p. 8). Common to this advocacy literature are a few key

recommendations, including selling to upscale restaurants and well-off consumers, minimizing capital and labor costs while maximizing production, and taking advantage of community supported agriculture (CSA) and marketing campaigns aimed at boosting demand for locally grown agricultural products (Cockrall-King, 2012; Hanson et al., 2012; Ladner, 2011; Lovell, 2010). However, the advocacy literature draws comparatively little attention to several substantial impediments to the profitability of city farming such as, for example, the high cost of land in many urban settings. Though not blind to high urban land values, market farming boosters point to the abundance of vacant lots in postindustrial cities. They argue that their private or municipal owners would be willing to lease or even donate land that might otherwise contribute to neighborhood blight, but these claims tend to gloss over the impermanence of many such agreements. It is true that farms add green space to neighborhoods, and, in turn, tend to raise the appraised value of the lots upon which they are established. However, as Wachter et al. (2010) have noted, that value nearly always pales in comparison to that of commercial or residential construction on those same lots. This is a contest city farmers rarely win: real estate development has displaced many urban farms, even widely lauded ones (Franceschini, Tucker, & Hamersky, 2010). A further impediment to profitability is the existence of widespread heavy metal soil contamination in postindustrial cities. The relationship between soil contamination and food safety is complex, but assuaging consumer concerns and meeting regulatory requirements in many instances requires growing food intended for sale in raised beds filled with imported clean soil. Even when uncontaminated, many vacant lots in cities like Philadelphia have soil of such poor quality for farming that they require imported soil or several seasons of building up the current soil before produce can be grown there. The transience, by design or by default, of many city-farming operations, however, can make planning and financing these essential capital investments unrealistic.

Another thread running through the advocacy literature is reliance on the small plot intensive (SPIN) farming method as an example of a

“proven, simple, and replicable business model” (Hansen et al., 2012, p. 76). The SPIN model provides a business plan, a marketing plan, and day-to-day work flow for the sub-acre farms typically found in urban agriculture. It is well known in Philadelphia’s urban agriculture community because, in the early 2000s, the Philadelphia Water Department sponsored an experimental half-acre (.2 hectare) farm in Northeast Philadelphia called Somerton Tanks Farm, which operated for four years (Institute for Innovations in Local Farming [IILF] & Urban Partners, 2007). The report summarizing the results of this experiment concluded that a couple working together on six scattered-site farms, with the land totaling less than one acre (.4 ha), could gross US\$120,000 annually following five years of experience (IILF & Urban Partners, 2007). However, that total is almost double what was grossed in the experimental farm’s most profitable year—US\$68,000, while operating costs amounted to US\$69,800 including meager wages for the farmers—and was founded on much speculation about the degree of heightened productivity possible given a prolonged growing season and the employment of part-time labor (IILF & Urban Partners, 2007). Moreover, SPIN assumes free or marginally priced land, a production rate of US\$20 of output per labor hour, and US\$135,000 in start-up costs to be covered by grants from public or nonprofit agencies (IILF & Urban Partners, 2007). From the perspective of many practicing urban farmers, however, there may be a more basic problem here: To what extent is the SPIN model consistent with the social goals that motivate most urban farmers? The report states that the “experimental and educational purposes” of the farm meant “efforts to maximize revenue were sometimes negatively impacted by these additional priorities” (IILF & Urban Partners, 2007, p. 14). In order for participating farms to succeed as businesses, the SPIN method requires them to focus exclusively on production and revenue maximization. This can be achieved by targeting well-off customers and niche markets, which necessarily neglects low-wealth populations. Proponents of entrepreneurial urban agriculture are not unaware of the trade-offs between the entrepreneurial and

social justice goals that motivate many urban farmers, but they frequently underestimate their severity. Lovell (2010), for example, notes that small-scale urban growers can become profitable by working with upscale niche markets while also asserting that these same farmers can meet demand for fresh produce among low-income consumers living in urban food deserts. Still, whether urban farmers can achieve their social and financial goals *simultaneously* remains far from clear. In this study, we explore the gap between what advocates claim is possible and what farmers on the ground are actually achieving in urban agriculture.

Study Design

In order to develop a nuanced understanding of factors that shape the financial viability of city farming, we conducted semi-structured interviews with twenty farmers and farm workers in the summer of 2014. We selected a survey design in part because we did not have the resources to undertake detailed financial audits of urban farms and, more importantly, because recruiting participants for such intrusive audits would have been impossible. This was a study produced *with* urban farmers, not just *about* them, in the tradition of participatory social science research. We were curious to learn what practitioners of urban agriculture had to say about its financial viability in a big picture sense. Self-reported financial and economic information has some limitations for producing a comprehensive farm-level economic analysis (e.g., farmers tend to undervalue their own labor), but this wasn’t our goal. Rather, we sought to critically examine, in light of urban farmers’ practical knowledge and experience, some of the more boosterish claims being made on behalf of entrepreneurial urban agriculture in the United States today. To that end, we approached urban market farmers as sources of information and insight about their work, contextualized by a review of the literature and informed by the research team’s familiarity with urban agriculture in Philadelphia.

Study participants had to be involved in market farming, which excluded from consideration nonmarket community gardens. However, in keeping with existing research on urban agriculture, we

took a flexible view of what urban production agriculture can entail by including both for-profit and nonprofit operations, as long as some crops were sold to the public. Fourteen urban farmers were recruited in Philadelphia. Approximately twenty city farms practice some form of market farming,² resulting in estimated participation rate in our study of about 70%. In addition, six rural and peri-urban farmers were recruited from within an eighty-mile radius of the city. Given the importance of farm size as a factor in farm profitability, we decided to include in our study somewhat larger commercial farms outside Philadelphia. The purpose for including rural and peri-urban farms in our study was to inform our understanding of *urban* agriculture; beyond that, we are wary of diluting the meaning of urban agriculture and therefore tabulate separate results for urban and peri-urban farms where appropriate.

Our informant interviews sought to elicit information about farm operations as well as participant meanings about urban agriculture in Philadelphia. We set out to obtain quantitative data on key factors with a bearing on the financial condition of urban farming. Our interview questions were selected following a review of the literature on urban agriculture and in response to feedback provided by Philadelphia urban farmers and Philadelphia County–Penn State Extension experts with whom we discussed a draft of the study design. Compiling, comparing, and analyzing the farmers' responses led us to identify ten farm-level and external factors that shape the financial viability of urban farming in Philadelphia, including: motivation for farming, business model, farm size, workforce composition, farm profitability, nonfarm income, fixed and/or startup costs, cost of land, crop-specific costs, and challenges of city farming. Some of these factors (e.g., motivation for farming, challenges of city farming) are less quantifiable than others; where appropriate, therefore, we frame our discussion of study results in terms of participant meanings rather than quantitative data. As we shall see, how farmers conceptualize urban agriculture significantly affects the degree to which

they consider profitability to be an important organizational objective.

To encourage study participants to speak freely, the interviews were not audio-recorded; however, detailed field notes were taken by two of the authors of this paper. We also assured study participants confidentiality. Since Philadelphia's urban farming community is characterized by internal competition for limited public and private funding opportunities, we do not disclose information that might make a farmer or their farm identifiable to a third party. The study received exempt status from Drexel University's Institutional Review Board. We attempted to collect a comprehensive set of responses from the greatest possible pool of interviewees, and we managed to talk to at least seventy percent of the city's farmers (as distinct from community gardeners). However, our interviews were conducted during the summer months, the height of the growing season and a time of year when farmers are very busy. Consequently, some of the farmers to whom we reached out were unable to participate in the study, and thus our findings do not provide as complete a picture of urban agriculture in Philadelphia as we might have wished for. Most notably, some farmers who were unable to participate in interviews were also those most involved in for-profit niche market farming. While these missing voices influence the results of this study to some extent, their omission, we believe, does not negate the validity of the input from those who were able to participate.

Results and Discussion

We begin our discussion of the financial viability of urban agriculture in Philadelphia with a summary of the participating farms' business models, sizes, and missions. This will contextualize the economic analysis that follows.

Business Model

Our sample included four for-profit farms and ten nonprofit farms in Philadelphia and five for-profit farms and one nonprofit farm outside Philadelphia. While for-profit farms seek to generate a financial

gardeners produce food primarily for their own consumption.

² That estimate is based on a survey performed by the authors that excludes several farm-like community gardens where

profit for their owners, nonprofit farms aim to benefit the greater good of the community (Fritz, 2015). This difference is reflected in their tax status: a for-profit farm is taxed on its profits while a nonprofit farm is not. Additionally, due to the extent that nonprofit farms manage to secure grant funding to further their social goals, they may be able to rely on income sources other than their crop sales to sustain their farms.

One of the four for-profit farms in the city functions as the farming project of a larger organization with both for-profit and nonprofit programs; the other three are run by individual farmers. None of the for-profit urban farms we studied rely solely on farm income for their livelihood. At two of the three for-profit farms, the farmers work on the farm part-time and have supplemental sources of income, such as nonfarm employment by the farmer or a spouse. Bear in mind that this situation is not radically different from the economics of many rural farms whose owner-operators rely on part-time or full-time nonfarm employment to supplement their income and/or to access employer-provided health insurance. Moreover, agriculture does not function outside the context of public policy: the economic condition of rural and peri-urban agriculture is as much a result of state and federal agriculture policies as of the weather and farmers' business acumen. We do not assume, or want to imply, that urban farmers depend on government support while their non-urban counterparts have somehow figured out how to thrive in free-market conditions.

While some of the nonprofit farms are independent entities, several are part of larger nonprofit organizations, such as community development corporations or anti-hunger charities. This arrangement provides organizational support and may indicate something of a trend among community and economic development nonprofits to establish urban farms.

Size

There are roughly 40,000 vacant lots in Philadelphia, but the relatively high density of the city compared to the surrounding region means that most of these lots are small in size, typically much

smaller than a traditional farm lot (City of Philadelphia, 2014). As a result, potential urban farmers generally do not have access to large contiguous tracts of land in Philadelphia. All of the city farms in our sample are smaller than five acres (2.02 ha), and most are smaller than one acre (.4 ha). The larger urban farms are located along the city's periphery or adjacent to parks where there is more available land for cultivation, or they use scatter-site models in which a single farm produces food on several smaller parcels. Unsurprisingly, all of the farms located outside the city exceed one acre (.4 ha), with only one farm smaller than five acres (2.02 ha). Two-thirds of these farms are larger than ten acres (4.05 ha), with the largest farm being forty acres (16.19 ha). Though they are substantially larger than the urban farms we studied, our nonurban farms are small by rural farm standards. These farms produce a mix of vegetable crops comparable to the urban farms in our study; they are not commodity crop operations. We included them to open up some intellectual space for thinking about expanding the scale of urban agriculture. Theoretically, production farms between five and ten acres (between 2.02 and 4.05 ha) could be established on reclaimed brownfields, though turning over parcels of this magnitude to food production would go beyond the tentative paradigm shift in urban planning and municipal land-use policy identified by McClintock (2014).

Mission

Nearly all of the farmers participating in this study expressed diverse motivations for farming, with most offering multiple responses to the question "Why are you farming?," as shown in Figure 1. Farmers outside the city, particularly the for-profit farms, have different missions from those farming in Philadelphia. These rural farmers cited primarily a desire to preserve farming, a passion for farming and food, or a desire to provide wholesome food to customers as their motivations for farming. They also hoped to make a living by farming, but the financial situation of small farms is generally precarious (see, for example, Moyer, 2015). Not surprisingly, our one nonurban, nonprofit farm's primary mission is socially driven: to strengthen the community and increase food security through

sustainable agriculture. This farm is closer to the city than the other participating nonurban farms: it is peri-urban rather than strictly rural.

Though a passion for farming and a desire to provide wholesome food cut across rural and urban farmers, nearly all of the latter cited explicitly social goals as having motivated their entry into urban agriculture. Even the two urban farms that described themselves as an “example” or an “experiment” to determine the viability of entrepreneurial urban agriculture either also had nonprofit status or were associated with nonprofits that had community development or educational goals. In fact, while the three for-profit urban farmers all noted their passion for farming as main drivers of their pursuit of urban agriculture, two of the three also mentioned the role of urban agriculture in “urban greening,” meaning increasing the cover of vegetation in the urban built environment, as a part of their missions. One for-profit farmer further described a desire to increase his connection with his neighbors and to help community members by improving their access to affordable produce as two primary motives for starting his farm. For the most part, then, the for-profit urban farmers seem to share with their nonprofit counterparts a vision of urban farming that goes beyond just making a living. This finding affirms urban agriculture’s social enterprise orientation independently of a farm’s tax status.

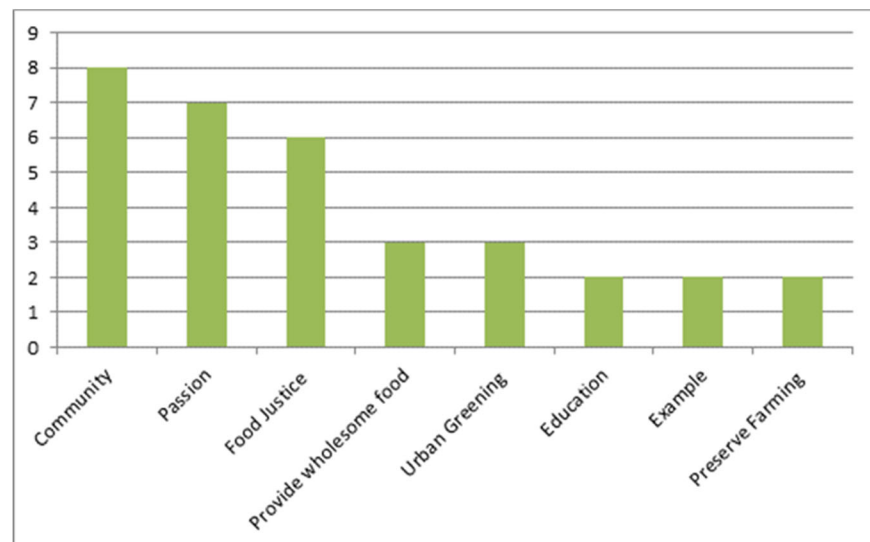
Among nonprofit urban farms, the most commonly stated missions were covered by the categories of “food justice,” “education,” and “community.” These categories are fairly broad, and also include some overlap. Food justice is defined as “ensuring that the benefits and risks of where, what, and how food is grown and produced, transported and distributed, and accessed and eaten are shared fairly” (Gottlieb & Joshi, 2010, p. 6). Within the context of urban agriculture, most farmers

working toward food justice goals describe a desire to increase access to nutritious produce in areas where it is otherwise unavailable or unaffordable to low-wealth communities. These farms are either located in low-wealth neighborhoods that lack sufficient access to full-service grocers, or they sell produce at subsidized prices at farmers’ markets in these neighborhoods.

Several of the nonprofit urban farms described “education” as their primary mission. Education here refers largely to teaching children and teenagers about farming, environmental sustainability, and food justice through programs run on their farms. These programs also aim to provide youth mentorship and job readiness training, typically by way of farm internships or part-time employment for teenagers. The farms with this educational focus vary in the number of youths they work with and for how long, from offering one-day school field trips to weeks-long classes to multiyear internships for a handful of students.

These urban farmers see their food justice and educational goals, as well as urban greening objectives, as a means to further community development, the most common response to the question of the urban farms’ missions. These farms are located in city neighborhoods that have experienced several decades of economic disinvestment along with persistent poverty, and the organizations managing the farms hope to use them as a

Figure 1. Organizational Missions of the Farms in the Study



means to create safe and beautiful spaces where neighborhood residents can come together to create and enhance social capital. For these nonprofit farms, rehabilitation of vacant land, education and outreach, and food justice work all contribute to building more empowered and cohesive communities in these neighborhoods.

The sorts of missions revealed here suggest that most of the farmers interviewed for this study, but particularly the urban farmers, regard the financial viability of farming not as an end in itself but as a means to realizing wider social goals. As one longtime Philadelphia farmer put it: “It’s never just about the food!” These results underline that urban agriculture here mirrors the social enterprise orientation of urban agriculture in the United States more generally. This context sets the stage for our economic analysis of urban agriculture.

Economic Benchmarks

Table 1 displays the economic metrics obtained from our farmer interviews. Sample size varies for different metrics because not all farmers were willing or able to provide information on all metrics. Metrics such as size, full-time equivalent (FTE) per acre, labor cost per FTE, labor cost per acre, capital investment per acre, land cost, farm gross receipts, receipts per acre, and receipts per FTE inform our economic analysis of urban farms with different business models and missions. They can

serve as benchmarks based on data as opposed to assumptions derived from models.

The sizes of the farms studied range from 0.05 acres (.02 ha) to 40 acres (16.19 ha). Although a rural 40-acre farm is obviously much larger than the urban farms in our study, including it helped us compare the economics of differently sized farms and determine what factors make smaller farms different from the bigger ones. Even in small-scale farming size matters, and some scales may simply be too small for market farming to be profitable.

The FTE per acre was determined using 60 hours per week corresponding to one FTE. Although 60 hours is 50% longer than the standard 40-hour work week, it is consistent with the number of hours full-time farmers reported they worked. Figure 2, which plots FTE against size, shows considerable variability for small farms. The correlation of 0.84 between size and FTEs is moderately strong and highly significant (p -value<0.01). While there clearly is a positive association between size and employees, it is not a precise relationship with farms ranging from two to three acres (.81 to 1.21 ha) in size having as few as 0.5 FTE to as many as 7 FTEs. This variability may result not only from variability in business operations, with some farms concentrating on agricultural production and others devoting considerable effort to value-added, hence labor-added, products. It may also be the case that some

Table 1. Summary of Economic Metrics of the Farms in the Study

Metric	Unit	Sample Size	Mean	Median	Standard Deviation	Minimum	Maximum
Size	Acre	20	6.1	1.7	11	0.05	40
FTE per acre	FTE/acre	20	2.3	1.4	2.4	0.063	9.4
Labor cost per FTE	US\$/FTE	12	15,000	15,000	13,000	0	31,000
Labor cost per acre	US\$/acre	12	38,000	11,000	46,000	0	110,000
Volunteer labor	%	18	16	0.82	31	0	100
Capital investment per acre	US\$/acre	10	110,000	0	190,000	0	600,000
Land cost	US\$	12	91,000	600	220,000	0	700,000
Farm gross receipts	US\$	12	28,000	5,900	58,000	680	200,000
Receipts per acre	US\$/acre	12	26,000	11,000	33,000	2100	110,000
Receipts per FTE	US\$/FTE	12	13,000	3,500	16,000	700	53,000

^a FTE=Full-time equivalent staff position

farms sought primarily to maximize efficiency of production while others were oriented more toward community engagement activities, such as youth training programs. This is suggested by the fact that the points for the for-profit farms tend to lie to the right of the points for non-profit farms in Figure 2. The average FTE/acre is higher for nonprofits than for for-profit farms (2.7 vs. 1.8), but this difference is not statistically significant ($p=0.4$ for independent samples t-test).

Farm gross receipts versus FTE are shown in Figure 3. There is a modest and statistically nonsignificant correlation of 0.50. One might expect receipts and FTEs to be more tightly correlated given that labor is a major production cost, particularly for small-scale farming. The solid line indicates a slope of approximately US\$50,000/FTE, which corresponds roughly to the most favorable performance observed here. The point located just above the solid line at roughly FTE=4 and receipts=US\$200,000 just barely exceeds this benchmark. We propose \$50,000 per FTE as a benchmark representing a rough estimate of the upper bound of observed performance. A reasonable number of farms approach this benchmark (that is, they are located close to the solid line), but many are well

Figure 2. Correlation of Number of Full-Time Equivalent Workers and Farm Size

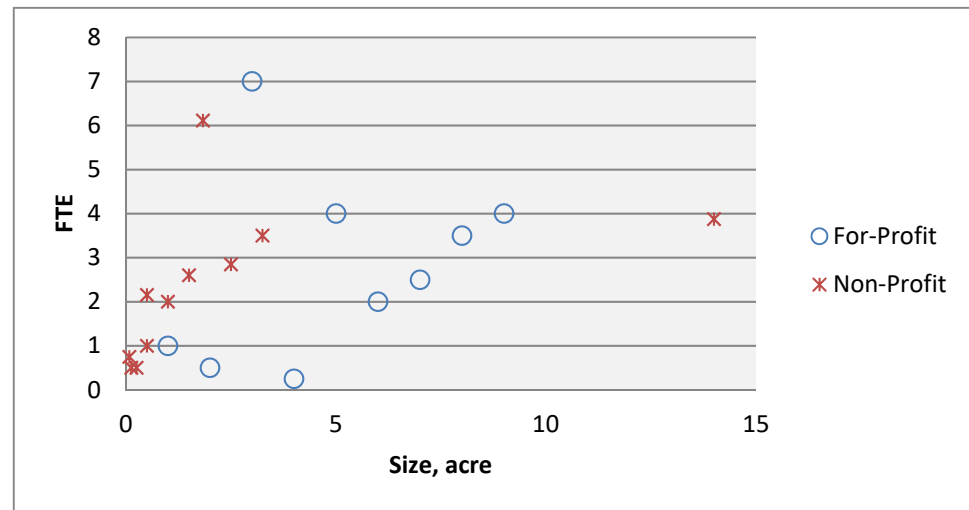
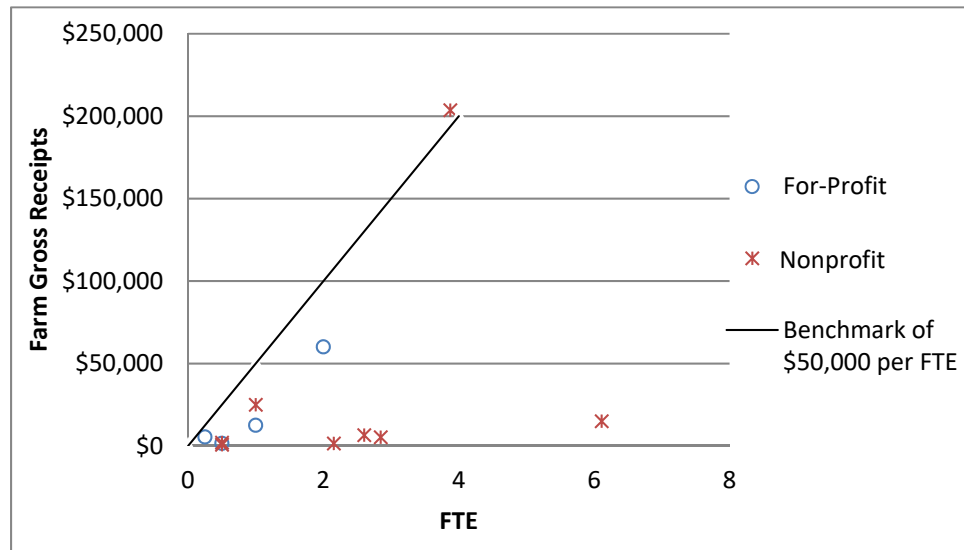


Figure 3. Correlation of Farm Gross Receipts and Number of Full-Time Equivalent Workers



below it. Farms may fall below this line for a variety of reasons including both capabilities (how efficiently they operate) and mission (how important farm revenue is to their objectives).

Farm gross receipts versus size are shown in Figure 4. There is a modest and statistically nonsignificant correlation of 0.54 between these two metrics. One might have expected that in a space-constrained urban environment, there would be pressure to uniformly maximize returns from available space. But insofar as there is great variation in the revenue obtained per acre, the data

Figure 4. Correlation of Farm Gross Receipts (US\$) and Farm Size (Acres)

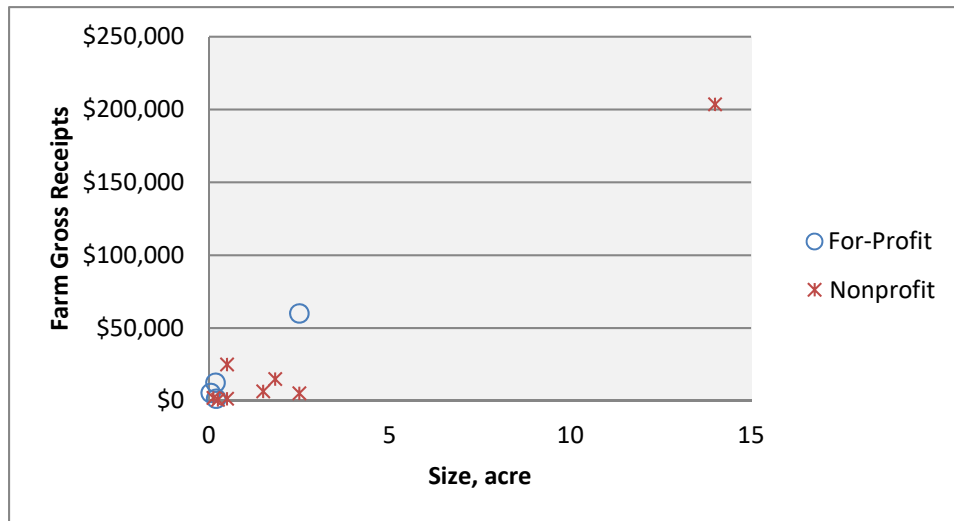
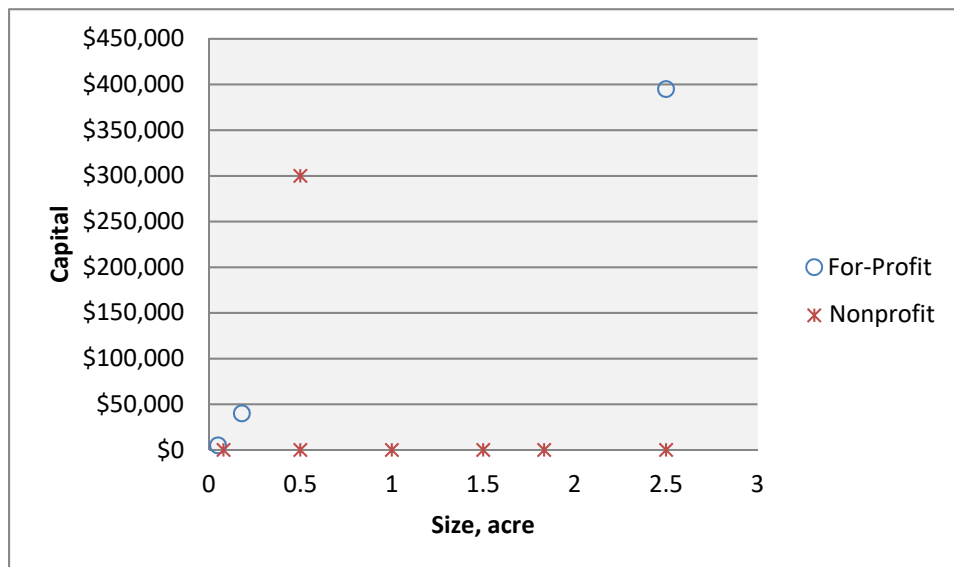


Figure 5. Correlation Between Capital Investment (US\$) and Farm Size (Acres)



suggest otherwise. As with the other metrics examined, this variability probably reflects variation in both farming practices and organizational mission. Put differently, social-service oriented farms may sacrifice some food production to other goals.

Figure 5 is a scatter plot of capital (land and equipment) versus size that shows that for the for-profit farms, the bigger the farm, the bigger the capital investment. This is very much not the case for the nonprofit farms in our study, most of which show a capital cost of US\$0 because most or all of their equipment was donated. Only one

nonprofit farm showed a nonzero capital investment.

Profitability and Viability of Urban Agriculture

According to our interviewees' assessments of the profitability of their farms, six of the 14 farms in Philadelphia made a profit, five posted losses, and three broke even (Table 2). Profitability here does not, for the most part, account for labor costs. If labor costs are accounted for, only one of the 14 urban farms could be counted as profitable (not fully accounting for labor and a reliance on unpaid labor are common practices in city farming, see Biewener, 2016). This farm was somewhat unusual, moreover, in that it consisted of a single farmer growing microgreens in a garage. What made it

profitable was the farmer's focus on producing a high-value specialty crop (Lyne, 2012) combined with the rent-free availability of the garage, which provided important temperature control that expanded the growing season. The capital costs of the garage construction and opportunity costs of the land were not included in this assessment of profitability. Moreover, given that a single individual was both the business owner and sole employee, the distinction between wages and profit is not entirely clear, but returns appear to have been relatively favorable for a part-time effort. This

may serve as an example of urban agriculture's occasional ability to profitably occupy micro-niches of unexploited capital assets—up to a point. This approach is inherently non-scalable, given that larger assets sitting idle (land, buildings) typically attract more competition from alternative uses. In fact, this farm ended operations when the garage became unavailable. As for the rural and peri-urban farms, four were profitable and two broke even, but, again, not all of the profitable operations accounted for labor costs. The tendency of farmers to undervalue their own labor holds true across the urban and rural farms in our study.

The farmers in the study were also invited to share with us their thoughts on the economic prospects of urban agriculture beyond the performance of their own farms. None of the farmers we interviewed believed that urban agriculture was economically viable today, but they were evenly split on its future potential. Six thought that urban agriculture could never be economically successful (five urban farmers and one peri-urban farmer), but seven urban farmers suggested that economic success might be achieved in a more supportive financial and policy environment.

Challenges in Urban Farming

To discover what problems that could be addressed by a more supportive financial and policy environment, we asked our participants to describe what they saw as their biggest challenges in urban farming. Of eighteen respondents to this question, some indicated one main challenge while others

Table 2. Farm Profitability

Profitability	Farms within Philadelphia (Urban)	Farms outside Philadelphia (Peri-Urban)
Profit	6 (1*)	4 (2*)
Loss	5	0
Breaking Even	3	2

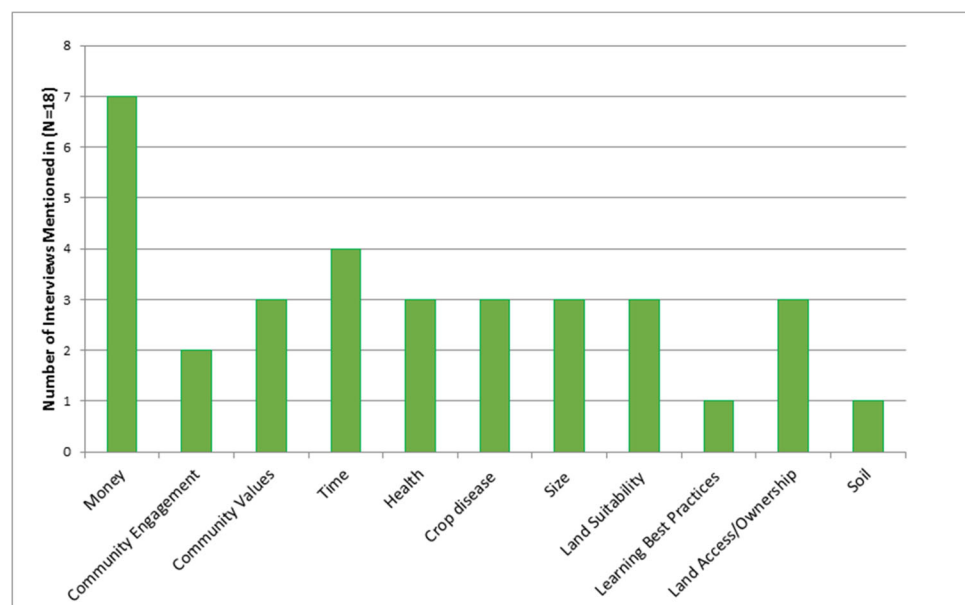
* Number of farms that were profitable when farmers accounted for labor costs.

identified as many as four main challenges. These include money, time, health, land, and community. Figure 6 lists the biggest challenges and the number of matching responses to each of them. Each of these factors is discussed in more detail below.

Capital Requirements

Seven participants said that money was one of their biggest challenges. Money in this context refers to the capital cost of farming. As shown in Table 1, average capital investment exceeded US\$100,000 per acre. Major capital costs (shown in Figure 7) include land (US\$91,000/acre, as shown in Table 1), soil for raised beds to grow produce in high-quality soil and to allay consumer concerns about soil contamination, and equipment. While 10 farmers reported capital costs, six of these reported values of zero, indicating that capital was donated

Figure 6. Biggest Farmer-Identified Challenges in Urban Farming



and not being accounted for. Based on the four farmers who provided nonzero estimates of capital costs, the average capital cost per acre was US\$270,000 and the median was US\$190,000. The average of US\$270,000 corresponds to annual payments of US\$22,000 dollars at 7% interest over 30 years (Office of Management and Budget, n.d., p. 9). However, access to financing on the private capital market is all but nonexistent for urban farms. To quote one of the farmers, “[Unless] you can prove to the bank that farming is profitable, no bank wants to take that risk and give you a loan.” Since financial institutions consider urban farming to be unprofitable, it is impossible to secure commercial loans. At the same time, obtaining grants, upon which most nonprofit farms rely to stay afloat, is a highly competitive and time-consuming process. One farmer indicated having to “fight for funding each year,” and expressed concern about constantly having to ensure that the farm’s mission remained relevant to potential funders. Thus, unless an urban farmer is independently wealthy or grant-supported for a number of years, assuring a farm’s financial sustainability is a challenge.

Time

Four farmers reported that time was one of their biggest challenges. In this study, we considered the full-time equivalent (FTE) to be 60 hours of work. A Pearson correlation of 0.885 implies a very

strong positive correlation between FTE and farm total yield. As FTE increases, farm total yield also increases, which suggests that the amount of time farmers can invest in cultivating their crops has a big influence on the yield at the end of the season. There is limited potential to enhance labor productivity through farm machinery. In order to maximize productivity in limited space, small-scale farming—including much of urban agriculture—tends to involve intensive and highly diversified crop production techniques that often cannot be done with large machinery, meaning that the labor is typically manual (Philips, 2013).

Health

Three farmers responded that health was a main challenge, though these are the nonurban farms that are not grant-funded and have the farm as their sole source of income. A farmer who gets sick or gets hurt on the job may be unable to work. Part of health being a challenge is the high cost of health care and health insurance, notwithstanding the Affordable Care Act.

Land Tenure

Table 3 shows the pattern of land ownership among the farms we studied. Five of the for-profit farms own their land and the others either partly own and partly lease or just lease it. The land cost for the for-profit 10-acre (4.05 ha) farm includes

the house on the property (Figure 8). The 40-acre (16.19 ha) farm was purchased in the early 1950s at auction and was later inherited. Interestingly, only one out of the five for-profit farms that own the land is actually making a profit. As discussed above, land is a major capital expense, but the form of tenancy appears to be unrelated to profitability in our sample.

Figure 7. Main Agricultural Capital Costs According to Interviewees

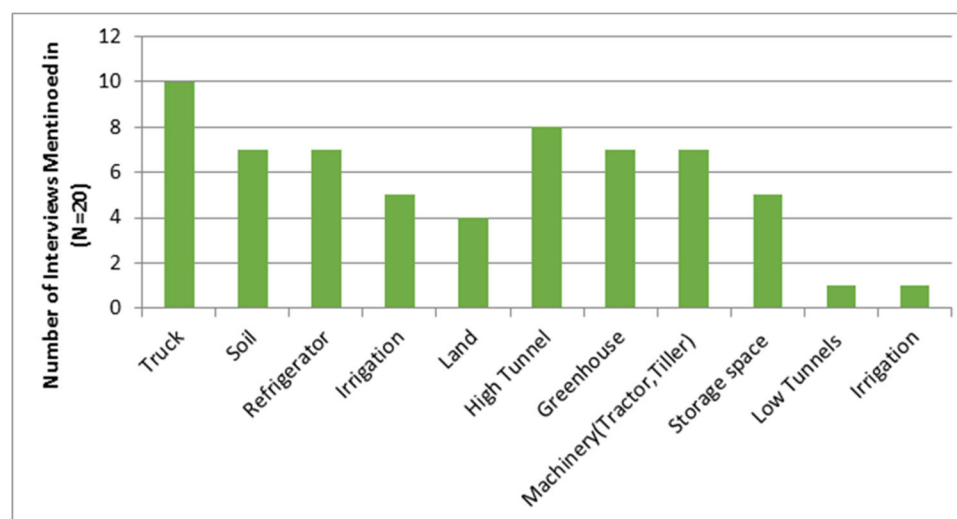
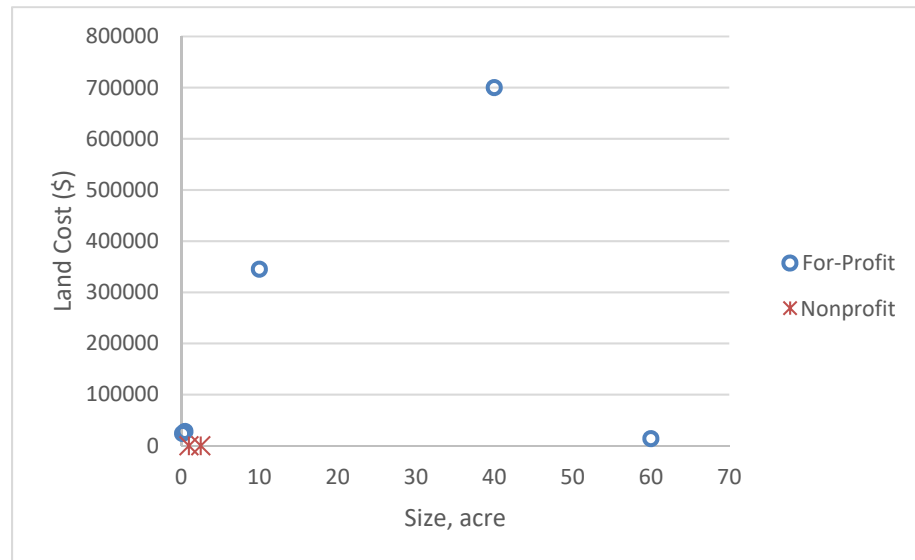


Table 3. Forms of Land Tenure of the Farms in the Study

	Owned	Owned/Leased	Leased	Leased-\$1/yr	Leased/Free
For-profit	5	2	2	0	0
Nonprofit	2	0	1	3	5

Figure 8. Correlation Between Cost of Land and Amount of Land Owned

Community

While community improvement was the primary mission of a number of the nonprofit urban farms, several farms acknowledged that getting support from the surrounding community or convincing the community of the importance of urban agriculture were also some of their greatest challenges. A few farmers expressed frustration that one barrier to achieving their food justice goals was their intended customers' apparent lack of interest in the fresh produce grown on their farm. One farmer lamented that neighborhood residents believed supermarket food to be of higher quality than that sold at a farm stand, despite the farm stand produce being significantly fresher and organically produced. Another farmer commented that many farm stand customers from the community requested fruit unsuited to the region's climate that could not be produced locally. Concerning the lack of interest from the community in the food available at the farm stand, one farmer asked, "what do we need to do to raise the level of

awareness of Americans around food?" Unfamiliarity with urban farming and the nutritional benefits of fresh produce can be a barrier to community buy-in (see Poulsen, Spiker, & Winch, 2014). Ironically, then, even though socially motivated farms aim to use urban agriculture to improve their communities, persuading neighborhood residents of the desirability of locally grown produce may be unexpectedly difficult.

Conclusion

The results of our exploratory study are consistent with claims that urban agriculture cannot meet important and ambitious food

justice, social capital, and job creation goals "while also being financially sustainable without outside funding" (Daftary-Steel, Herrera, & Porter, 2015). In closing, we briefly consider our findings in terms of the SPIN model discussed in the background section of this paper. The farmers were asked about their familiarity with and thoughts about the SPIN model. Those who knew of the model (a majority) thought it was not realistic because in their own experience the well-oiled farm assumed to exist by the model did not—and arguably could not—exist in practice. A key assumption in the SPIN model is that the soil to be farmed is productive and not contaminated, which avoids the capital costs of either cultivating the soil for several seasons prior to starting production or of constructing raised beds and importing soil. SPIN also does not include structures to extend the growing season, either greenhouses or high tunnels, which farmers reported as being very helpful, if not indispensable in Philadelphia's climate. Another element of the SPIN model considered impractical by the

farmers we interviewed was irrigation. In the model, the source of water for irrigation is city water, reliance on rainfall, and free use of water supplied by one of the landlords. In reality, reliable access to water is one of the key challenges in running an urban farm. Philadelphia Water does not deliver city water to vacant lots, for example. While some farms in our sample do have access to city water, others rely on some combination of rainfall and rainwater catchment systems, whose construction requires capital expenditures, unless they are donated by a university or by another institutional partner.

Whether capital costs need to be paid by the farm will have a substantial impact on its viability, of course. The maximum value found in our study for gross receipts per FTE was US\$53,000. This would be sufficient to cover capital costs (annualized at US\$22,000 per year for a one-acre (.4 ha) farm, see “Capital Requirements” section above) and still pay wages of around US\$30,000. The second highest of the twelve reported values of receipts per FTE was US\$30,000, which is clearly insufficient to both cover capital costs and pay a living wage. In light of these discrepancies between the model and our data, we can imagine three paths for making urban farming economically more sustainable. One possibility is for the peak performance of US\$53,000 per acre we have observed to be widely replicated. Our study suggests that the SPIN values are not impossible to achieve, but they appear to be economically more ambitious than the typical urban farm performance observed here. A second possibility is for urban farms to exist and operate only in niches where capital costs are already largely covered by happenstance. This path is consistent with the original intent of much of urban farming to productively use vacant spaces. The temporary success of one farmer using a garage to grow microgreens implies that creative farmers may well find ways to implement this strategy, but the unsustainability of that effort once the garage was needed for another use by its owner also illustrates the potential fragility of such efforts.

A third option is that if the nonmarket benefits of urban agriculture such as “deeper concerns of equity, citizenship, place-building, and sustaina-

bility” (DeLind, 2011, p. 273) are judged to be sufficiently important to justify support for the practice, then capital costs might be covered through a one-time grant from either a governmental or foundation source. In this case, a much larger set of farms could become financially sustainable, without having to become larger or exclusively profit-oriented operations. Of the twelve farms reporting values, four had receipts per FTE of greater than US\$20,000 per year, a level that appeared viable to attract qualified workers. Urban agriculture may not be the preferred land use expressed by market valuations, but the non-market benefits of urban farms may persuade public agencies and private foundations who seek to strengthen urban food networks to include agriculture as an urban land use in a fashion sustainable for the long term. This third option would have the added advantage of being consistent with both the multiple functions and goals of city farming in the United States and with the practical experiences of many urban farmers, both of which point to a more tempered judgment about the commercial prospects of small-scale urban market farming than a perusal of the breathless advocacy literature would seem to suggest. Opportunities for building on this research include examining the financial sustainability of urban agriculture in other cities: factors such as real estate development pressure and the amount and cost of available land may differ sufficiently among cities to produce very different cost structures for urban market farming. Along similar lines, a comparative analysis of policies intended to support entrepreneurial urban agriculture in cities across the United States would be extremely valuable.



Acknowledgments

We would like to thank Drexel University’s Urban Sustainability Initiative for funding this project, the Penn State Extension Philadelphia office for assisting us in contacting interview participants, and the farmers who shared their knowledge with us. In addition, we are grateful to the JAFSCD reviewers for their thoughtful comments on earlier drafts of this article.

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Reality education: Agricultural knowledge exchange in the U.S. South

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Submitted October 20, 2016 / Revised March 2 and March 17, 2017 / Accepted March 17, 2017 /
Published online March 29, 2017

Citation: Franzen, S. (2017). Reality education: Agricultural knowledge exchange in the U.S. South. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 69–83.
<http://dx.doi.org/10.5304/jafscd.2017.072.013>

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Abstract

Access to agricultural education is critical for farmers to maintain sustainable and profitable agricultural enterprises. Yet African American farmers have historically faced obstacles in gaining equal access to educational resources, due in part to the communicative frameworks through which agricultural knowledge is transmitted. Framing agricultural education as a communicative event, this paper examines the process of knowledge transmission itself as practiced by a grassroots organization dedicated to overcoming educational disparities by providing educational programs and resources for African American farmers. This paper draws on research gathered through ethnographic methods, including collaborative filmmaking. Collaborative filmmaking provided both a means to focus on the performative, tacit,

and embodied components of the educational process and a tool for discussing interpretations and the relevance of the educational programs with participants. Drawing on this research, this paper argues that while it is important for all extension agents and educators to pay attention to communicative frameworks, intermediary organizations play an important role in providing critical and accessible agricultural education to local communities. Intermediary organizations and local educational programs can utilize local discourses, engage tacit and symbolic knowledge, serve as translators between mainstream educational resources and local communities, and provide specific knowledge for the goals of local communities.

Keywords

Race; Education; Community Development; Beginning Farmer; Social Justice; Community Engagement; Experiential Learning; Cooperatives; Smallholder Agricultural Programs

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Introduction

Agricultural education is a crucial component of the agricultural system; in the United States, educational programs for farmers have been critical in shaping the trajectory of farmers' techniques, approaches, and livelihoods. Yet the country's mainstream educational and extension programs have also caused and exacerbated injustices within the agricultural system. In particular, African American farmers have faced a long history of discrimination from both the U.S. Department of Agriculture (USDA) and university extension programs (Daniel, 2013; Grim, 1996; Harris, 2008; Jones, 1994; also see information on *Pigford v. Glickman* in Cowan & Feder, 2011; Glickman, Rominger, & Reed, 1997).¹ Racial discrimination in access to knowledge and resources has significantly affected African American farmers' abilities to compete within the agricultural sector, leading to a drastic decrease in African American farmers throughout the twentieth century (Wood & Gilbert, 2000). However, overt discrimination against African American farmers is not the only obstacle to accessing agricultural knowledge. Educational practices are embedded within ideological, communicative, and systemic frameworks that shape the process of knowledge transfer. In this paper, I focus specifically on the process of knowledge transmission itself by framing education as a communicative event. This paper draws on examples of educational events organized by a grassroots civil rights organization, the Federation of Southern Cooperatives/Land Assistance Fund (hereinafter called the Federation).

Founded in 1967, the Federation is a regional network dedicated to supporting and promoting rural development through cooperative principles applied to building land-based economic enter-

prises (Federation of Southern Cooperatives/Land Assistance Fund [FSC/LAF], n.d.). While the Federation's focus is to support African American farmers and rural residents, it extends its services and support to all family farmers, regardless of race. Currently, the Federation consists of over 70 active cooperative groups with a membership of more than 20,000 families across 10 Southern states, with field offices in Mississippi, Alabama, and Georgia (FSC/LAF, n.d.). Its administrative headquarters in East Point, Georgia, serve as the public face of the Federation to conduct fund-raising, policy work, and national and international relationship building.

Since the beginning, the Federation² has focused on education as a crucial component of rural development. The organization seeks to address gaps in the educational needs of African American farmers in two main ways. First, it has helped African American farmers gain access to existing educational resources by connecting farmers to extension agents; helping African American farmers understand and apply for government programs, loans, and grants; and providing resources to help farmers attend workshops and field days at agricultural universities. Second, the Federation has created its own educational programs that teach not only agricultural techniques, but also cooperative development, small farm business training, estate planning, and land retention strategies, among other topics. The Federation has made more accessible both centralized and decentralized and formal and informal educational programs that work with farmers and rural residents both in groups and on an individual basis.

The Federation has also recognized the need for localized educational programs. The Federation has organized its member cooperatives into State Associations, each of which can better assess and meet the educational needs of its member cooperatives and farmers (Zippert, 1979). State Association staffs provide individual on-farm assistance,

¹ The second Morrill Act (1890) provided additional funds to each state with the stipulation that African Americans were to be admitted to land-grant institutions; states could alternatively use the funds to create separate colleges for African Americans, which happened throughout the Southern states. Despite this effort, African American farmers, and these 1890 land-grant colleges, have historically received less funding and been denied equal access to government agricultural resources (Daniel, 2013; Harris, 2008; Hart, 2001; Wayne, 1998).

² During my research, the majority of farmers and Federation members I interviewed cited education as one of their main reasons for joining the Federation or one of its member cooperatives.

attend cooperative members' meetings, and provide workshops and trainings for members. These workshops typically incorporate presentations from local extension agents, university researchers, or other experts, thus combining multiple forms of education for participants. At an even more localized level, cooperatives themselves also provide education and training for their members. These processes vary largely from cooperative to cooperative and depend on the needs and goals of the members. On the whole, most of these educational processes involve farmer-to-farmer-style training, through which members teach each other about what is working (or not) on their own farms.

In this paper, I explore an informal educational encounter and two educational programs, one implemented by a State Association and the other by a cooperative. First, I examine an informal moment of knowledge exchange between an established vegetable cooperative in Mississippi and a newly forming vegetable cooperative in Louisiana. This informal meeting between cooperative members is a common benefit for Federation members throughout the network and serves as an example of local and informal communicative frameworks among the membership. I compare this encounter to two educational programs. The first event was an on-farm goat demonstration hosted by the president of the Southeastern Goat Cooperative (SoGoCo). The goal of this workshop was to increase farmers' familiarity with goats in order to encourage others to try raising goats, and thus increase the membership of the cooperative. The second event was a two-day tour and workshop for beginning farmers conducted by the Mississippi Association of Cooperatives (MAC), the Federation's Mississippi State Association. This event was intended to fill what MAC staff saw as a gap in the knowledge of beginning and potential farmers. Before exploring these cases in depth, I first provide a background framework used to theorize these as communicative events and the methodology used to collect the data on each case study. Finally, I conclude with a discussion on lessons learned and recommendations.

Background on Communicative Frameworks

Communicative events in agricultural education

consist of shared times and spaces that rely on shared communicative practices and meta-communicative frameworks. This process is not just a transfer of information, but is itself generative of and dependent upon existing social, cultural, and political structures (Sherzer, 1987). A key aspect in considering the success of educational efforts is the communicative competency of participants (Hymes, 1985). Even among participants sharing a language, differences in accent, dialect, syntax, word choice, sentence structure, and idioms can all affect how information is understood and perceived. Specialized extension agents utilize a different discourse than farmers due to the nature and effect of formalized and academic training. Language gaps also exist due to diverse cultural and social differences in language use. Farmers are often expected to code-switch to professionalized discourse, even though they may lack formal training in such discourse.

In addition to verbal language, body posture, position, gesture, and expressions all assist in the construction of communication (Streeck, Goodwin, & LeBaron, 2011). This performative aspect of communication also serves to construct identity not only for the performer, but also for the audience, especially in situations of unequal power dynamics. Identity is more than an internal conceptualization of self; it is relationally produced through discourse and practices (Bucholtz & Hall, 2005). This production is informed by both macro- and microlevel socio-cultural contexts, which position people within identity frameworks. Thus, communicative events position audiences or listeners within specific subject positions. Charles Briggs (2005) proposes the use of "communicability" to refer to the productive capacity of language in creating subjective identities. Communicability creates domains that seem unified, position people within discourses, and produce forms of self-regulation among people who want to participate. These communicability spheres are spaces of knowledge production, reproduction, dissemination, and transmission. Those who can correctly engage in these communicability spheres through correct forms of discourse and subject positioning can access forms of knowledge and power associated with these spheres (Briggs, 2005).

But those who are unable to correctly engage in the proper form of communicability, either because of their communicative skills or subject position, are excluded from knowledge and resources governed within the sphere.

The Federation works to disrupt communicability spheres that have historically discriminated against African American farmers. The historic segregation and discrimination against African American farmers built a pattern of communicative interactions between extension agents and African American farmers that reproduces racialized power dynamics. Even with shifting laws and practices that promote racial inclusion and integration, African American farmers tend not to have the communicability patterns to access power and resources. Federation staff address these issues in two ways: first, they attempt to translate, and thus help African American farmers access mainstream communicative spheres. Second, they create alternative forms of extension, built on communicability of African American farmers using their network as a means for farmers to educate each other.

The process of knowledge transmission also involves nondiscursive forms of knowledge, sometimes referred to as implicit understanding (Shotwell, 2011) or tacit knowledge (Polanyi, 1966). This form of knowing includes skills and practices used in farming, observational awareness of sensory cues, and affective understanding, which rely on the farmers' physical presence and interaction with the ecological and social environments (Csordas, 1993). It also includes modeling what it means to be a farmer, and the ability to evaluate what is a good farmer, or symbolic knowledge (Burton, 2004). Federation staff and members often emphasize the importance of familiarizing youth with the sensory experience of farming in order to instill an appreciation and a tacit understanding of agriculture. By positioning educational events on farms and using hands-on techniques, the Federation's educational programs engage in tacit forms of knowledge transfer. Additionally, the process of using established African American farmers as educators not only provides practical knowledge for other farmers, but also models an image of what it means to be an African American farmer. Tacit knowledge affects farmers' ability to

develop crucial skills and adapt to ever-changing environments. Symbolic knowledge shapes farmers' identity and social relationships.

Knowledge transmission may also be obstructed because the type of knowledge being communicated does not fit paradigmatically into the cultural, social, ecological, or economic agricultural systems of the learning participants. Given that knowledge is embedded within ideological and paradigmatic frameworks, promoting particular agricultural techniques results in the enforcement of particular agricultural systems. Therefore, while innovative agricultural techniques may present efficient methods for increasing production, they may not be suitable for small-scale farmers, part-time farmers, or farmers with mixed landscapes. Or they may simply not fit with the specific goals and desires of particular farmers. The goal for the Federation is to help farmers understand, evaluate, and utilize diverse forms of knowledge to determine which techniques are most appropriate for their systemic goals of agriculture.

Together, these aspects are important considerations for creating effective educational programs. Communicability spheres within agricultural education establish normalized discourses and subject positions that govern access to knowledge and information and promote particular values or systematic frameworks. The Federation serves an important role in facilitating agricultural education for African American farmers and helps navigate the gaps in communicability spheres between African American farmers and mainstream educational resources.

Methodology

This paper draws on my ethnographic research conducted with the staff, organizers, and farmers involved with the Federation in Alabama, Mississippi, and the administrative headquarters in East Point, Georgia, conducted between 2011 and 2013. My research takes a community-based approach using interviews, informal conversations, participant observation, oral histories, archival research, and, most prominently, ethnographic filmmaking. Drawing on a framework of reflexive science (Burawoy, 1998), I approach filmmaking as a collaborative and intersubjective process of shared

time and space (Fabian, 2001) through which individuals and groups can directly express cultural and subjective identities and then collaboratively discuss and interpret the material that was filmed. The ethnographic value derived from this method resides not simply in the films but in the process and social interactions surrounding their production and viewing. In my research, this process is a repetitive practice in what I term *adaptive co-production*. This approach to filmmaking combines observational and participatory techniques.

Observational filmmaking emphasizes a material, phenomenological, and relational understanding of culture (Grimshaw & Ravetz, 2009; MacDougall, 2006; Young, 2003), providing a means to focus on specific manifestations of social and cultural patterns at a given moment (MacDougall, 1998), while privileging the visual, sensory, and particular over the abstract and general (Grimshaw & Ravetz, 2009). Filming in this manner is more active than simply witnessing an event. It requires an observational stance (Grimshaw & Ravetz, 2009) or way of looking (MacDougall, 2006) in which the researcher continually selects to focus on, and film, moments of meaning as they unfold through social interactions. Filming observationally is a skilled practice of being present in the moment and responding to relationships and situations happening in front of the camera (Grimshaw & Ravetz, 2009; MacDougall, 2003; Rouch, 2003).

This form of filming also requires an intimate relationship with the films' subjects (Young, 2003). In order to understand the significance of ongoing gestures, utterances, and movements, and to accurately select among various foci, the researcher must be familiar with the participants appearing before the camera. Furthermore, the participants need to have a certain level of comfort and trust in order to engage with the filmmaker. Observational cinema can be seen as a form of filmmaking in which the filmmaker shares the subjects' experiences and in turn shares these experiences with audience members. The resulting film remains open, never fully determining the complete interpretation of the moment on the screen, thus allowing the viewers their own experience of the situation as it unfolds.

While observational cinema *implies* a relationship between filmmakers and film subjects, participatory filmmaking makes the relationship explicit (MacDougall, 2003). Participatory filmmaking considers that the solicitation and provocation brought forth by filmmaking reveals the identities, culture, and relationships that the researcher is exploring. This process can be used to encourage performances and enactments (Rouch, 2003; Sjöberg, 2008) and collaborative or participatory projects in which participants use the camera to express and record their own perspectives (Dienderen, 2007; Elder, 1995; Flores, 2007). Similarly, my project sought explicit input from the filmed participants. Federation staff and members worked collaboratively with me to determine the process of filmmaking and decide which events or moments should be filmed. Footage was then screened back to participants in order to solicit feedback. Edited versions of different events were circulated within the cooperative networks of the Federation. Through these interactions, the ethnographic significance was more than just the films themselves, as it included all the interactions and discussions around the production of the films.

The process of collaboration and the method of filmmaking also assisted me in learning and accessing local forms of communication. As a white, Northern-born doctoral student, I occupied different communicative spheres compared to the participants in this research. My ethnographic approach and participant observation provided me both exposure to local forms of communication and the time needed to learn and participate within these communicative spheres. But even more significantly, by creating a collaborative filmmaking project, I positioned the filming process as not simply a method for my research, but as a tool for facilitating and building media communication among and for the Federation's network. Communication with the camera, therefore, was intended not only for me, but also for other anticipated audiences that included other Federation members, the Federation's administrative staff, and possibly other Federation supporters. This process of collaborative filmmaking positioned me at the center of communicative processes that existed among members, as well as

between participants and anticipated larger audiences. Additionally, the method of filmmaking provided me a means to repeatedly watch and observe the process of communication recorded by the camera. This repeated and detailed exposure to participants' communication allowed me to develop a deeper understanding of local communicability.

This paper is based on a close examination of the communicability within two filmed educational events conducted by Federation members. The two films described here were created upon invitation from the participants. Longer versions were shown to the participants and at cooperative meetings. At these screenings, participants discussed their interpretations of the filmed events and determined which parts were most significant. After these discussions, I further edited the films and rescreened them.

Along with these two examples of educational programs, I also provide a close reading of a visit from members of a newly formed cooperative to an established cooperative, which was also filmed. This informal visit was not an official part of the educational programming of the Federation, but it is an example of a common way in which members learn from each other. I use this example as a way to demonstrate how the formal educational programs draw from and mimic informal communicability spheres as well as showcase how education exists beyond the formally organized programs.

The educational events were evaluated according to the style of communication used by presenters, the communicability spheres or subject positions imposed within the communicative event, the tacit and symbolic knowledge present in the educational event, and the systemic frameworks supported by the knowledge being presented at the educational events. Further insights into the material were gathered through the discussions around the screenings; informal conversations before, during, and after the educational events; and interviews conducted with participants and educators outside of the educational events. I also attended and filmed workshops and trainings by USDA extension agents and university researchers with the African American farmers participating in my research and was present when extension agents

conducted site visits on participants' farms. The films described here were compared to my filmed material of the informal educational exchanges between cooperative members and my filmed material of presentations by agricultural extension agents and university researchers.

Results

Cooperative Visit

One way that Federation members gain agricultural knowledge is through learning from other members within the network. This is especially pertinent for farmer cooperatives in the process of organizing or expanding. In order to facilitate cross-cooperative learning, many on-farm and cooperative visits are organized into workshops and meetings within the Federation, but informal visits are frequent as well. During my research with the Indian Springs Farmers Association, located outside Petal, Mississippi—one of the oldest Mississippi member cooperatives—members from a newly formed farmer cooperative in Louisiana came to see Indian Springs' vegetable processing shed. The visit and tour were facilitated by the director of the Federation's Mississippi branch, a second-generation member of Indian Springs, and one of the regular coordinators of Indian Springs. As part of my research, I had established an ongoing collaborative film project with Indian Springs and was present to film events such as this visit.

The visit began with a tour around the processing facilities. The facilitator demonstrated how they cleaned, packaged, stored, and boxed produce. This included detailed information about the prices and funders for some of the machines and equipment, and simple advice, such as the benefit of using wooden crates over cardboard in order to preserve the freshness of produce. The tour was casual and informal, with fluid and meandering conversation. The visitors touched and examined the various tools, equipment, and materials used within the process.

The facilitator then set up a circle of chairs for the four Louisiana visitors and the two Indian Springs members. The six men sat in an open, equal, and conversational manner with no formal leader or presentation. Dialogue ebbed and

meandered casually, at times interrupted as the facilitator got up to grab a label used to package okra or one of the slips they give to farmers who bring in produce, or to attend to an unrelated errand. This style of communicating emulated the form and structure of a social visit, rather than a formal educational event. The facilitator only guided the conversation, leaving at times to bring in a prop or to attend to business, and allowing all participants to equally participate and contribute to the conversation.

The facilitator's style of conversation positioned the participants as equals within the communicative framework. His casual body position, storytelling, informal dialogue, and use of vernacular dialects and idioms positioned all the men on an equal level with a shared investment in the ongoing conversation. Even though the Louisiana cooperative had travelled to learn from Indian Springs, all of those present added to the dialogue and contributed their own insights and understanding.

The casual and equal style of communication in turn supported a wide number of topics that blended different forms of knowledge and understanding, such as planting seasons, crop prices, and the nature of contracts with different distributors and retailers, including Walmart and Whole Foods. The men exchanged tips and techniques, including traditional agricultural practices passed on from parents and grandparents. They also told stories about their various experiences and trials with farming.

While the discussion focused on improving productivity, the purpose for this improvement was not for economic gain alone. The Louisiana men discussed their goal to use farming as a supplemental form of income. Through farming, rural residents could simultaneously build a more sustainable income, secure their residency on farms, and continue a livelihood and way of life that is increasingly being threatened by the industrial agricultural system. The men also discussed the importance of maintaining a farming tradition within their communities. These values—maintaining a way of life, a set of traditions, and rural residency—are sometimes beyond the scope of typical agricultural extension concerns, so farmers

are not provided useful knowledge for establishing small-scale and part-time farming enterprises. But for many Federation members, these values are the reasons for pursuing agricultural enterprises.

The casual nature of the conversation emphasized personal and social connections between the men, allowing for local colloquiums and meanings to enter into the conversation. While educational workshops are often designed as rapid, structured, linear dispersions of data, nothing was orderly about this setting. The conversation contained key nuggets of critical and relevant knowledge about how to better grow and market vegetables, but these pieces of data were surrounded by stories that were both relevant and tangential to the information. Knowledge remained contextualized within its narrative framing, requiring visitors to attend to both technical data points and the surrounding details. These elements bound the knowledge within social conventions and facilitated a familiarity among the men.

After their conversation, the men continued their tour through the facilitator's fields. They examined and handled some of Indian Springs' more advanced equipment, including a planter and transplanter. On the farm they watched the facilitator demonstrate his automated irrigation device. These hands-on opportunities gave the visitors a chance to look at, feel, and sense the equipment, the fields, and the crops. This type of sensory engagement with Indian Springs' farming operations was perhaps too short to convey in-depth tacit knowledge, but it nonetheless offered the visitors a chance to expand their understanding of the operations through an embodied experience.

The significance of this event is its resistance to de-contextualization. Relevant information was exchanged through channels within a communicative framework common to social visits, informal encounters, and daily activities.³ The casual, slow, and meandering form of conversation was only

³ The commonality of the communicative style was determined based on comparisons to additional filmed material of social, daily, and informal events, as well as participant observation. The usefulness of this encounter was later discussed in informal conversations with the Louisiana cooperative members at an annual meeting of Federation members.

one component to this communicative style. Additionally, topics of conversation, body language, and the framing of technical knowledge within political-economic knowledge all were part of the meta-communicative exchanges between cooperative members.

*Goat Workshop*⁴

In late November 2012, the president of the Southeastern Goat Cooperative of Alabama (SoGoCo) invited members, Federation staff, family, friends, and neighbors to attend a workshop on his farm. His goal was to make this an annual event, expanding every year until it becomes a stable anchor for the growing collective of goat producers. The workshop was designed to introduce people to goat farming and teach those who already owned goats about best handling practices.⁵

The workshop began with a prayer in the recreational room of the small church across from the president's farm. Almost all Federation-related events begin and end with a prayer. The prayer is often used to remind the group of the overall goal and vision of the event to happen, and at times even used to encourage people to choose cooperation over and above their own individual ambitions. The prayer also reminds the participants to trust in a higher power and to devote themselves to this higher power through their pursuit of a better life. The prayers are often offered by a minister or pastor who is also a participant.

After the prayer, the president asked participants to stand up, introduce themselves, and discuss whether they had goats or were interested in getting goats. This icebreaker was aimed at building intimacy among the participants. It also instigated discussion among participants. In between introductions, the president told jokes and added comments. A light breakfast of beverages and pastries was served. The combined social exchanges and sharing of food were designed to create an informal atmosphere conducive to shared and

equal communication among the participants.

Next, Federation field staff from Alabama offered a series of presentations on goat health and rearing, the techniques of silvopasture (combining goats with timber production), and the basics of cooperative development. These presentations included slides filled with technical information. The staff helped explain the technical details throughout the presentations and offered to meet individually with the farmers. Formal educational formats like this were often included with hands-on and demonstration forms of educational. At times, Federation staff invited extension agents or university researchers to make formal presentations during field days or on-farm workshops. As a result, many Federation-sponsored educational events involved hybrid forms of knowledge transmission, combining formal with informal, and didactic with experiential, forms of knowledge exchange.

After the morning activities, the participants moved to the president's nearby farm. On the farm, they were taught how to identify different breeds of goats, how to determine age, and how to examine the general health of male and female goats. One of the local farmers facilitated most of the training. He had been goat farming the longest, and therefore was considered the most knowledgeable among the group, even among the Federation staff. Along with basic identification, the local farmer facilitated hands-on training for the participants. He set up the goats to have their hooves trimmed and invited the participants to come and try trimming. Participants took turns approaching the goats, examining the hooves, and learning how to trim the hooves to the right length. During this time, both the farmer and Federation staff explained specific details about hoof trimming.

The experienced farmer also identified a goat that had grown a cyst and demonstrated how to drain the cyst safely. The participants observed the large amount of pus that oozed out of the drained wound and commented on the smell of the secretion. The farmer commented that despite its foulness, the smell was a normal sign that the cyst was simply an infection and would heal.

This on-farm training served as the core of the workshop. Although the beginning portion of the

⁴ This ethnographic example is taken from my dissertation (Franzen, 2016).

⁵ A video of portions of the workshop can be seen at <https://vimeo.com/112238967/cb70dc20e3>

workshop communicated vast amounts of technical information, the on-farm portion enabled a sensory, tacit, and embodied form of knowledge accumulation. Participants spent time not only learning specific information about goats, but generally became more familiar with the sights, smells, sounds, and mannerisms of goats as they watched and participated in the handling of goats. Some of the participants also brought their children to the farm and encouraged them to touch and examine the goats, thus exposing the youth to the tacit aspects of goat farming. This familiarizing process is considered crucial among Federation members as a way to encourage youth to better understand farming in general and encourage their interest in farming. Such workshops did not necessarily teach youth agricultural skills, but rather created a sensory engagement through which youth began a tacit understanding of farming more generally.

The workshop was also a space for establishing the symbolic knowledge of a “good farmer.” The experienced local farmer continually commented that the president was doing well and had learned to be a good farmer. These comments were meant to encourage the others to emulate his efforts. Being a “good farmer” in this case involved the productivity of his farm, the aesthetics of his goats, and also the care and attention the president gave to his operation. It also involved affirming that the subject position occupied by the president (that of a Southern African American farmer) could achieve the status of “good farmer.” The recognition of the group, and of the Federation, provided a form of validity for farmers and a set of parameters by which to determine the qualities of a “good farmer.”

The on-farm portion of the workshop also created an informal space for farmers to ask important questions of the Federation organizers. Specifically, some of the farmers had faced issues when applying to and receiving support from USDA-sponsored programs. This was a common concern brought up at several Federation events by farmers who had difficulty procuring grants, loans, or services from government or private institutions. The reasons ranged from overt discrimination, lack of Internet access, and convoluted

application procedures, to failure to meet the qualifications. The organizers were familiar with these issues and aware of both overt and implicit forms of discrimination sometimes used to deny farmers full access to resources. The workshop provided a space for farmers and organizers to discuss the process of applying for USDA programs and obstacles farmers face when working with local agencies.

The workshop concluded back at the church with another meal and prayer, and stories. The president told stories about his youth and made jokes about how the participants were disciplined as children, thus aligning those present in a shared memory. He also spoke about his struggles beginning his goat farm and pointed to his current success after years of hard work. Overall, the workshop offered multiple forms of knowledge for new and beginning goat farmers and worked to build a stronger collective. Farmers received knowledge through diverse formats, including sensory and tacit knowledge. The prayers, meals, stories, and introductions all facilitated a collective and social connection between the participants, working to bring together individual farmers and building on their shared customs and cultural norms. Discussions on the structural barriers African American farmers faced also framed these as collective issues, and blended the technical aspects of goat farming with political-economic realities. As the president had hoped, he has continued to hold similar workshops on his property.

Beginning Farmer Reality Tour⁶

In spring 2013, the Mississippi Association of Cooperatives (MAC), the Mississippi State Association of the Federation, hosted a Beginning Farmer Reality Tour to expose young and new farmers to the often unseen and unknown realities behind farming. The tour was designed as a series of visits to established farms over a two-day period. In addition to the visits to established farms, the tour incorporated a series of presentations from MAC staff, USDA agents, and a local farm-to-school

⁶ This ethnographic example is taken from my dissertation (Franzen, 2016).

researcher.⁷

This reality tour was a new educational initiative designed by MAC staff to fill what they saw as a deficit in the existing educational programs for new and beginning farmers. While many programs and trainings exist that are specifically geared toward field days, and farmer-to-farmer training is a familiar idea among farm extension services, this particular tour had a different undertone. The “reality” being exposed was more than just agricultural techniques and practices. Throughout the tour, the facilitators emphasized that this was a chance for beginning farmers to ask frank questions and learn about the social, economic, and political aspects that affect the lives of small-holding farmers, and especially African American farmers living in the U.S. South. The organizers felt that these sorts of conversations were often avoided in professional or public workshops and presentations. By creating an intimate setting, MAC organizers hoped the participants could have deeper discussions about existing realities.

Before the tour, the participants met in the MAC offices where the staff introduced them to the schedule of events and tour expectations. Most of the MAC staff consists of African American farmers, either actively working their own farms or assisting on family farms. They are familiar with the culture, language, and communicative style of rural farmers and were able to joke and cajole the participants as they discussed serious issues around finances and diverse income streams. For instance, one facilitator was encouraging the participants to consider rural tourism as a revenue stream. “They want to come, lay in the pasture, talk to the soil, and they’re willing to pay [US]\$250 for two days,” said the facilitator referring to rural tourists. These tourists desired the things farmers took for granted, such as being outdoors, touching animals, and working under the sun. But the reasons that African American farmers were not able to tap into this industry, according to the facilitator, was that they were unfamiliar with the opportunities, their parents were too skeptical, and they were not on

the Internet. The facilitator’s familiarity with the common family structures of the participants, the influence of older generations on managing the farm, and the lack of Internet access among the participants helped her lay out the economic obstacles around small-holding farming in a way that was relevant for the participants.

In discussing the economics of small-holding farming, the facilitator also broke down how much monthly and yearly income could be earned from a five-acre (2-hectare) plot growing vegetables and goats. Her example was based on a real farmer whose books she helped manage. The facilitator was promoting to beginning farmers how maintaining only a small farm, or even just a garden plot, could be beneficial. In the face of industrial agriculture’s emphasis on scaling up, many Federation organizers see a benefit in farmers maintaining small plots. If small plots are able to provide at least supplemental income, rural residents can simultaneously improve their livelihoods, better sustain their landholdings, and continue a farming tradition. Part of the effort of this tour was to highlight the benefit of small farmers and promote the continuance of small-holding farming.

The tour consisted of visits to several farms during which participants explored the crops, animals, equipment, and techniques of the established farmers, who offered informal presentations and time for open discussion. Presentations offered by established farmers focused not just on knowledge, but on processes of knowledge accumulation. Each spoke of methods of gaining new knowledge and of pitfalls and obstacles new farmers, especially African American farmers, may face. For instance, one established farmer encouraged the beginning farmers to read farm magazines, attend conferences, and, most importantly, to learn from their elders. He equated these diverse forms of knowledge gathering with college, emphasizing that new farmers did not necessarily need formal education but rather could build their knowledge through a combination of experience, apprenticeship, and public resources.

Similarly, another farmer on the tour questioned the efficacy of a college education and asked the participants how many had been given the wrong kind of information in school, or just

⁷ A video of portions of the tour can be seen at <https://vimeo.com/91238506/89a624afaf>

enough “to hang” themselves. Slowly, the whole crowd began to raise their hands, jointly admitting that so-called “educational” spaces may in fact be detrimental for their success. But he did not just warn about dominant educational spaces; he also pointed out that African American farmers may be hesitant to share information with each other—something they all needed to work to overcome. As he explained, “Black men are afraid to pass on information, afraid I’m going to get a little too much.” But if farmers learned to help one another, there is a better chance of success for the whole group.

This farmer was encouraging a collectivist approach to farming, an approach that is not supported or encouraged within the industrial agricultural paradigm. The collectivist approach was a means to not only help farmers with smaller acreages, but also to help African American farmers access capital. African American farmers’ operations were often behind their white counterparts due to lack of capital, resulting in an inability to create value-added products, withstand unforeseen circumstances, or own their means of production. A collective approach would provide both power and resources to small-holding African American farmers. The dilemma, according to many of the farmers on the tour, was that in order to cultivate a collectivist attitude, African Americans needed to have pride in the act of farming. The farmers on the tour similarly emphasized that farming was about passion and freedom, not status or wealth. These social, economic, and political goals were not part of typical extension agendas. The tour provided a space to bring forth complex issues that African American farmers face and discuss different systemic approaches to agriculture.

The general tenor of conversations with established farmers framed new farmers as capable agents who needed to understand their social, political, and economic environments while simultaneously learning key farming techniques and various levels of tacit knowledge to become what one cattle farmer called a “physical farmer.” This farmer began explaining that the university extension programs now promoted computerized farming, or what is being called precision farming, which reduces farming to a set of calculations

based on precise variables. Physical farming, meanwhile, is the type of farming based on a continuous presence and observation of the fields where tacit knowledge is gained through continued experience so that eventually small details are combined to understand comprehensive patterns. This enables farmers to understand how to address the constantly shifting patterns and relationships involved in farming. As he was about to discuss these issues further, he promptly turned to me and told me to turn off the camera. His decision to keep this part of the conversation off the record furthered the overall agenda of this tour, which was designed to support and evoke conversations that may have political or social consequences but were important nonetheless for beginning farmers.

The tour uniquely addressed the needs of African American beginning farmers through different educational strategies. Firstly, diverse types of knowledge were presented by the established farmers. Along with specific techniques, the established farmers divulged insights into the process of gaining knowledge, attitudinal challenges, political obstacles, and continuing issues of racism. After conversations with each established farmer, the participants spent time on each farm gaining sensory knowledge of the crops, animals, machinery, and general set-up of existing farms. Secondly, the form of communication used in the tour differed from typical extension programs. Not only were the established farmers communicating in informal, local vernaculars, but also the push by MAC organizers for more frank conversations led to a number of intimate conversations. Finally, the established farmers emphasized a systemic analysis of appropriating and incorporating knowledge. They did not categorically reject any form or institution of education. Rather, they cautioned the farmers to think carefully about their own goals and paradigms for farming, and to use this to govern which methods, techniques, and information they would adopt into their own practices.

This tone was contrasted by the supplemental presentations offered by two USDA agents and a university researcher who focused on farm-to-school issues. Each of these presenters spoke from their own respective positions—as government agents or from within the school system. The

farmers were tasked with the duty of conforming to the positions deemed appropriate by these institutions. For example, the woman who presented on farm-to-school initiatives spoke about the regulations and obstacles involved with supplying local schools with local food. Ultimately, the food service director of the school system controls these decisions, so the researcher urged farmers to understand how to best work with the director. They would need to find ways to appeal to the director, such as offering to make presentations at the school to show examples of local farmers, offering taste tests of their produce, or creating biographies with photographs for the schools—a strategy the researcher emphasized as part of the pilot program in the local school district, where children could view the biographies while waiting in line in the hallway of the school cafeteria. Her point was that farmers needed to brand themselves as the right kind of farmers and to make this branding available for use by schools and attractive to the director. The researcher also stressed the need for uniform, reliable, and timely food products branded with an ideal image of “good local food” and appropriately packaged to fit school lunch needs. Her slideshow supported her assertions by showing pictures of happy children eating wholesome food.

The USDA agents similarly offered detailed presentations on the specific regulations of different government programs that may be of interest to the new farmers, such as the program that partially funds farmers’ hoop houses. These presentations were offered in a communicative style vastly different from the conversations among farmers. The tone, language, and style were all drawn from the agents’ experiences as professionals. The information was directly communicated without story or interpretation. A vast amount of details were listed linearly to an audience that did not have any form of note-taking materials. Some of the MAC staff present took handouts from the USDA agents so that they could help the individual farmers later.

The tour highlighted the expectations placed on different groups’ communicative capacities. Those who use the dominant discourse rarely feel a need to actively interpret diverse linguistic frame-

works. By contrast, users of minority discourses are not only frequently expected to adapt to and utilize diverse sets of communicative capacities, but their skill in doing so is commonly overlooked. Agricultural knowledge is often taught using the dominant discourse, and diverse farmers who fail to accurately respond to or utilize the information are seen as having a lack of motivation, apathy, intellect, or awareness. What was unique about the Reality Tour was not necessarily the informational content, but the contextualization of knowledge and communicability of knowledge exchanges.

This tour was organized because the staff at MAC felt that young potential farmers were having difficulty learning how to begin their farming enterprises. Many of the member cooperatives that are part of MAC have discussed the need to recruit younger members, both to help sustain the cooperatives and to retain existing African American-owned land and rural communities.⁸ Throughout informal conversations before, during, and after the two-day tour, participants admitted that this program had been extremely useful in a way that other educational programs had not been. Participants felt more aware of the realities around initiating a farming enterprise. MAC evaluated their program as successful due to the fact that after the tour, two participants continued to work with the MAC staff in order to apply for a government-sponsored loan to purchase land and begin a cattle farm. The MAC staff is committed to repeating this tour for other new and beginning farmers in hopes of continuing to encourage them to take the first steps in initiating their agricultural enterprises.

Discussion and Conclusion

This paper used a framework of communicability to examine the process of knowledge transmission within agricultural education using case studies from the Federation. These examples offer four key points. First, they show the process of knowledge exchange using local communicative frameworks. In the examples discussed here, the shared communicative frameworks exist largely due to the

⁸ This information is based on discussions held at cooperative meetings and at the MAC annual meeting.

cultural, social, historic, and linguistic frameworks shared between educators and participants. Many educational events utilize farmer-to-farmer forms of knowledge transfer as well. However, even Federation staff who are not from the communities they serve spend considerable time on both a professional and personal level getting to know local communities and familiarizing themselves with local frameworks of communication. Federation educators also serve as “translators,” sharing knowledge from other sources within local communicability spheres. This issue of communicability in agricultural education is critical in disseminating information and knowledge and may become even more important as knowledge about climate change and adaptability need to be communicated to diverse populations. The ability of educators, or intermediaries, to communicate knowledge not only within local languages, but also within local communicative frameworks, is essential for knowledge transfer.

Second, these examples show that farmer-to-farmer forms of knowledge transfer are also useful for transmitting tacit and symbolic knowledge. Even at a cursory level of exposure, this type of knowledge familiarizes the senses with an awareness of some of the cues and factors essential in the process of farming. For new and beginning farmers, this type of familiarity can build confidence and awareness of how to take on new agricultural tasks. Witnessing the success of farmers holding similar identities can also provide symbolic knowledge about what it means to be a farmer, and who can occupy that position.

Third, the Federation’s efforts show that communicability spheres are crucial factors in considering justice in the agricultural system. There is an increasing awareness of ongoing injustices in the food system and the role education plays in providing a means to understand and address these injustices. However, there has also been growing criticism of food justice efforts that assume a subject position of whiteness (for instance, see Guthman, 2008). If education itself is transmitted through communicability spheres that exclude specific subjective identities, then education can continue to cause and exacerbate problems of injustice and exclusion. The Federation’s forms of

education create communicability spheres designed to support and empower African American farmers.

Fourth, another crucial component in considering how to make a fair and equitable agricultural system is understanding how knowledge is embedded within specific cultural, political, and ecological frameworks. The U.S. has had a history of promoting industrial agriculture, resulting in a “get big or get out” phenomenon as farms become more efficient and mechanized. But other values are at play within the agricultural system. Many of the Federation members expressed their desire to create small, sustainable farms that would provide supplemental income and serve as a means to protect their farming traditions, maintain their landholdings, and support their rural communities. Industrialized agricultural knowledge is not suited to helping support these values. The Federation helps train farmers to build agricultural enterprises that support their diverse values. They also serve as an intermediary organization by communicating the needs of their members to larger institutions, such as the U.S. Department of Agriculture, and helping their members find existing programs that may serve their needs and goals.

This research suggests two approaches to improving the inclusiveness, equity, and effectiveness of agricultural education. First, agricultural educators should consider the importance of communicability in shaping the process of knowledge transfer. Outside educators are unlikely to ever fully grasp or perfectly utilize local discourses, performances, and contextualization. Yet strategies may be enacted to help facilitate agricultural extension. Being aware of communicative competencies and putting effort toward learning others’ communicative patterns, including style, idioms, norms, and traditions, will help facilitate better engagement. Also, being aware of the subjective positions and identity roles that communication creates will help extension agents address assumptions and biases.

While this type of awareness would improve agricultural education, the complex aspects of communication cannot be overcome easily. Therefore, the second recommendation is the use of individuals or groups that can translate between

different communicative frameworks and that are also familiar with both expert-derived and local knowledge, institutions, and discourses (Eversole, 2012). Grassroots organizations play an important role in determining the needs of local communities and facilitating educational programs that fill the needs and goals of local farmers while engaging in local spheres of communicability. Even the Federation advocates for local educational programs within its own network. While it maintains centralized programs, it also recognizes and supports educational programs implemented by State Associations and member cooperatives.

The Federation has served to fill gaps in education for African American farmers by facilitating physical access to knowledge and resources, as well as by facilitating access to the communicability spheres through which mainstream agricultural knowledge is transmitted. The Federation also created its own educational programs in order to meet the unique needs of African American farmers. As African American farmers have become more visible to extension agencies and gained more access to mainstream educational resources, it may seem that the Federation's role is diminishing, but intermediary organizations such as the Federation are important beyond their ability to make physical connections. Because it focuses on the role of communicability, the Federation's role is still crucial for meeting the needs of African American farmers.

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Shepherding community engagement to strengthen the local food system in Northeast Iowa

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Submitted June 21, 2016 / Revised November 10, 2016, and January 24, 2017 /
Accepted January 25, 2017 / Published online March 7, 2017

Citation: Enderton, A. E., Bregendahl, C. M., & Topaloff, A. S. (2017). Shepherding community engagement to strengthen the local food system in Northeast Iowa. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 85–100. <http://dx.doi.org/10.5304/jafscd.2017.072.011>

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Abstract

In this case study, we describe how a multistakeholder collaboration in Northeast Iowa is using a type of systems leadership that we call “shepherding” in order to engage a six-county regional community in creating food systems change. Shepherding is an intentional process of fostering trust, connecting food systems actors, tracking

readiness, and making strategic requests to help interested community members define active food system roles for themselves. In Northeast Iowa, “shepherds” usually have been paid staff of the Northeast Iowa Food and Fitness Initiative partner organizations. Some literature characterizes leadership by paid staff as an asset, but such leadership also can foster more limited community engagement and empowerment. We examine some successes and challenges of engaging a regional community using the strengths of paid staff. We conclude that paid staff can offer benefits in terms of connecting local food system efforts by aligning community stakeholder efforts with formalized work efforts of organizations represented by paid staff, which contributes to the compounded impacts of the work. At the same time, relying on paid staff may reinforce existing patterns and power structures.

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Disclosure

Funding for this article was provided by the W. K. Kellogg Foundation.

Keywords

Community Engagement; Collective Impact; Local Food; Governance

Introduction and Literature Review

Proponents of local food systems claim that citizen involvement in food systems contributes to better human health, a cleaner environment, stronger local economies, and more just and equitable communities (Feenstra, 1997; Lyson, 2004). To achieve these outcomes, many local food champions focus on one area, such as economic development or food access, but the literature rarely characterizes organizations that address more than one area (Blay-Palmer et al., 2013). A proceedings report from an evaluator meeting of national health funders¹ in 2015 concluded that multicomponent, multisector, multisetting, and multilevel interventions have the best record for achieving successful outcomes (“Evaluating obesity prevention efforts,” 2015). This suggests that approaches that involve diverse community-based organizations are more likely to be effective than those pursued by a single organization. The more diverse approach may be able to approach issues using multiple strategies from different areas of work and reinforce locally relevant culture from the unique perspective of each organization. We believe this occurs because organizations approaching local food systems development from distinct angles and with differing, yet complementary, goals can effectively create larger systems changes (Blay-Palmer et al., 2013; Wright, Score, & Conner, 2007). One such multi-pronged effort is the focus of this paper.

From the beginning, the Northeast Iowa Food and Fitness Initiative (NEIFFI) has drawn upon the frameworks of community capital (Flora & Flora, 2004), asset-based community development (Kretzmann & McKnight, 1993), and appreciative inquiry (Cooperrider & Whitney, 2005) to guide its approach to community development. When Kania and Kramer (2011) put forth the concept of “collective impact,” NEIFFI leaders began to adopt the language of collective impact because it aligned with what they were already doing. In this model, cross-sector partners work together toward a

common agenda with the support of a backbone organization. The partners engage in mutually reinforcing activities and continuous communication while using a shared measurement system to gauge progress. While community engagement is not explicitly part of the collective impact model, it is consistent with making the approach it frames effective (Raderstrong & Boyea-Robinson, 2016).

Community Engagement and Program Governance

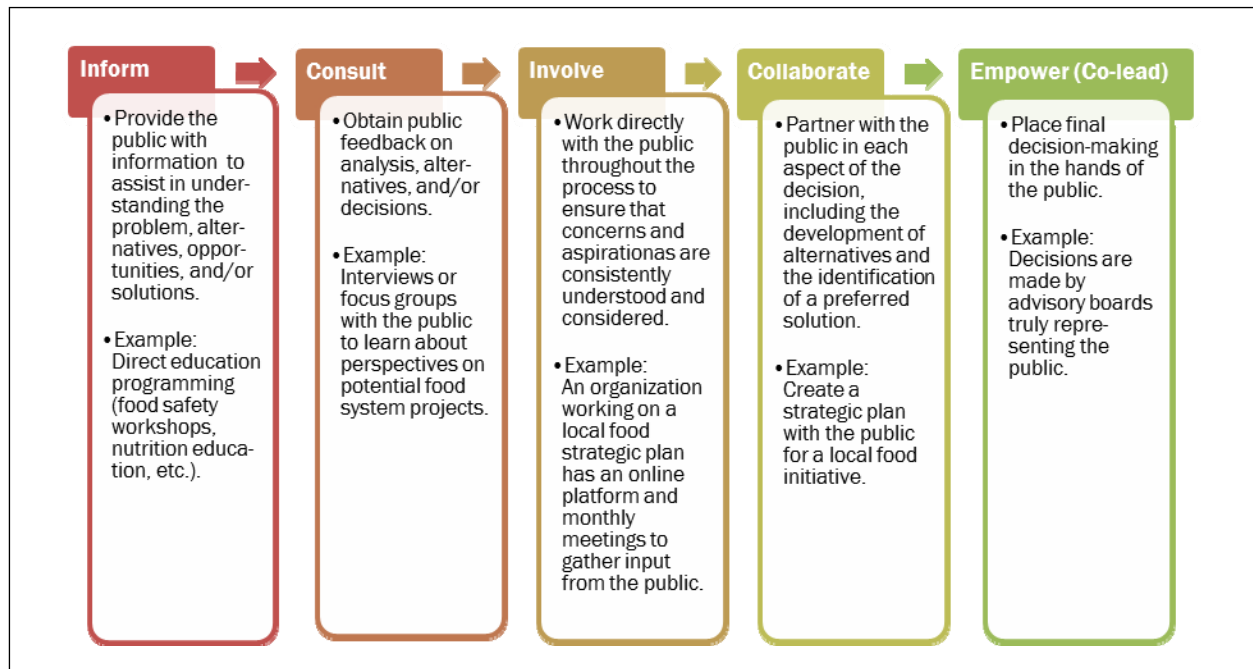
A variety of terms can define community efforts to elicit social change, including asset-based community development, participatory action research, local engagement, and public participation. We have chosen to use the term “community engagement” in this article, as the term is commonly used in the broader food and fitness initiative, but we are cognizant of the fact that definitions and perceptions of community engagement differ. Therefore one of our main challenges entering this case study was to determine how NEIFFI leaders define community engagement, compared with how the term is defined in the literature.

One useful and widely accepted approach to codifying the meaning of community engagement is the Public Participation Spectrum developed by the International Association of Public Participation (2014). The spectrum outlines five levels of strategies that leaders and partners can take in a community initiative (see Figure 1). In order from the lowest to the highest level of public impact on decisions, the five levels are Inform, Consult, Involve, Collaborate, and Empower. Each level implies distinct goals for seeking public involvement and sets forth particular types of outcomes for local leaders and partners. The framework takes into account different levels of public participation that may be appropriate depending on the stated goal or goals.

Many philanthropic leaders in the food movement, such as the W. K. Kellogg Foundation, the Robert Wood Johnson Foundation, and Policy-Link, define community engagement as empowerment, meaning that all interested community members have the opportunity to influence actions or make decisions. The emerging literature on local food systems governance emphasizes the impor-

¹ Participating health funders included the W.K. Kellogg Foundation, the Robert Wood Johnson Foundation, Nemours, the California Endowment, and Kaiser Permanente. Evaluators from the Centers for Disease Control also were present.

Figure 1. The Public Participation Spectrum, Followed by an Example of How Each Level Might Occur in Food Systems Work



Source: Adapted from the International Association of Public Participation's Public Participation Spectrum (2014).

tance of democratic governance, social justice, and empowerment of local people in alternative agri-food systems (Allen, 2010; Anderson, McDonald, Gardiner, & McLachlan, 2014). Community engagement literature supports this position, suggesting community engagement efforts that occur higher on the spectrum (Collaborate and Empower) are more desirable (Bagdonis, Hinrichs, & Schafft, 2009; Hassanein, 2003; Luluquisen & Pettis, 2014; Perrett & Jackson, 2015). While the Public Participation Spectrum typology includes several levels of participation, the lower levels of participation such as Inform, Consult, and Involve are less included in community engagement definitions in this literature.²

In contrast to food system governance conceptions, collective impact initiatives often are led by professionals working for stakeholder organizations, sometimes referred to as “grasstops” (Raderstrong & Boyea-Robinson, 2016) rather than the “grassroots” (Himmelman, 2001; Kania,

Hanleybrown, & Spansky Juster, 2014). This literature provides examples of how reliance on professionals and their organizations in any type of community change initiative can ignore or undermine grassroots leadership. Ultimately, it may prevent an initiative from effectively building on assets available in the community, which suggests that the role of professionals in these efforts is contentious (Kretzmann & McKnight, 1993, quoted in Barnes & Schmitz, 2016, p. 36; Wilson, 2006). We have observed that paid professionals often have the time, formal legitimacy, and organizational support to act as primary decision makers, and therefore often take on leadership roles in these efforts. Raderstrong & Boyea-Robinson (2016) modified the Public Participation Spectrum to include the roles of both grasstops and grassroots engagement by renaming the highest level, “Empower,” as “Co-lead,” explaining that “Empower” implies that community members (grassroots) are powerless unless the leaders (grasstops) give them power. “Co-lead” implies a place for both grasstops and grassroots leadership in collective impact initiatives.

² In Cooperative Extension circles, these levels often are described and qualified as Education and Outreach.

Only a few empirical studies are currently covered in the literature on the governance of food value chains and of organizational structures associated with local food systems. This area of study is quite new and theoretical, and has yet to generate much empirical research (Allen, 2010; Clancy, 2014; Erwin, 2016). Empirical studies of local food system governance have focused on municipal land use policy (Beckie, Hanson, & Schrader, 2013), civic food networks (Anderson et al., 2014), CSAs (Moore, McCarthy, Byrne, & Ward, 2014), and farmers markets (Gantla & Lev, 2015). Two authors delve deeply into the challenges of achieving democratic governance in local food systems due to irreconcilable power differences (Anderson et al., 2014; Beckie et al., 2013). Beckie et al. (2013), in their study of the year-long process in Edmonton, Alberta to create a municipal development plan that preserved prime agricultural land, concluded that “inclusivity and dialogue do not guarantee democratic outcomes” (p. 26). In this case, final decision-making power was in the hands of elected officials who put the interests of businesses and developers above those expressed by citizens. Similarly, Anderson et al. (2014) studied a farmer-led civic food network that formed with the expectation that local food systems may offer opportunities for democratic governance valuing consensus, and concluded that civic governance mechanisms, such as cooperation and participation, are just as likely to lead to conflict as consensus.

To this literature, we add a unique perspective on food system governance from our study of a multistakeholder, community-based, local food initiative in a six-county area the size of Connecticut. In grappling with the challenges of achieving democratic governance in local food systems, we introduce a concept of systems leadership that we have observed and fostered over the years as evaluators for the Northeast Iowa Food and Fitness Initiative. We call this concept “shepherding.” Although shepherding can mean guiding people in the direction the shepherd chooses, in this context effective shepherds do not choose the agenda, but rather help others in the community to choose what is important and then decide in which direction they want to go. This can be somewhat

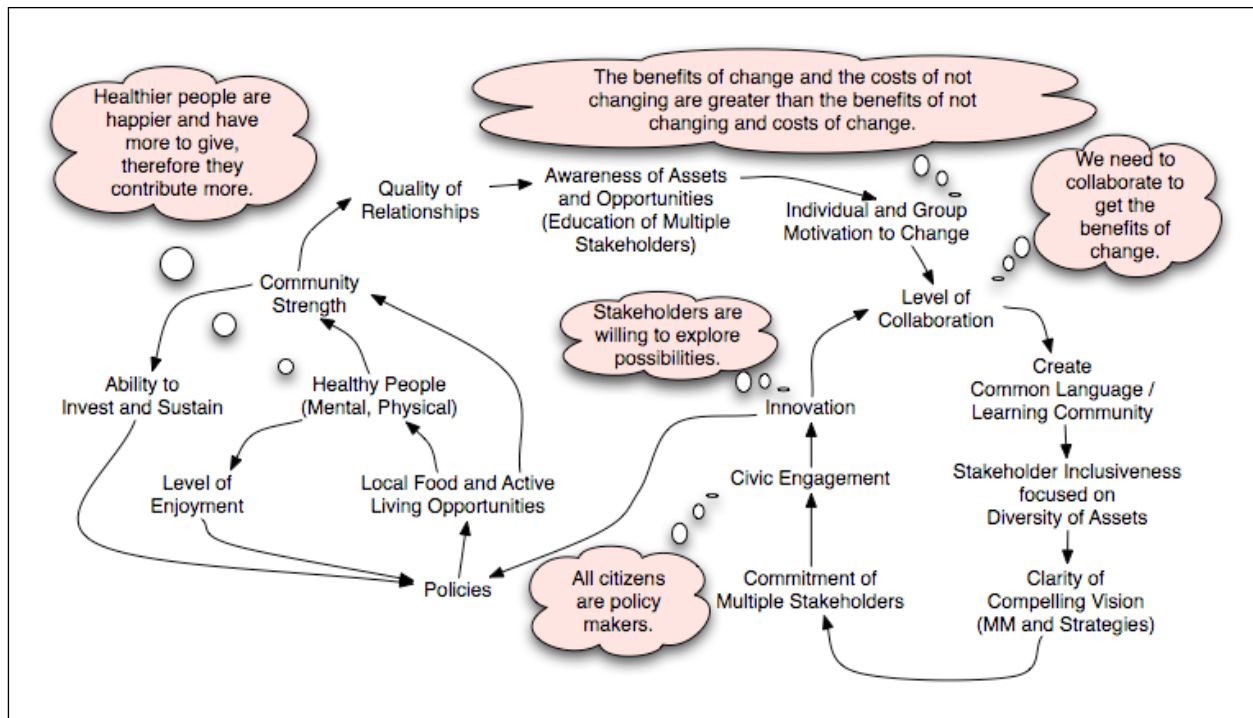
tricky, since in any locale there often are conflicting views on goals and strategies for achieving these goals. Shepherds, therefore, are not merely neutral participants who support what actors in a local setting want to do. Shepherds also identify and help to manage delicate relational politics, share information, and contribute to articulating conceptual frameworks. They participate in those discussions, public and private, that help to clarify shared definitions of the situation and feasible strategies. Shepherds use their position and power in the community to act in ways consistent with the goals and chosen actions of local participants. Shepherding thus is critical to social justice-based and community-based food systems work, and involves deep listening, network building, strategic guiding, and nudging and/or persuasion to help coalition members step into or expand their work. In this study, we describe the successes and challenges associated with facilitating community action for systems change through employing the resources, power, and skills of paid staff (Emery & Bregendahl, 2014).

The Northeast Iowa Food and Fitness Initiative

In 2006, the farmer-based Northeast Iowa Food and Farm (NIFF) Coalition organization formed in five Northeast Iowa counties (Allamakee, Clayton, Fayette, Howard, and Winneshiek). It was the first of several regionally based local food coalitions in Iowa funded by the Leopold Center for Sustainable Agriculture. Twelve such groups today continue to work as part of a statewide network, the Regional Food Systems Working Group (RFSWG), which is active in 78 of Iowa’s 99 counties. In 2007, shortly after the creation of the NIFF Coalition, the W. K. Kellogg Foundation (WKKF) launched its Food and Fitness Initiative (FFI), initially implemented at nine locations around the country. The WKKF selected Northeast Iowa for the FFI because of the NIFF Coalition’s efforts to support more democratic forms of food system development in an area dominated by industrial agricultural systems. Thus the Northeast Iowa Food and Fitness Initiative (NEIFFI) was born. NEIFFI is in its eighth year of implementation in 2016, but this is the first year without funding from the WKKF Food and

Figure 2. Northeast Iowa Food and Fitness Initiative Theory of Change

This figure illustrates how participants in NEIFFI understand changes in food and active living systems in response to collaboration and civic engagement.



Source: Iowa Food and Fitness, n.d., p. 5.

Fitness Initiative. NEIFFI has also secured other sources of funding throughout the years to support its work; together with WKCF funding, investments in NEIFFI over a nine-year period have totaled US\$5 million.

NEIFFI consists of four core partners, each heading one of NEIFFI's strategy areas: Luther College leads school wellness efforts, the Upper Explorerland Regional Planning Commission leads "Safe Routes to School" and active living, Northeast Iowa Community College supports early childhood coordination, and Iowa State University Extension and Outreach (ISUEO) Region 4 leads local food system development. The four core partners have engaged the active participation of more than 700 unique individuals in decision-making and implementing local foods and active living activities and programs over the life of the project.³

³ This figure does not include those individuals who were reached, but not actively engaged over time.

The theory of change underlying NEIFFI's strategy is the proposition that strong and trusting collaborative relationships within a community create the conditions for systems change, leading to healthy, empowered citizens. The conceptual model illustrated in Figure 2 emphasizes community assets as opposed to deficits, commitment to creating a common language and vision, collaboration among multiple stakeholders across different sectors, and civic engagement.

The way in which paid staff have shepherded local food system partners in Northeast Iowa has resulted in stronger support for and use of local foods in a variety of sectors. Paid staff intentionally aligned the goals and work of NEIFFI with the formal work of the host organization(s) or institution(s) they represented in order to (a) reinforce NEIFFI activities with additional financial and administrative support from host institutions, (b) achieve multiple goals with single strokes within the community, (c) compound

results of the work, and (d) effectively institutionalize community goals within formal organizations. For nearly a decade, we (the authors, in partnership with NEIFFI work group leaders) have tracked significant outcomes of NEIFFI's work through an ongoing evaluation. The evaluation has focused primarily on changes in food systems in Northeast Iowa. Unlike typical program evaluation, therefore, it measures changes in the food system to which NEIFFI has contributed, but which cannot be attributed only to NEIFFI. Below is a list of highlighted outcomes related to NEIFFI food systems work from 2009 to 2016 in Northeast Iowa.

Financial impacts

- Seventy-six farmers and/or local food enterprises began operations.
- One hundred twenty-two new jobs (44 full-time) were created in the local food arena, including on- and off-farm jobs.
- The nonprofit Iowa Food Hub (IFH), established in 2013, purchased US\$508,439 in local foods from farmers or farmer groups in 2015.
- Twenty-four venues implemented programs or infrastructure investments to increase affordability and accessibility of local food, such as farmers market coupon programs for food pantry clients, a new food-box program in a low-income community in Northeast Iowa, and assistance for serving locally raised meats in schools.

School outcomes

- Comprehensive farm to school programs were started and maintained in 18 school districts that enrolled 11,589 students. These districts had an aggregated free and reduced school lunch rate of 40%.
- Six schools or school districts have achieved the bronze level or higher of the Healthier U.S. Schools Challenge: Healthier Lunchroom Award.
- Seven school districts updated wellness policies to promote local foods and physical activity.

Large-scale local food purchasing

- Over the 10 years of the project, regional institutional and intermediate market buyers purchased a total of US\$8.5 million worth of local foods. These purchases have increased steadily since 2005, when ISUEO Region 4 first began tracking the numbers.
- Key partner Luther College locally sourced 35% of food served on campus in 2013.
- Purchases of local foods by 17 community school districts and one parochial school increased from US\$12,874 in 2009–10 to US\$63,400 in 2015–16, as shown in Figure 3. The increase in local food purchases from 2013–14 to 2014–15 was due largely to two factors: (1) NEIFFI and four school districts worked together to create a seasonal cycle menu incorporating local foods, and participating schools committed to doubling their purchases of local foods, and (2) buyers were able to order local foods more easily through the newly established Iowa Food Hub.

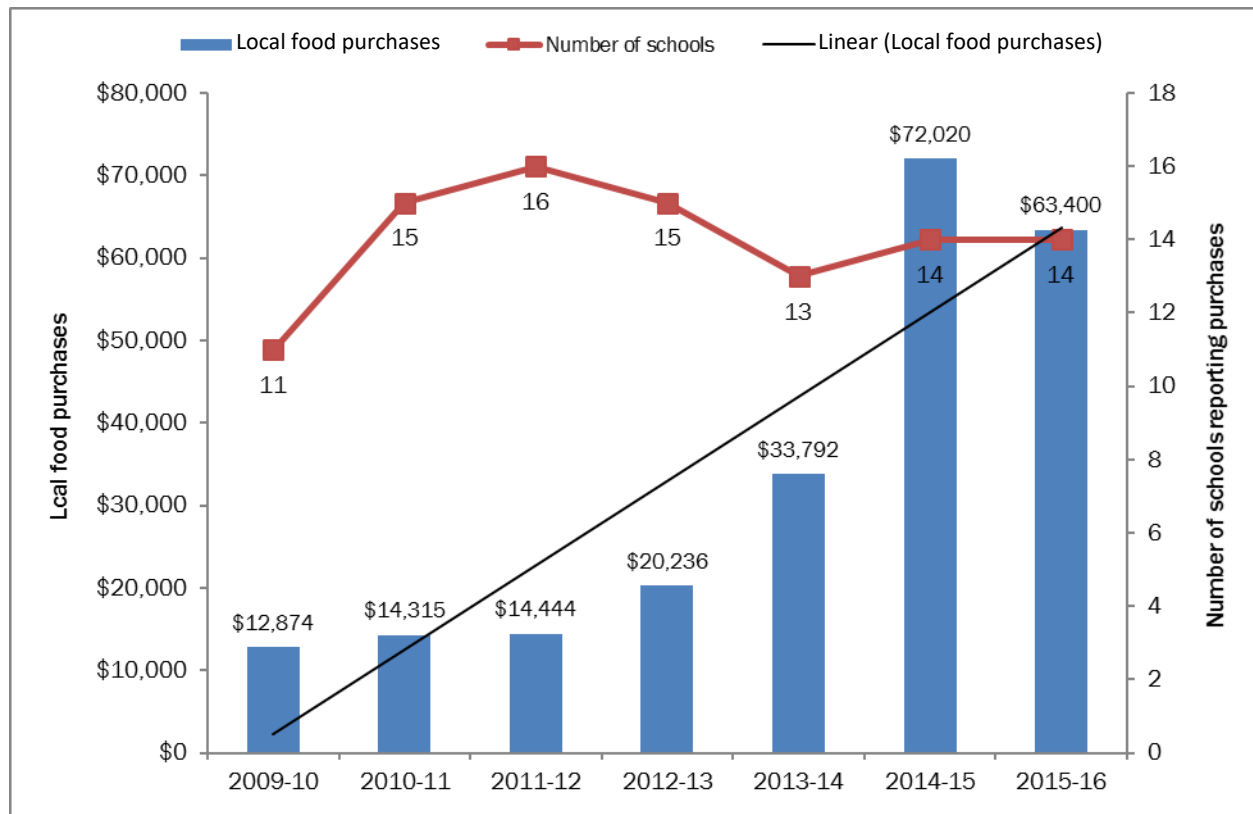
Methods

Our analysis was based on grounded theory, an inductive method in which theory emerges from the data, rather than using data to test a preconceived theory (Glaser & Strauss, 1967). The question we posed as we looked at our first dataset was a simple one: “What do these data say about community engagement?”

We—the evaluators—have kept notes from in-depth, reflective phone calls with NEIFFI leaders as well as transcripts of interviews conducted as part of evaluation over the life of the initiative. These notes date back to 2007, with over 150 such documents in our files. We coded these documents to discover themes regarding community engagement using NVivo software, a software package used for analyzing and organizing qualitative data and coding (“What is NVivo?”, n.d.). We identified common themes as they relate to notions of community engagement.

The influential role of paid staff in community engagement emerged as a prominent theme during

Figure 3. Northeast Iowa School Purchases of Local Foods Showing the Increase from the 2009-2010 School Year to the 2015-2016 School Year (US\$)



our initial analysis. This motivated us to conduct additional interviews to gain a better understanding of this topic, along with further exploring our original question as to how NEIFFI leaders and participants understand community engagement. The paid staff members at NEIFFI include work group leaders, most of whom are from Northeast Iowa and have worked for NEIFFI for years. The group also covers NEIFFI resource contacts (AmeriCorps and FoodCorps Service members who work in schools to support wellness committees and provide nutrition education and related activities). Salaries for these staff members come from a combination of WKCF and/or other grants and their host institution or employer.

We asked NEIFFI work group leaders to identify partners they believed could share insights on community engagement and the role of paid staff. We selected 19 individuals from the list, and 17 agreed to be interviewed. Interviews were

semistructured, using a common interview template, screened initially by NEIFFI work group leaders. These interviews were audio-recorded and transcribed by a third party. We coded the transcripts using NVivo software.

Because we collected data originally for the purpose of evaluation rather than to add to generalizable knowledge, our project did not fit within the federal definition of research. Thus, we were not required to seek Institutional Review Board approval. According to Iowa State University's Institutional Review Board (IRB), "intent to publish or otherwise disseminate study results...does not *necessarily* mean a project meets the federal definition of research...The important factor is whether a project is *designed* to develop or contribute to generalizable knowledge" (IRB, 2011, p. 4, emphasis in original). All authors have participated in human subjects training, however, and in this project adhered to human subjects protocols

by protecting participant confidentiality, informing them of their rights prior to interviews, and obtaining their verbal consent to participate.

Findings and Discussion

Four themes emerged from the second set of interviews, from topics that several interviewees emphasized or mentioned. Quotations shared below from interviews help summarize or illustrate the themes and represent thoughts shared by a number of interviewees.

Theme 1: Definitions of Community Engagement

NEIFFI interviewees overwhelmingly agreed that community engagement is essential for creating systems change. However, they offered a variety of definitions of community engagement, which were scattered along the Public Participation Spectrum described above. The most common definition, used by slightly more than half the interviewees, was sharing information or resources with community members, thus manifesting their notion of community engagement that falls on the lowest end of the Spectrum (“Inform,” Figure 1). Another common definition of community engagement centered on partners sharing a common vision for the community, with six of the 17 defining it in part using this phrase. This second definition reflects a higher level of public impact on decision-making. (Although sharing or creating a common vision is not a part of the Public Participation Spectrum, it does speak to the “Collaborate” level, the second-highest Spectrum level.) Only one interviewee described community engagement in terms of empowerment, though the community change model in Figure 2 obliquely refers to

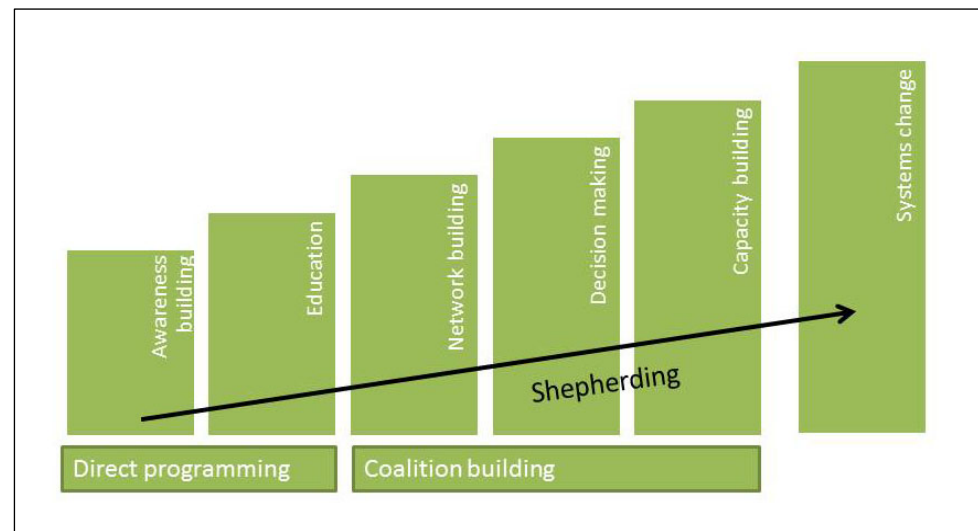
empowerment, in the bubbles, stating that “all citizens are policy makers” and “healthier people have more to give.”

The diversity of community-engagement definitions demonstrates that NEIFFI is reaching people on a variety of levels depending on their audience. For example, interviewees working in schools and early childhood settings tended to define community engagement as sharing information or resources in the context of informing parents about “new” work. Those interviewees working with school staff who have been more exposed to or experienced with NEIFFI or other organizations were more likely to define it in terms of working toward a shared vision.

In Figure 4, we present a visualization of the elements that interviewees described when defining community engagement, with supplementation for context and comparison based on observational data collected from the broader statewide local food system network (the Iowa Regional Food Systems Working Group). Most of the 12 local food groups in Iowa reported using two common strategies to develop local food systems in their area: (1) direct programming (Inform, Consult, and Involve, according to the Public Participation Spectrum), and (2) coalition building (the Collaborate level of the Spectrum). The difference between direct programming and coalition building lies in

Figure 4. Evolution of Community Engagement for Systems Change

Shepherding helps direct programming and coalition building toward systems change.



the direction of information sharing as well as the type of information shared. Direct programming relies on disseminating publicly available information, whereas coalition building relies on sharing implicit and tacit up-to-date information. The latter involves information, often exchanged informally among peers and trusted partners who have never recorded their wisdom, making it unavailable from any other source (Pirog, R., personal communication, 2010). Effective coalition building also includes strategic-planning meetings and joint problem solving, rather than merely reporting results (Kania & Kramer, 2011).

Shepherding, in Figure 4, ties together all the community-engagement tactics by helping those initially engaged in direct programming to find their role in the coalition and then to implement changes in their sphere of influence.

To illustrate, we share the example of how NEIFFI worked with local food service directors to develop a seasonal cycle menu. In the early phases of the initiative, NEIFFI regularly hosted workshops for food service directors (FSDs) and staff to build the skills needed to incorporate local foods into school menus (an example of Education in Figure 4). One such training occurred during spring 2012, a few months before the Healthy Hunger-Free Kids Act instituted new school food standards. Following the training, several FSDs were conversing about the challenges they faced in revamping their menus to meet the new regulations. One suggested they work together to create new menus. NEIFFI staff overheard the conversation, which prompted the idea of creating a common menu incorporating local foods. Following the conversation, NEIFFI staff applied for and received funding from the Leopold Center for Sustainable Agriculture to create a seasonal, cycle menu, with six FSDs committing to collaborate (the number later decreased to four). Through a connection between NEIFFI staff and a local food initiative in a neighboring region, the FSDs and NEIFFI staff hired a former FSD with extensive consulting experience with incorporating local food into menus. The consultant and two NEIFFI staff members met monthly with participating FSDs to create a five-week menu that met the new federal regulations and *could* use locally grown foods.

Participating FSDs contributed their favorite recipes and tested new ones, brought their feedback to the monthly meetings, and worked with the consultant to adjust the recipes and menus (examples of Decision Making in Figure 4). The consultant also visited the four school district kitchens on a regular basis to receive feedback on the menu from the entire food service staff. Initially, NEIFFI staff wanted to begin incorporating local foods into the menu immediately, but FSDs were reluctant to do so, wanting to create a workable menu prior to adding local food to the mix. Therefore, for the first year the group focused exclusively on creating a menu that pleased FSDs, kitchen staff, and kids. The FSD group then began adding local foods in the 2013–14 school year, doubling local food purchases in that year and again in the 2014–15 school year (showing how development of the seasonal cycle menu led to Systems Change, the highest stage in Figure 4).

An explicit focus on empowerment is largely absent from Figure 4. While other Food and Fitness sites nationally—all operating in urban areas—have embraced the idea of empowerment to lead their community engagement work, many of them are led by experienced social justice organizations with strong connections to existing grassroots organizations (Luluquisen & Pettis, 2014; Sands, Bankert, Rataj, Maitin, & Sostre, 2014). We note that such organizations are generally lacking in rural Northeast Iowa, as the grassroots are not as well organized and self-identified, and thus less able to take action. Nevertheless, NEIFFI has demonstrated success in organizing and empowering two grassroots audiences: local food farmers (organized through the NIFF Coalition) and youth (organized through FFI Youth 4-H Clubs in schools). For example, one young person explained how participating in FEEST (an FFI/4-H youth program focused on food and empowerment) provided him with skills and practice to speak up when he wants something changed at his school or in his community. As a result, he and a few friends planned to ask the school board to repeal a policy that required freshman students to take a study hall: “We’re going to go up and talk to the school board and see

if we can do something. Before I would have said, 'I hope someone else will do it and I won't have to worry about embarrassing myself.'"

Other than these two audiences, NEIFFI has been more successful in engaging and empowering partner organizations within the region, such as preschools, Head Start organizations, schools, and nonprofits, which supports the idea that collective impact initiatives may be more successful if co-led by the grasstops and the grassroots, sharing power rather than only empowering the grassroots (Raderstrong & Boyea-Robinson, 2016).

Theme 2: Balancing Programming with Coalition Building

Although it seems low on the list of community engagement priorities, interviewees explained that outreach through direct programming is essential as an entry point for inviting people to engage in work and creating an inclusive environment. However, direct programming alone is insufficient for keeping them engaged or redistributing power. As one interviewee explained:

There's always...going to be that community awareness team and you're always going to be out there with at least the baseline message of: This is Food and Fitness; this is what we do and this is what we're trying to achieve. But, how do you balance that with...looking at the strategic groups where you can start to apply pressure to...change.

Local food system "shepherds" can help to guide collective, coordinated action that leads to systems change. Direct education and coalition-building strategies without shepherding can lead to passivity and ineffectiveness. Based on our observations of how leaders in the NEIFFI have combined direct programming and coalition building toward systems change, we added shepherding to Figure 4 as the essential factor that ties everything together and leads to systems change. Through our work as evaluators of the RFSWG, we have observed that some local food leaders simply bring together large groups of people, hoping that this will automatically lead to coordinated action. Sometimes coordinated action does happen, but

generally shepherding is necessary to achieve systems change. One interviewee recognized the shortcomings of direct programming and networking in eliciting systems change, and the importance of shepherding:

[Regarding] some of the groups [in our local network]—how can we actually push them further [in their own work in collaboration with us] instead of just creating awareness and hoping that they'll jump on the bandwagon with us?

Theme 3: Engaging Ready Partners

Interviewees described themselves as engaging more strongly with specific partners as the initiative has evolved through different cycles of local food work. NEIFFI interviewees cited numerous examples:

- **Schools.** NEIFFI has collaborated with 18 school districts in many different ways.⁴ In 2014, initiative leaders made the decision to place NEIFFI "Resource Contacts" or RCs only in schools that chose to contribute to the Resource Contact's stipend. Since then, 10 schools on average have contributed funds to have an RC each school year.
- **Farmers.** After NEIFFI formed, the NIFF Coalition continued to learn through bringing various actors together, with monthly meetings that connected farmers and farm service providers, and brought in speakers to talk about topics such as food aggregation and food safety. NIFF Coalition attendance eventually started to drop, however, for reasons unknown to us. The group that remained chose to discontinue regular meetings. At about the same time, in 2011, ISU Extension and Outreach

⁴ Schools have been engaged through encouraging school administrators to attend special FFI meetings designed for them, creating youth teams, educating school food service staff on preparing vegetables and meals from scratch, working with school wellness teams, funding schools in order to increase healthy food access and physical activity, providing nutrition and local foods education to PreK-12 students, supporting farm to school activities, helping to fund, establish, and maintain school gardens, etc.

Region 4 secured funds to hire a value-chain coordinator to address creating a system to aggregate and distribute food from small and midsize farms in Northeast Iowa to larger buyers. The coordinator began work by holding strategic planning meetings with farmers and food buyers, which he deemed unsuccessful because no one committed to action. As a result, the coordinator worked with a small group of farmers and grocers, rather than the entire NIFF Coalition, to pilot various strategies for food aggregation and distribution. These pilot programs eventually led to the creation of the Iowa Food Hub (IFH).

To create system change, NEIFFI leaders eventually concluded that engaging partners who demonstrate readiness to implement change yields more, and more rapid, progress than engaging a broad base of partners with varying degrees of interest, time, and resources. This has meant leaving some partners behind, at least for a time. One interviewee struggled with deciding how to invest in “ready” partners:

You’ve got these people who are siphoning time and energy who aren’t going to go any further. You almost have to just let them go so that you can focus time and energy on going deeper with those who are ready. And that’s a hard decision because...we want to help everybody...We know the system has to change but, at the same time, [shouldn’t] you nurture those innovators so that they can be the leaders for system change?

NEIFFI also has had partners who engage for a time and then disconnect once they have achieved their goal. For example, one of the FSDs who met monthly with a technical-assistance provider to create a new school menu described those meetings fondly, but expressed relief they had ended:

It was nice to have the other food service directors in one place. That’s where I learned everything...I miss that because we

don’t get together any more...We do see each other, but not monthly like we used to. That was kind of nice, you know?...It’s good and it’s bad that we don’t meet. I miss the communication, but everybody is busy and everybody has their own extra stuff that they do.

Shepherds can keep such people in mind, and invite them to reengage when new opportunities arise.

Theme 4: The Role of Paid Staff in Community Engagement

Paid NEIFFI staff have played an essential role in building the local food system in Northeast Iowa. Interviewees were in general agreement that NEIFFI could not have achieved as much if it had relied on volunteers alone. One staff member of an early childhood partner group described how the Farm to Preschool program would never have taken off in Head Start and other early child-care settings without the paid leadership and time investment of NEIFFI’s early childhood coordinator.

Similarly, another interviewee explained how the IFH would not have started without the work of the value chain coordinator and other Extension staff:

I think it was [Extension’s] skill set and their talents and their understanding of what the potential was and their vision of what they had identified that allowed [the development of the Iowa Food Hub]. I think their dedication and their passion for what the potential outcomes [created a resilient team]. [The value chain coordinator] would drive anywhere in his own personal car and load up boxes...For somebody who didn’t even own that business, he went above and beyond.

Despite agreement that paid staff are critical to NEIFFI, the initiative has struggled with defining appropriate roles for them. An example of the difficulty is the NEIFFI role in the IFH and the NEIFFI Regional Leadership Council.

NEIFFI leaders formed the Iowa Food Hub board, with seven members consisting of small-scale farmers and community members, and the separate Regional Leadership Council, a 23-member council that meets quarterly to guide NEIFFI. These two groups were intended to ensure that community members had opportunities to influence the direction of IFH and NEIFFI. The governance structures of these two organizations were modeled on those of existing rural organizations—such as farmer cooperatives, gas cooperatives, and telephone cooperatives—which are commonly governed by boards. FFI leaders sought for these boards a combination of people already involved with the IFH or NEIFFI and voices who were not currently represented. They did so in hopes that being part of a formal decision-making body would increase the breadth of engagement and diversify leadership. However, neither group has participated significantly in local food system decision-making, despite efforts by paid NEIFFI staff to build their capacity to do so. NEIFFI staff intended to reduce their own leadership role by creating the IFH Board and the Regional Leadership Council, but transferring leadership has not been an easy process. Community members have limited time to dedicate to NEIFFI work, which is another challenge. One NEIFFI staff member described the situation, using working with the IFH Board as an example of the problem:

It was this dance between Extension playing a leading role and trying to [build community] capacity [to lead], but you're trying to transfer the ownership and the capacity to a group of community members that are already stretched thin, going to too many meetings, and...not looking for one more. But...they need a piece of skin in the game. This no longer can be our show; it can't be Extension's show. But that transfer of ownership with capacity into the community is not a short journey.

Interviewees indicated that high levels of trust in NEIFFI staff by community members were

limiting the motivation of community members to take a lead in making decisions. Many community members trust paid staff to make decisions, rather than feeling a need to articulate their own views. Furthermore, they may not have the time to be involved in further decision making, or do not have the time or energy to volunteer. A farmer on the IFH Board described the situation:

Things have grown so fast that it is hard to keep up, to be somebody who really does influence the direction. But, I also think that that's not really the role of a board member. It isn't really to direct the organization. That's the employees. That's the people that you put in charge and then as a board you meet to have that interchange and to offer ideas and opinions.

Others stated that they felt work group leaders, who are paid NEIFFI staff, were better qualified to make decisions, as expressed by one member of the Regional Leadership Council:

I essentially went to the [Regional Leadership Council] meetings to hear about what was going on. We got to look at their reports and their grants and budget and everything but I wasn't deciding...I felt like the [work group leaders] did that. I mean, they knew way more about it than we did.

Finally, Extension's role in founding IFH has been contentious. Iowa State University Extension and Outreach started IFH with the goal of increasing access to healthy local foods among low-income families, but has received sharp criticism regarding the part it has played. Some critics believe that Extension, as a publicly funded institution, should not provide a competitive economic advantage to participating farmers over nonparticipating farmers and private local-food distribution businesses. Extension staff responded to these criticisms by clarifying Extension's role with IFH. Extension primarily partners with IFH in order to offer technical assistance, conduct research, and pilot programs from which others can learn, and

administer grants for research and food access programs, which the food hub could not do without support from Extension. Despite this clarification, Region 4 Extension continues to receive criticism from within and outside the region, as some believe that IFH is distorting the market by paying some of its operational costs with grants—most of which have been publicly funded—giving it an advantage over for-profit companies. At the same time, IFH is addressing a lack of access to healthy food by delivering healthful local foods to schools and subsidizing food deliveries in low-income communities with profits from sales to more affluent customers. Thus, Extension is assisting an organization that is addressing a market failure. In addition, there is a push for Extension, both in Iowa and nationally, to step out of its traditional role of direct programming into new frontiers of coalition building and systems change (Dunning et al., 2012; Raison, 2010). Resistance to efforts by a public institution to address inequity in the food system by reducing barriers to healthy food access illustrates one of the continuing challenges the Northeast Iowa group faces. More effective shepherding is warranted in this situation to foster trust and perhaps support among critics.

Conclusions and Recommendations

The experience of the Northeast Iowa Food and Fitness Initiative has yielded important lessons on changing food systems through community-based approaches. First, community engagement can happen at a variety of levels, ranging from informing people in general to including a wide range of people in collaborative decision-making and implementation. That said, given the needs of many communities, even the lowest levels of community engagement (which include informing and educating) could easily and quickly consume all the limited resources of a coalition. Thus the process of making aligned policy, systems, and environmental changes that are consistent with the goals of the broader food system effort can likely be improved by identifying organizations and partners who can implement change and invest their own time and resources.

Second, we learned that having paid staff filling

the role of shepherd offers great benefits in terms of connecting local food system efforts with similar efforts of existing organizations and institutions within the community, contributing to compounded impacts of the work. However, strongly connecting grassroots efforts with grassroots organizations may reinforce existing patterns and power structures, especially in places like Northeast Iowa, where the grassroots base is neither organized nor energized.

The work of identifying and engaging “ready” partners raises the specter of “unready” partners and power dynamics. So-called “unready” partners may include people and organizations who do not have the interest, time, or resources to get involved. They also may include members of marginalized, resource-poor groups, those traditionally excluded from decision-making processes. Indeed, this has been a perennial challenge for NEIFFI. It was recognized early in the planning stages when NEIFFI leaders tried unsuccessfully to engage Northeast Iowa’s few ethnic minority communities⁵ (Erbstein, 2013), who have a history of financial, cultural, social, and political disenfranchisement and distrust in formal institutions. Viewed from another perspective, it may be that NEIFFI leaders were not “ready” to engage uninvolved populations, because these leaders lacked the long-term capacity, social capital, cultural acuity, and/or sociopolitical resources to engage marginalized populations and catalyze power redistribution. The difficulty of changing power structures in Northeast Iowa, where the adult population is relatively racially homogeneous (97% white), speaks to the difficulty of improving equity in places where the populations are significantly more racially heterogeneous.

Finally, perceptions by other farmers from

⁵ A case in point is the community of Postville, the site of an Immigration and Customs Enforcement Agency raid of a kosher slaughterhouse and packing plant in 2008. ICE agents arrested nearly 400 immigrant workers of South and Central American indigenous descent. Several plant employees and managers were indicted on charges of child labor violations, harboring undocumented workers, and aggravated identity theft. Although the owners were never charged, the plant’s chief executive was convicted of bank fraud and sentenced to 27 years in prison.

different parts of the state that the use of public funds “distorts” free market competition ultimately interferes with the ability of the initiative to make more progress on increasing healthful food access for low-income families. Rural areas without a strong base of independent and influential philanthropic funding, combined with a dearth of strong grassroots social justice groups, may be facing a similar situation. Furthermore, if the private sector fails to address healthful food access while simultaneously working to prevent the public sector from doing so, who will take on this important work in rural America?

We anticipate this case study to be valuable to other local food system initiatives seeking to engage the community while building on the strengths of paid staff. This case study offers evidence that often the best use of staff time can be working with partners who already have the capacity and willingness to implement change. Yet this creates a dilemma as to whether and/or how to engage with partners who are not “ready,” because they lack the motivation, capacity, or resources to make changes. The concept of shepherding as a best practice can help address and potentially change these conditions and bring partners deeper into the work and the community. Further research into how initiatives can maintain a balance between engaging ready partners (those with motivation, resources, and the capacity to act) and unready partners (those who are unmotivated, under-resourced and/or lacking the capacity to act via organized, conventional ways) would be insightful. This study also shows that high trusting relationships that exist between paid staff and community members can have a downside: It may cause community members with low motivation to become engaged less actively in decision-making, which other initiatives may want to keep in mind. Further research would be useful to help understand how to counter reluctance to engage as a result of high trust environments.

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Implementing Collective Impact for food systems change: Reflections and adaptations from Michigan

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Submitted November 30, 2016 / Revised March 16, 2017 / Accepted March 20, 2017 /
Published online March 29, 2017

Citation: Hoey, L., Colasanti, K., Pirog, R., & Fink Shapiro, L. (2017). Implementing Collective Impact for food systems change: Reflections and adaptations from Michigan. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 101–115. <http://dx.doi.org/10.5304/jafscd.2017.072.014>

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Abstract

As Collective Impact (CI) gains popularity across food systems change efforts, few scholars and practitioners have evaluated whether this collaborative social-change framework is well suited to food systems work. We begin to answer this question based on our own experience applying a CI model to support statewide goals established in the Michigan Good Food Charter. Our reflections are based on the project's evaluation findings, internal staff discussions about their CI-based efforts,

discussions with other food systems practitioners using CI, and a review of emerging literature where scholars and practitioners evaluate or reflect on facilitating a CI initiative. The Michigan experience largely corroborates what is emerging in the broader criticisms of CI: that limited guidance exists about how to implement various elements of the model, that CI is relatively silent on policy

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Author note

Funding in support of this research was provided by the W. K. Kellogg Foundation.

advocacy, and that, unless intentionally integrated, it has the potential to exacerbate, rather than address, inequities. However, our experience and that of other food systems practitioners also suggest that it is possible to transcend these limitations. We argue that groups expecting to make significant improvements to food systems can turn to CI as one of many social-change models that can guide their work, but only if lead organizations have the capacity to build trust and relationships between stakeholders and if they can thoughtfully integrate strategies for ensuring policy- and equity-based change.

Keywords

Collaboration; Collective Impact; Equity; Food Systems; Michigan; Networks; Policy

Introduction

Scholars and practitioners have long debated how to address “wicked” problems (Hamm, 2009; Rittel & Webber, 1973; Xiang, 2013). The interconnected challenges affecting food systems are some of the most wicked, defined as problems that cross economic, social, health, and environmental realms, which require adaptive, multistakeholder solutions (Plastrik, Taylor, & Cleveland, 2014; Weber & Khademian, 2008). One strategy for addressing such systems-based challenges—Collective Impact (CI)—has been gaining popularity in nonprofit and foundation communities (Aspen Institute, 2013; Easterling, 2013; Kania & Kramer, 2013; LeChasseur, 2016; Nee & Jolin 2012; Weaver, 2014). The model has been adopted by initiatives addressing issues as diverse as juvenile justice reform, environmental protection, homelessness (Aragón & Garcia, 2015; HanleyBrown, Kania, & Kramer, 2012; Kania & Kramer, 2013), and increasingly, food systems.

Emerging out of research on trends in philanthropy (Kramer, 2007, 2009), the CI concept was popularized by Kania and Kramer in 2011. The idea behind CI is to discourage problem-solving via single organizations, producing *isolated* outcomes, and instead to encourage collaboration across sectors and institutions to achieve *collective*, systemic impact. Kania, Kramer, and others suggest that CI initiatives require several key preconditions (influ-

ential champions, sufficient funding, and a sense of urgency for change [HanleyBrown et al., 2012]) and five conditions to guide collaboration: a *common agenda*, *mutually reinforcing activities*, *continuous communication*, *shared measurement*, and one or more *backbone organization(s)* to facilitate the other conditions (Kania & Kramer, 2011).

As practitioners apply CI to issues like obesity, food access, and local food economies (Fink Shapiro, Hoey, Colasanti, & Savas, 2015; Pirog & Bregendahl, 2012; Sands, Bankert, Rataj, Maitin, & Sostre, 2014; Vermont Farm to Plate, 2013), few have evaluated whether the model is well suited to food systems work. We begin to answer this question by reflecting on the use of a CI model in our own efforts to support statewide goals established in the Michigan Good Food Charter.¹ Our essay combines the perspectives of two lead coordinators at Michigan State University’s Center for Regional Food Systems (CRFS) who are supporting statewide networking activities centered on the Charter (Colasanti and Pirog) and two of the external evaluators of a CRFS anchor project (Hoey and Fink Shapiro). Our reflections are based on findings from formative and developmental evaluations of CRFS’s work (Patton, 2010) and staff discussions about their CI-based efforts. To situate our experience, we also draw on literature where scholars and practitioners evaluate or reflect on facilitating a CI initiative. We analyzed the literature inductively, looking for themes across these reflections (Creswell, 2013). The lead author also presented this essay’s initial ideas with and gathered feedback from food systems scholars and practitioners with CI experience during one national and two local conferences.

In the remainder of this essay, we first explain how CRFS incorporates CI’s five conditions into its work on the Michigan Good Food Charter. We then outline the emerging criticisms of CI from the literature and discuss ways CRFS and other practitioners have responded. The Michigan experience largely corroborates what is emerging in the

¹ See more detail about the MI Good Food Charter at <http://www.michiganfood.org/>. The charter’s “vision and roadmap” calls for a “good food” system, that is, one that is “healthy, green, fair, and affordable” by 2020.

broader criticisms: that limited guidance exists about how to implement various elements of the model, that CI is relatively silent on policy advocacy, and that, unless intentionally integrated, it has the potential to exacerbate, rather than address, inequities. However, our experience and that of other food systems practitioners writing about their application of CI also suggest that it is possible to transcend these limitations. Doing so, we argue, requires lead organizations using a CI model to have the capacity to build trust and relationships between stakeholders and to thoughtfully integrate strategies for ensuring policy- and equity-based change.

The CI Approach in Practice

In Michigan, CRFS serves as one of the key *backbone organizations* behind achieving the Michigan Good Food Charter goals by facilitating the four other conditions of a CI approach. First, the six goals of the charter and 25 priority actions serve as the *common agenda* for a statewide food systems change initiative. The idea of the charter emerged in late 2009 when CRFS, along with the Food Bank Council of Michigan and the Michigan Food Policy Council, began discussing strategies for making Michigan's food system more equitable, sustainable and economically viable. Five work groups developed proposals and gathered feedback through a statewide summit and other means, eventually launching the Charter in June 2010. The Charter's goals focus on increasing local food purchasing that is profitable for local farmers and fair for their workers; building local agri-food business infrastructure; improving access to affordable, healthy food; and improving kindergarten-through-twelfth-grade (K-12) school meals and curricula.

Second, CRFS encourages *mutually reinforcing activities* by co-convening statewide networks focused on food councils, farm-to-institution initiatives, food hubs, the livestock sector, and a Michigan Good Food Charter Steering Committee. The intention is for these networks to enable diverse organizations to exchange information and partner with one another. CRFS also recently convened 15 to 20 additional food-related networks to discuss the potential of forming a Michigan network of networks to build the effectiveness of this

collaborative work.

Third, CRFS manages regular *communication* channels for each of the networks it co-facilitates, including in-person and teleconferenced meetings, email lists, newsletters, social media, and webinars. Some of these networks (e.g., the Farm to Institution and Food Hub Networks) also meet jointly once a year, and all come together with the wider public and other networks every other year for the Michigan Good Food Summit.

Finally, CRFS co-coordinates a *shared measurement* project aligned with the Charter. This effort involves the development of data collection tools for organizations to compare common indicators across communities. Based on statewide stakeholder input, shared measurement activities currently focus on food access, institutional sourcing of local foods, and the economic impact of local food strategies.

CI Criticisms and Emerging Adaptations

As we noted at the outset, scholars and practitioners have raised three key criticisms about CI that should be of particular concern to food systems change agents using the approach. At the same time, CRFS and other practitioners' adaptations offer ways to address each weakness. These relate to strategies for operationalizing the model, addressing issues of equity, and influencing policy change.

Limited Guidance Regarding Implementation

First, many scholars and practitioners discuss the lack of evidence-based practices and specificity about how to implement CI's five conditions (Christens & Inzeo, 2015; Flood, Minkler, Lavery, Estrada, & Falbe, 2015; Wolff, 2016). This operational opaqueness makes it difficult to discern how appropriate the model is for food systems work. Despite their attempts to offer more implementation guidance (Hanleybrown et al., 2012), Kania, Kramer, and their colleagues routinely note that the CI framework is necessarily broad, so that it can be adapted to different contexts (Kania & Kramer, 2011, 2013; Kania, Kramer, & Russell, 2014). They describe how the approach requires an "ongoing progression of alignment, discovery, learning, and emergence...[and] continual unfold-

ing of newly identified opportunities for greater impact, along with the setbacks that inevitably accompany any process of trial and error” (Kania & Kramer, 2013, p. 2).

Paradoxically, rather than a complex, adaptive process, other scholars argue that the CI framework is sometimes presented as a recipe (Meter, 2014) or technocratic exercise (Connolly, 2011) that involves “the methodical structuring of relationships and activities to execute against [a pre-established] agenda” (Lanfer, Brandes, & Reinelt, 2013, p. 73). Pirog (Personal communication, August 15, 2016) has seen this happen when a foundation imported the expertise from one successful CI initiative to unsuccessfully apply the same approach to a second project related to local healthy food access in a different state. He argues that this effort was destined to fail, not because the foundation used the CI framework, but because it did not engage local partners’ agency and self-determination—a basic tenant of any participatory initiative (Arnstein, 1969; Forester & Theckethil, 2009).

The oversimplified, recipe approach to CI has not been the case in Michigan. As Kania and Kramer suggest, CRFS has routinely responded to Michigan’s unique and dynamic institutional, economic, and social context. While it has not fully addressed concerns about CI’s need for further evidence-based implementation guidance, CRFS’s experience (similarly to other CI users) offers lessons about when to implement the five conditions, ways to structure communication, how to approach shared measurement, and whether to emphasize relationship-building and shared goals over collective actions.

When to implement the five conditions

CI proponents maintain that initiatives may not attain positive outcomes if each of the five conditions of the model is not robust (HanleyBrown et al., 2012; Kania & Kramer, 2011). This does not mean that each element of the model must be implemented together or in a particular order (Kania & Kramer, 2013), but it does imply that project coordinators will have all of the conditions in mind during the initial planning process. We have found instead that many of these steps may

emerge unplanned. Organizing for the Michigan Good Food Charter began in 2009, well before CRFS staff began referring to their work as “Collective Impact” in 2012. They adopted the model a year after Pirog was hired as associate director of CRFS, as a result of his familiarity with the approach and his experience using CI in a previous position in Iowa. While CRFS staff knew more generally about social network and other theories of social change, they felt the five CI conditions offered them the clearest framework to guide their ongoing collaborative work. Their decision to adopt the model was also legitimized when the W.K. Kellogg Foundation spoke at a grantee meeting about its interest in CI in 2011. Similarly, when the Leopold Center for Sustainable Agriculture adopted a CI model in Iowa, staff believed CI offered a useful framework to *retroactively* explain the complex networks and communities of practice Leopold Center coordinators were already facilitating across Iowa’s growing local food sector (Pirog & Bregendahl, 2012).

These experiences suggest that other food systems practitioners may also discover that CI helps explain their complicated change effort. Alternatively, even if actors do not believe they can implement the full CI approach, they may eventually build the capacity to adopt the entire model. Food policy councils, for instance, implement (often unknowingly) elements of a CI model but usually operate without a clear backbone organization or shared measurement until they can secure funding and dedicated staff (Center for a Livable Future, 2015).

Ways to structure communication

CRFS has also found that communication should be multifaceted, but may not need to be as “continuous” as CI texts suggest. Some of the original writings about CI described intensive, in-person communication. This was true of one program the CI model is based on that involved 15 education networks in the Cincinnati region. Each network met every two weeks for two years, which Kramer, Parkhurst, and Vaidyanathan (2009) believe contributed to “building trust and enabling learning that a shorter or less intensive process could not have achieved” (p. 20). In Michigan, however, such

frequent, face-to-face interaction would be impossible, since traveling across the state can take more than seven hours. Other regional food systems initiatives have also noted that they try to avoid tiring participants with “death by meetings” (Fink Shapiro et al., 2015, p. 7).

Instead, CRFS relies on diverse forms of communication. Many of these are virtual, including one-way information flows (e.g., newsletters, websites, reports), but also interactive fora (e.g., email lists, webinars, conference calls). The Michigan Local Food Council Network, for instance, started hosting monthly calls that focus on topics members propose in advance (e.g., the Michigan House bill on urban agriculture), along with time to share experiences or ask questions. Coordinators have found that the open space, in particular, has encouraged cross-mentoring and immediate feedback about problems councils are facing. Most networks also host regional, in-person meetings three to four times a year. These meetings draw members of a network together—such as the Food Hub Network—and base activities on the chosen location (e.g., community-based tours, local speakers), while simultaneously encouraging an openness to innovations and new ideas through dedicated time for cross-state sharing and unstructured networking.

CRFS staff and other stakeholders are also starting to act as boundary spanners—people who can look for opportunities for cooperation across networks. This is similar to the Appalachian Foodshed Project’s efforts to establish “double links” (a concept from the dynamic governance model), people who can participate in more than one committee or network (Fink Shapiro et al., 2015). These ideas build on social capital theories about “bonding” and “bridging.” Where bonding connects individuals with similar backgrounds across multiple settings and roles, bridging connects diverse actors to each other and others from outside the community, expanding the diversity of stakeholders involved in solving complex problems (Agranoff & McGuire, 2001; Flora & Flora, 2003; Lasker & Weiss, 2003). Other statewide and multistate food systems initiatives using a CI model also appear to be using a variety of virtual and in-person strategies to stay in touch

(Fink Shapiro et al., 2015). Taken together, this more eclectic communication approach is dynamic and multifaceted, allowing for overlapping strategies that offer multiple avenues for engaging in a CI endeavor.

How to approach shared measurement

CI proponents also insist that all stakeholders engage in shared measurement (HanleyBrown et al., 2012; Kania & Kramer, 2013); however, the experience in Michigan has shown that the process of discussing measurement priorities can yield positive outcomes, even if some participating organizations never engage in shared data collection. One unforeseen challenge in Michigan has been the lack of capacity of community groups and nonprofits to participate in measurement activities, requiring a prior step to build data collection and analysis skills. Discussions about what to track and who will engage in data collection and analysis have also proven to be time intensive. On the other hand, CRFS staff have observed how discussions and trainings have exposed participants to new strategies for understanding the impact of their work and expanded relationships between organizations. For example, participants in a workshop on food system economic impacts had formed an average of 2.7 new partnerships with other organizations six months later (Hoey et al. 2016). Shared measurement discussions are also helping establish a norm of equitable data sharing; organizations are increasingly asking CRFS staff how they can best align with statewide efforts before engaging in their own data-collection efforts.

CRFS’s experience is also reflected in evaluation expert Cabaj’s (2014) observations, who argues that shared measurement may not always be appropriate. He has seen CI groups’ progress stall for years because they could not agree on common indicators to track, while he has also observed initiatives that have had considerable impact over many years despite having no shared measurement system in place. He has also seen CI projects suppress innovation because they focus only on actions that are measureable (Cabaj, 2014), as other studies of CI-based food systems initiatives have found (Hoey, Fink Shapiro, Gerber, & S. Savas, 2016).

Whether to emphasize relationship-building and shared goals over collective actions

Similar to their experience with shared measurement, CRFS staff believe the *processes* involved in applying a CI model, especially relationship-building and shared goal-setting, may be the most important aspect of the CI model. Extensive stakeholder engagement during the development of the Michigan Good Food Charter and through the networks has allowed diverse organizations to recognize their shared values and how their efforts fit into a broader vision, without requiring agreement upon specific actions each will take. This has allowed the partnerships to create a diverse array of place-based strategies and encouraged an iterative approach to framing the problems and solutions, avoiding the pitfall of universal solutions sometimes associated with CI (Arias & Brady, 2015; McAfee, Blackwell, & Bell, 2015; Wolff, 2016). For example, rather than impose a single model to increase local food purchasing, partnerships emerging² out of the Farm to Institution Network are each customized to the sizes, types, and number of farmers in a certain location, the local food processing capacity, and the motivation and ability of hospitals, universities, and school districts to change purchasing practices (Thompson, Colasanti, & Matts, 2016).

“Extensive social interaction” (Pirog & Bregendahl, 2012, p. 12), relationship-building, and trust have also been important to collaborative communities of practice in the Iowa food system, the Food Solutions New England initiative, and other regional food systems initiatives (Burke & Spiller, 2015; Fink Shapiro et al., 2015; Northeast Sustainable Agriculture Working Group, n.d.). Holley (2012) has similarly found that “complex reciprocity”—where participants help others without expecting reciprocation because they believe in the value of the network—is the tipping point at which collaborations are able to be more effective. Collaboration scholars have also found that network effects deepen as relationships and trust solidify (Ansell & Gash, 2008; Innes & Booher, 2000; Liberato, Brimblecombe, Ritchie, Ferguson,

& Coveney, 2011; Nowell, 2009; Vandeventer & Mandell, 2007). In more recent writings, Kania, Kramer, and Rusell (2014) have also observed that, “The health of relationships between organizations and individuals in the system is often the missing link in explaining why programs and interventions ultimately succeed or fail” (p. 31).

Other research suggests that attempts to reach agreement on actions can sometimes be the downfall of collaborations. In one study, debates over strategy in a CI-style malnutrition program in Latin America caused lasting fissures in the nutrition coalition, even though stakeholders agreed on the overall goal (Hoey & Pelletier, 2011). One Food & Fitness collaborative applying a CI model also found that participating organizations agreed on the goal—to reduce obesity—yet had conflicting visions about how to mobilize community engagement to achieve their goal, which slowed their progress (Sands et al., 2014). Meter’s (2014) account of CI efforts in Minnesota additionally shows how food systems initiatives that involve businesses may require them to differentiate themselves to compete for customers, intentionally reducing synergy and “mutually reinforcing activities,” despite other ways they can still collaboratively build their sector (in this case, food co-ops).

Silence in Regard to Policy Advocacy

A second major area where CI proponents have received criticism relates to a sense that the model stops at the programmatic level, while conspicuously avoiding the word “advocacy” or “policy.” As others argue, this obfuscates the reason collaborations are often needed: the gradual downsizing of government since the 1980s and outsourcing of many public services to the private sector or nonprofits (Christens & Inzeo, 2015). Hanleybrown, Kania, and Kramer (2012) admit that the rapid adoption of CI approaches is likely due to the 2008 economic recession, which has forced communities and nonprofits to do even more with less funding. However, they downplay the possibility or importance of policy change, noting that “the appeal of CI may also be due to a broad disillusionment in the ability of governments around the world to take the lead to solve society’s problems, causing people to look more closely at alternative

² See “Faces of the Network” for stories about example partnerships at <http://www.cultivatemichigan.org/spotlight>

models of change” (HanleyBrown, Kania, & Kramer, 2012, p. 2).

A substantial amount of reform related to food systems in the U.S. and globally has been led by grassroots movements (e.g., Altieri & Toledo 2011), consumer demands (e.g., Conner, Montro, Montri, & Hamm, 2009), and private sector-led initiatives (e.g., Harris, Lott, Lakins, Bowden, & Kimmons, 2012), but equally important changes have also been led by, or achieved through, government reforms. This includes shifts in the U.S. farm bill and other national food policy agendas, as well as food labeling laws, bans against food marketing aimed at children, soda taxes, increased wages for food sector workers, and more (Bittman, Pollan, Salvador, & De Schutter, 2014; Popkin & Hawkes, 2016). As such, food systems scholars and practitioners are calling for even greater policy change (Allen, FitzSimmons, Goodman, & Warner, 2003; Clark, Sharp, & Dugan, 2015; Guthman, 2008; Imhoff, 2007; Jayaraman, 2015; Pothukuchi, 2009), while some specifically point out the policy gap in CI-based work, arguing that “without changing policies and systems, transformation at scale cannot be achieved” (McAfee et al., 2015, p. 6). The larger concern is that collaborative models like CI that shy away from policy change may further absolve government of its responsibility for creating and maintaining many of the health, economic, and environmental conditions that have caused food systems problems, either through problematic policies or a lack of progressive policy (Alkon & Mares, 2012).

In Michigan, the Good Food Charter was first developed with the goal of engaging state legislators in food systems issues. Yet, in CRFS’s view, an attempt to appeal to a broad array of stakeholders and policymakers across party lines led to a pragmatic, market-led framing that focuses largely on the economic potential of local food, slowing policy advocacy work. Charter-inspired stakeholders, including CRFS, have had success in leveraging federal and state support for market-based initiatives, including a federal Healthy Food Financing Initiative award (Michigan Good Food Fund, n.d.) and state match funding for the 10 Cents a Meal Program, focused on local food purchasing in 16 school districts (Groundwork Center for Resilient

Communities, 2016). More extensive policy changes, however, have been less apparent as they have been, for instance, in the Iowa CI initiative. Unlike the Michigan Good Food Charter, the equivalent Iowa Food and Farm Plan emerged in 2010 after six years of intensive local food network-building led the Iowa legislature to pass an amendment mandating the development of “policy and funding recommendations for supporting and expanding local food systems” (Leopold Center for Sustainable Agriculture, 2011, p. 5).

The Michigan Good Food Charter’s slower policy traction, therefore, is likely due to it having been written by nongovernmental actors who were attempting to get the attention of policymakers, while in Iowa, policymakers asked for a plan to prescribe policy. Focusing on policy advocacy as a strategy for achieving the Charter goals also creates a tension with CRFS’s efforts to build a “big tent” to draw together many people with different perspectives about a common issue (Gustaveson, 2012). CRFS’s staff strengths and skills also lie in research, education, and outreach, as opposed to political organizing, while being employees of a public university can also constrain direct policy action. That said, food councils are spreading across Michigan, and it is the intent of CRFS to build their capacity to inform policy change. Furthermore, the slow uptake of and gaps in food policy advocacy is not unique to Michigan; knowledge about how to mainstream food systems issues in policy agendas is generally lacking (Pelletier et al., 2012; Raja, Picard, Baek, & Delgado, 2014).

Potential Unintended Impact on Inequities

The final, major criticism of the CI model is that advocates have largely failed to encourage an analysis of or strategies for addressing entrenched power and inequity, as community development and other social change models have long emphasized (Arias & Brady, 2015; Christens & Inzeo, 2015; Flood et al., 2015; LeChasseur, 2016; Williams & Marxer, 2014; Wolff, 2016). Rather, CI solutions are often discussed as universal, population-level goals without recognizing that different parts of the community may need customized engagement strategies and interventions (Arias & Brady, 2015; LeChasseur, 2016; McAfee et al., 2015; Wolff,

2016). Kania and Kramer (2015) have begun to acknowledge that issues of equity are a blind spot in their earlier writing. They and other scholars (McAfee et al., 2015; Wolff, 2016) have suggested that a focus on equity requires CI practitioners to disaggregate data—by race, income, gender, etc.—to ask how different parts of the community are affected by an issue, as well as ongoing analysis about what strategies are most effective for whom. Disaggregated analysis, however, does not go far enough.

If food systems change agents choose to use a CI model without recognizing that it lacks a robust equity lens, we argue that they could reinforce the existing class, race, and gender inequities associated with nutrition security and food access, wages and working conditions in food industries, land ownership, and more³ (Giancattarino & Noor 2014; Guel, Henderson, Pirog, Kelly, & Wimberg, 2017; Horst, 2017; Jayaraman, 2015; Reynolds & Cohen, 2016; White, 2011). Food justice scholars are increasingly advocating for decision-makers to confront historical traumas tied to current food system inequities (e.g., the displacement of native people from land, histories of segregation), to pursue progressive ameliorative actions (e.g., member-owned food stores, sanctuary restaurants, etc.), and to ensure more democratic representation and communicative food system planning (Horst 2017; Cadieux & Slocum, 2015; Tareen, 2017).

CI, as it is currently promoted and interpreted, does not adequately incorporate this type of equity lens, for several reasons. First, CI may demand too much of the backbone organization(s), which can begin to make decisions for other partners and unintentionally create a top-down initiative (Wolff, 2016). Second, as in any new trend in philanthropy, a focus on CI could shift funding toward large, well-coordinated entities that have the capacity to serve as backbone organizations and away from smaller, community-based nonprofits that might not be able to serve such a role. Third, because the

model focuses on coordinating “CEO-level cross-sector leaders” (Hanleybrown et al., 2012), such as directors of nonprofits, government agencies, and private-sector companies, it implies that the power of change rests with organizations rather than individuals, especially marginalized groups most affected by an issue (LeChasseur, 2016; Wolff, 2016). Even if organizations involved with a CI initiative work closely with communities, this could reinforce existing hierarchies of power, as most public officials and executive leaders of formal organizations are still primarily white, male and middle-class (LeChasseur, 2016).

Finally, the CI model fails to address how to handle power relations and conflict that can arise in change efforts that involve diverse community members. Particularly in food systems work, corporate-led approaches to solving food systems problems clash regularly with the social justice and food sovereignty tenets of community-based groups (Agyeman & McEntee, 2014; Anada, 2011; Giorda, 2012; Jaffee & Howard, 2010), complicating efforts that attempt to bring multiple stakeholders together when power differences are so stark. Post-political and other participatory planning scholars show how more powerful actors can co-opt collaborative decision-making processes to protect and legitimize their own interests (Arnstein, 1969; Roy, 2015; Susskind & Cruikshank, 2006). This can occur when power inequities and conflicts are bracketed out of collaborations, either by overlooking marginalized groups or by avoiding conflictive topics in order to reach an agreement (Roy, 2015). Even intentional efforts to balance multiple perspectives, Kaza (2006) argues, can lead to a “tyranny of the median” (p. 255), when groups settle on a decision where all agree, rather than equity-based, progressive action.

McAfee et al. (2015) argue that CI backbone organizations ultimately must have a “point of view” (p. 8) if they care about fairness and inclusion, compared to some CI texts that suggest the need to be “neutral” (O’Brien, Littlefield, & Goddard-Truitt, 2013, p. 26). Collaboration scholars suggest that CI can be successful if backbone organizations can create spaces where genuine, open dialogue occurs and if they allow for “radical criticism, dissensus and disagreement” (Roy, 2015,

³ Also see articles included in the *Journal of Agriculture, Food Systems, and Community Development* issue devoted to commentaries on race and ethnicity in food systems work at <https://www.foodsystemsjournal.org/index.php/fsj/issue/view/21>

p. 67). Forester (2009) also describes how an “activist mediator” can structure more inclusive dialogue, debate, and negotiated action plans even under the most divisive circumstances by doing things like incorporating sufficient time for co-learning (e.g., time for personal histories, unstructured social events, search conferences, study groups) and establishing “ground rules” that are culturally sensitive (p. 5).

CI scholars have also argued that backbone organizations must not allow themselves to become the lead, but need the skills and humility to develop “coalition leadership” with communities, in pursuit of democratic governance (Wolff, 2016). Lead organizations must also have credibility with communities most affected by inequity and staff reflecting those communities, which are lessons being echoed in food systems work more generally (Horst, 2017; Pirog, Koch, & Guel, 2015; Tarng, 2015). Scholars additionally suggest that integrating grassroots organizing into CI efforts may require training and support to build the “collaborative capacity” of both the backbone organization and community residents. This can include guaranteeing that the benefits of participating outweigh the costs for all stakeholders, teaching skills in negotiation and conflict resolution, understanding stakeholders’ beliefs and assumptions about the problem, and building a strong sense of personal efficacy to be a part of the collaborative effort (Foster-Fishman, Berkowitz, Lounsbury, Jacobson & Allen, 2001; Kirk & Shutte, 2004; Lasker & Weiss, 2003; Liberato et al., 2011; Nowell, 2009).

Reflective of these strategies, Food Systems New England has actively integrated a focus on equity in its CI work through trainings on racial equity, the formation of a Racial Equity and Food Justice working group, and an ambassador program that attracts other organizations committed to equity goals (Burke & Spiller, 2015). The Michigan Good Food Charter already incorporated equity as one of the core values before CRFS started to apply a CI model. CRFS has also integrated racial equity across all strands of its work in recent years, including its new strategic plan. Among other things, this has included support of a racial equity work group started by the Michigan Good Food Steering Committee, the formation of a racial

equity committee within CRFS, two years of racial equity trainings for CRFS staff and partners, an examination of internal hiring practices, and regular updates of its annotated bibliography on structural racism in the U.S. food system (Guel et al., 2017). CRFS also actively engages community-based groups, uses collaborative approaches to manage networks, and has begun asking applicants for seed grants to incorporate plans for diversifying their membership. Finally, disaggregated data CRFS has begun collecting should determine if any demographic groups are underrepresented in Charter networks.

Despite the progress CRFS has made applying an equity lens, staff acknowledge that this is still a work in progress. They continue to struggle with increasing the diversity of their own staff; understanding their appropriate role in advancing racial equity in food systems, given the many highly respected and long-standing racial equity organizations both in Michigan and nationally; navigating how directly to focus on racial equity while maintaining their core identity as a food systems organization; mediating power differences that might exist in some food system networks; and determining whether to and how they can engage directly in grassroots organizing. Many of these questions are being debated by other food systems organizations as well (Horst, 2017; Pirog, Koch & Guel, 2015; Tarng, 2015), including CI-specific food initiatives (Sands et al., 2014). (See Table 1 for a summary of CRFS’s application and adaptation of CI.)

Conclusion

Despite CI’s shortcomings, CRFS still promotes its use for addressing food systems problems, with caveats. Based on emerging criticism and our own experience, we argue that if CI is interpreted narrowly, it would likely work best (a) with stakeholders who have major economic or decision-making power (e.g., foundations, major nonprofits, the business elite), time to stay in frequent communication, and the capacity to collect shared measurement data, and (b) if the problem of focus is technical, does not disproportionately affect resource-poor or historically marginalized communities, and can be largely solved outside of government. In most cases, however, the very nature of food

Table 1. Summary of CRFS Application and Adaptation of Collective Impact (CI)

CI Condition	Broad CRFS Application	CRFS Adaptation
Backbone organization	CRFS co-convenes Charter-focused networks, facilitates communication across networks, and leads shared measurement activities.	CRFS has integrated the four conditions below when they were appropriate, without necessarily having planned to incorporate CI or various components from the beginning.
Common agenda	CRFS helped gather cross-state stakeholder input to develop six goals and 25 priority actions outlined in the Michigan Good Food Charter.	The Charter already included an equity lens that CRFS has increasingly incorporated into its CI-based Charter work. CRFS is interested in adding more of a policy focus, but given CRFS's convening role, staff may need to build the capacity or rely on other partners to carry out policy advocacy, such as local food policy councils.
Mutually reinforcing activities	CRFS co-convenes networks on food councils, farm-to-institution, food hubs, and the livestock sector to create opportunities for mutually reinforcing activities to develop.	Rather than trying to define state- or network-wide collective actions, CRFS focuses largely on relationship-building, which encourages place-based partnerships to emerge and "boundary spanners" who look for cooperation opportunities across networks.
Continuous communication	CRFS facilitates regional in-person meetings, teleconferencing, email lists, social media, newsletters, and webinars.	CRFS ensures communication is dynamic and multifaceted, but not necessarily as frequent or in-person as CI often assumes is necessary.
Shared measurement	CRFS is developing tools to measure food access, institutional sourcing of local foods, and the economic impact of local food strategies.	Additional time has been necessary to develop CI partners' shared measurement capacity. Discussions of measurement priorities, even if some participating organizations never engage in shared data collection, has still built partner capacity in other ways, increased interest in equitable data sharing, and helped build relationships.

systems problems will likely have equity and policy implications and will require the perspectives of many actors who do not have the time or resources to engage in a highly intensive problem-solving process as the ideal CI model presumes. Yet, as our experience and that of other CI practitioners show, the flexibility of the CI model allows users to adapt the approach to these types of situations, but only if lead organizations have the capacity to build trust and relationships between stakeholders and if they can thoughtfully integrate strategies to ensure policy- and equity-based change. Funders who are often behind the spread of CI use should require and build the capacity of CI users to incorporate these currently underemphasized adaptations of the model (LeChasseur, 2016).

As the nascent academic research⁴ on CI builds (Flood et al., 2015; LeChasseur, 2016), more

evidence is needed to determine whether the types of adaptations we discuss are necessary in most food systems initiatives, and more generally, when and where the CI model is best applied. Such evidence could ameliorate potential misuse of the model (Christens et al., 2015; Wolff, 2016). An evaluation guide available for CI practitioners (Preskill, Parkhurst, & Juster, 2014) can help gather feedback on whether, how, and why a CI initiative is making progress and can document the complex change process an intervention undergoes.

Research is also needed to understand why CI has become so popular, whether CI is more effective than other collaboration models (e.g., deliberative planning, networked governance, rural wealth creation) (Flora & Flora, 2003; Forester, 2009; Castelleo, Watson, & Allen, 2011) and whether the five CI conditions, and variations for implementing them, are critical to making progress. In particular, critics cite that CI proponents fail to build upon decades of findings from research that could offer insights about how to approach coalition formation, multisector collaboration, agenda

⁴ Also see a recent grant awarded by the W.K. Kellogg Foundation in December 2016 for research on CI at <https://www.wkkf.org/grants/grant/2017/01/collective-impact-fieldwide-research-study-p3036146>

setting, participatory planning, conflict mediation, and other strategies inherent to carrying out CI (e.g., Christens & Inzeo, 2015; Forester, 1997, 2009; Innes & Booher, 2004; Kegler, Rigler, & Honeycutt, 2010; Potapchuk, 1999; Susskind & Cruikshank, 2006). Such questions are especially important for change processes like those that confront most food systems problems, where issues of power, policy change, and equity must be addressed to achieve more durable and large-scale change.

Acknowledgements

We would like to thank staff from the Center for Regional Food Systems and University of Michigan Good Food Charter Phase II evaluation team for their contribution to ongoing conversations about our use of Collective Impact (CI), including Liz Genzler, Noel Bielaczyc, Judith Berry, Colleen Matts, Nicholas McCann, Sue Ann Savas, Leah Gerber, Stephanie Williams, and Andrew Jones. The evaluation team's advisory group also helped us reflect on CI and theories of change, including Barbara Israel, Jennifer Blesh, Rebecca Jablonski, and John Seeley. Finally, thanks goes to the journal editor and blind reviewers for their useful suggestions.

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Critical reflections on the USDA local food economics toolkit

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Submitted March 28, 2016 / Revised August 23, October 4, and October 26, 2016 /
Accepted October 31, 2016 / Published online February 8, 2017

Citation: Conner, D., Becot, F., & Imrie, D. (2017). Critical reflections on the USDA local food economics toolkit. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 117–125. <http://dx.doi.org/10.5304/jafscd.2017.072.001>

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Abstract

In this paper we report the results of a field test of an economic impact toolkit recently commissioned by the U.S. Department of Agriculture (USDA). The toolkit was created as a guide for food systems organizations to frame issues and collect and analyze data in order to credibly measure economic and other benefits of their initiatives. To test the toolkit, we applied it to an economic contribution study of a local food-buying program in a large regional hospital in Vermont. Our findings indicate that by working with a dedicated and motivated community partner, we were able to agree on the scope and objectives of the project, obtain high-quality data, and enter these data into an input-

output model to measure broader economic contributions (Modules 1 through 6 of the toolkit). We experienced difficulty, however, in obtaining data from a sufficient number of the hospital's vendors to modify the model from its default settings to better reflect local food system actors' purchase patterns (the subject of Module 7). Our experience suggests that practitioners need to work with community partners and consider which stages of the analysis meet their project objectives; in particular, they should focus on the difficulty and expense of incorporating Module 7. Our implications focus on strategies for decreasing the cost and effort of data collection for Module 7.

Keywords

Institutional Food Procurement; Local Food; Economic Impact Study; Food Suppliers

Introduction and Literature Review

"All models are wrong, but some are useful."

—George Box

The food system's impact on human well-being is vast, touching on a broad array of dimensions, from the economy, nutrition, and health to land

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Disclosure

This research was supported by the U.S. Department of Agriculture, National Institute for Food and Agriculture (NIFA).

use and the environment and to community and civic engagement (Conner & Levine, 2007; Institute of Medicine & National Research Council, 2015; Lyson, 2004). As governments, foundations, the private sector, and other funders continue to support and implement local food systems–related programs, it is important to be able to measure the economic impact of these programs in order to enable comparisons and analysis and to foster learning and adoption of effective practices. Many economic impact studies have used tools such as the IMPLAN input-output model to measure the economic impact or contribution of current or prospective food systems initiatives (Conner, Knudson, Hamm, & Peterson, 2008; Gunter, 2011; Haynes, 2009; Hughes, Brown, Miller, & McConnell, 2008; Jablonski, Schmit, & Kay, 2015; Swenson, 2006a, 2010; Tuck, Haynes, King, & Pesch, 2010). An input-output model is a matrix of economic multipliers (how many times a given dollar circulates in the economy before leaving or leaking out from the study area) associated with a given purchase. It measures the broader impact of how much income is generated by the recirculation of money spent in a given sector.

Accurate measurements depend on many factors, including sound data, realistic assumptions about opportunity costs and tradeoffs (e.g., did the researchers account for foregone food purchases from out of state when measuring the impact of local food purchases), and models that accurately reflect conditions in the field. The USDA Agricultural Marketing Service (AMS) has commissioned a group of largely university-based scholars to develop a toolkit to allow recipients of funded projects and other stakeholders to more accurately measure economic impact and to address the issues above (Thilmany McFadden et al., 2016); co-author Conner of this paper was on the team that developed the toolkit. This study utilizes the methods and guidelines recommended by the toolkit and will contribute to the field by presenting methods and results for future comparisons.

This article uses an economic contribution article (Becot, Conner, Imrie, & Ettman, 2016) to critically examine the use of the USDA toolkit. Our test case is the University of Vermont Medical Center (UVMHC), the largest hospital in the state

of Vermont. We begin with an overview of previous economic contribution and impact studies, then briefly describe the context, methods, and results of our Vermont study, focusing on the degree to which we were able to incorporate the methods and recommendations of the toolkit.

Spending money locally can have large impacts on a local economy. A number of studies have used input-output models to calculate the direct and indirect economic benefit from increased purchases of local foods by consumers (Conner et al., 2008; Swenson, 2006a, 2010), farmers' markets (Hughes et al., 2008), food hubs (Jablonski, Schmit, & Kay, 2015), and farm-to-school programs (Gunter, 2011; Haynes, 2009; Tuck et al., 2010). On the whole, these studies find that depending on the size of geographic area and scope of changes in purchase behaviors, local food systems can add or contribute thousands of jobs and hundreds of millions of dollars to an economy.

Good economic impact studies depend on good data, good assumptions, and a sound, accurate model (Bauman & Tegegne, 2013). Secondary data sources may not exist or may inadequately reflect conditions in the field, yet primary data collection is time-consuming and difficult and methods are not well established (Conner et al., 2013; O'Hara & Pirog, 2013). Moreover, many economic impact studies rely on faulty assumptions and tend to overstate economic impact, and proponents are often eager to tout these studies to support their positions (Eathington & Swenson, 2007; Swenson, 2006b). It is also important to use careful and consistent semantics to reduce confusion and the misuse of economic analyses (Watson, Wilson, Thilmany, & Winter, 2007).

A crucial consideration for any economic impact analysis is the geographic area where the economic activity studied takes place. The larger the study area, the bigger the economic multiplier, while the smaller the study area, the larger local industries will appear (Watson, Wilson, Thilmany, & Winter, 2007). The geographic area needs to encompass an economic area that accurately represents the transactions germane to the study.

Researchers have found that the IMPLAN input-output model does not fully capture and/or accurately measure the impacts of smaller,

diversified farms and other small to medium-scale operations that frequently participate in the localized food system (Lazarus, Platas, & Morse, 2002; Jablonski, Schmit, & Kay, 2015; Swenson, 2011). These researchers have found that farmers serving local and regional markets, as well as smaller-scale farmers, tend not only to spend more money locally, but also differently (e.g., more expenses on labor) than is assumed in IMPLAN. The farmers' economic activity, therefore, actually has a higher multiplier and greater impact than is assumed. To address these limitations of IMPLAN, which underestimate the impact of farmers serving local and regional markets, researchers are modifying the model by customizing the agricultural sector using secondary and primary data on spending and sales patterns of those farms (Gunter, 2011; Jablonski & Schmit, 2015).

Overview of the Toolkit

The toolkit (Thilmany McFadden et al., 2016) was authored by leading scholars in the economics of local food systems. It was motivated by the need for rigorous methods to be applied to the burgeoning interest, funding, and enterprise development around local food systems. The goal was to create food system assessment principles and economic indicators that communities can use to guide economic development discussions and strategies: "The goal of this Toolkit is to guide and enhance the capacity of local organizations to make more

deliberate and credible measurements of local and regional economic activity and other ancillary benefits" (Thilmany McFadden et al., 2016, p. 1). The toolkit is composed of seven modules. Modules 1 to 4 describe how to frame the problem, engage stakeholders, and collect and analyze primary and secondary data. Modules 5 to 7 provided detail on how to use IMPLAN in a rigorous manner to provide a more robust economic impact measurement. Table 1 lists each module, its subject area, and its use in food systems economic studies.

Key recommendations from the toolkit (Thilmany McFadden et al., 2016) include:

- Have a concise scope of the project and invested stakeholders who will guide and set the context for the study, in order to ensure useful results (Modules 1 and 4).
- When possible, utilize secondary data sets, but be aware of their limitations (Module 2).
- Collect primary data to overcome the limitations of secondary data (Module 3).
- Input-output models like IMPLAN are useful but also have limitations. Careful estimation of opportunity costs and customization to reflect the behavior of local actors will create more realistic and defensible scenarios. It is important to have a team member with expertise in IMPLAN modeling on the research team, especially if modification are made (Modules 5 to 7).

Table 1. Overview of the USDA Toolkit

Module	Title	Use
1	Framing Your Assessment Process	Engage community members; develop scope and objectives; evaluate needed resources
2	Using Secondary Data	Identify secondary data sets; evaluate usefulness to project objectives
3	Generating and Using Primary Data	Develop methods for sampling, data collection, and analysis
4	Engaging Your Community Process with Data	Develop strategies for identifying and communicating key results with stakeholders
5	Analyzing the Linkages of Local Foods to Local Economies	Articulate the basic vocabulary and concepts behind economic development and input-output models
6	Addressing Opportunity Cost	Articulate how resource constraints and opportunity cost should be considered in economic impact models
7	Advanced IMPLAN Analysis	Understand how and why to modify the IMPLAN model

Overview of Vermont Hospital Study

We partnered with the University of Vermont Medical Center (UVMHC; formerly Fletcher Allen Health Care), the largest hospital in the state of Vermont, for this case study. In 2006, UVMHC became one of the first hospitals to sign the Healthy Food in Health Care pledge, a national initiative of Health Care Without Harm (HCWH). Signatories agree in part to prioritize locally and sustainably grown foods. UVMHC has since won HCWH awards for sustainable procurement and policy advocacy.

Key components of UVMHC's efforts include procuring local food, emphasizing nutritionally dense and minimally processed foods, revamping the retail cafeteria, communicating extensively and planning with local suppliers, and running on-site farmers markets and vegetable gardens (Buzalka, 2012; Fletcher Allen Health Care, 2014). In 2013, UVMHC served over two million meals, of which 15% were meals served to patients and 85% were meals served to visitors and hospital staff. Approximately 40% of the food served comes from local suppliers in Vermont, including food purchased directly from farmers and food manufacturers. The rest of the local food is purchased through wholesalers. More than 90% of the beef served is from Vermont. The hospital is currently purchasing food from about 70 Vermont farmers and producers as well as from one Vermont wholesaler and three larger-scale national wholesalers.

Overview of Methods

A more detailed account of the methods and results of this study have been published elsewhere (Becot et al., 2016). In brief, we gathered purchase data from UVMHC for use in IMPLAN analysis. We also interviewed vendors and surveyed customers to better understand their behaviors and motivations. Questions to vendors focused on the magnitude, motivations, and impacts of sales. Consumer questions focused on hospital employees, and in particular their motivations, rather than visitors and community members, since they purchase more meals there.

This essay critically reflects on this study, discussing future prospects for similar studies and

how they can be improved. The AMS toolkit was under development while the Vermont hospital study was being conducted; one of the researchers of the Vermont study and authors of this paper (Conner) is also an author of the toolkit. Another author (Becot) had the benefits of both early drafts of the toolkit and discussions with two other toolkit authors, which helped to guide the Vermont study's methods.

Decisions made in accord with toolkit recommendations include:

1. Working closely with UVMHC's nutrition services director and obtaining all purchase data directly from her.
2. Working with stakeholders to define the geographic scope of the models. We determined that the functional economy should be defined as the whole state of Vermont in order to conform to the hospital's definition of local food and given that the hospital's food suppliers are located throughout the state. We excluded bottled soda, as this has no nutritional value and uses only local water, a common asset; we do not consider it to be local food as commonly understood.
3. Determining whether local foods were in addition to what was currently purchased from out of state or whether these purchases were a substitution for items previously purchased from out of state. If the items were substitutes, failing to net out the forgone purchases of out-of-state goods from distributors (what AMS toolkit Module 6 calls opportunity cost) would result in inaccurately high estimates. The wholesale prices were divided into wholesale markup and the producer value to measure the unique contribution of the wholesaler.
4. Including on the research team those with prior experience in regional economic studies and IMPLAN; gaining additional expertise in IMPLAN through on-line training courses; and consulting and vetting methods with two outside IMPLAN experts.

5. Entering the data into an IMPLAN input-output model to measure effects on sales, value-added activity, income, and jobs.
6. Collaborating with the nutrition services director to co-author scholarly articles and develop talking points for UVMMC's outreach efforts.

Results

Key findings of our study include:

- UVMMC spent US\$1.784 million on Vermont food, representing 44.3% of its total food purchases, with 16.3% of the local purchases bought directly from farmers, 22.9% bought directly from food manufacturers, and 60.8% bought from wholesalers. In the case of the purchases from wholesalers, we only accounted for products that were grown or processed in Vermont.
- Additionally, two full-time positions representing US\$95,058 in labor income were added at UVMMC in nutrition services due to an increase in the volume in meals served. The increase in volume was due largely to an increase in sales to hospital employees and the university community rather than increased patient meals.
- On average, 9.3% of the vendors' production went to UVMMC. UVMMC also served as a gateway to other wholesale accounts for many vendors.
- Depending on assumptions, we find the output multiplier to be 1.38 (every US\$1 spent on local food by the hospital contributes another US\$0.38 to the Vermont economy), where previous studies have found multipliers ranging from 0.65 to 1.82 (Gunter & Thilmany, 2012; Jablonski, Schmit, & Kay, 2015; Tuck et al., 2010). According to Hughes (2003) the probable range of multiplier is between 1.5 and 2.5, and the larger the size of the economy the larger the size of the multiplier. Additionally, Hughes (2003) cautions that a multiplier above 2.5 should be carefully examined.

For a more complete description of the methods and results, see Becot et al. (2016).

Discussion

It is important to note that in this study we focused only on the contribution of UVMMC local food purchases, including opportunity costs as they relate directly to the food supply. Since starting local purchases in 2006, UVMMC has seen an increase in the number of meals served while the number of inpatient and outpatient days has remained fairly constant. According to the nutrition services director, it seems that the increase in meals served can be attributed to two things: more UVMMC staff eating at the cafeteria instead of bringing in their lunch from home, and people from outside coming to the hospital to eat at the cafeteria (UVMMC is adjacent to the University of Vermont campus). Because the number of inpatients and outpatients has remained essentially constant, we hypothesize that the change in meals served due to patient visitors is negligible. A future study would then add the economic impact of the increase in meals served at UVMMC. In this case, the opportunity costs to consider are the lower sales for supermarkets and the food service provider (Sodexo).

It is also important to note that input-output models are not well equipped to handle opportunity costs. We were not able to examine key issues that in-depth, including what tradeoffs the hospital makes to afford higher-priced local food, such as smaller portions of proteins; impacts on staff training and preparation time; and whether farmers who are selling to UVMMC may be foregoing higher prices from direct markets. In this sense, the results of IMPLAN studies are (to echo Box's quotation above) "wrong"—even if useful—in that they do not address these opportunity costs well.

We wish to share a word of methodological caution. We originally intended to interview vendors to gauge their spending patterns and then conduct advanced IMPLAN analysis (as detailed in Module 7 of the USDA toolkit). Despite encouragement from UVMMC and a cash incentive, only eight out of 70 vendors responded to our interview requests. Of these eight, four were farmers and

four were manufacturers. In order to modify IMPLAN as outlined in Module 7, we would have needed to assume that four vendors were representative of the farming and food manufacturing sectors in the state as a whole. Vermont has approximately 7,300 farms (USDA, National Agricultural Statistics Service, 2014) and at least 385 food manufacturers (Vermont Specialty Food Association, n.d.), so this sample cannot credibly claim to represent all 70 UVMMC food vendors, let alone the state as a whole. We did use qualitative results, however, from the vendor surveys to highlight vendors' perceived benefits of selling to UVMMC on the overall business. In these interviews, many vendors expressed that while the sales to the hospital were a relatively small portions of their overall sales (a mean of 9% and ranging from 0.04% to 33%), the sales had instrumental value in raising brand awareness and helping them gain experience meeting the logistical rigors of wholesale markets.

In contrast, a previous study (Jablonski & Schmit, 2015) had the resources to interview a much larger number of respondents. This data collection method requires very large time commitment to gain respondents' trust (due to the sensitive nature of sharing financial data) and pore over records. The limited budget of our project and time availability of the researchers, as well as lack of response from vendors, all precluded further data collection. As a result, we were not able to customize IMPLAN as we intended. We posit that survey fatigue in farmers and other supply chain actors, as well as tight funding environments, will be future challenges to this kind of work.

Reflections on the USDAAMS Toolkit

On the whole, we believe our study generally addressed the key recommendations from the toolkit mentioned earlier. These specifically include:

- *Have a concise scope of the project and invested stakeholders who will guide and set the context for the study, in order to ensure useful results.* The study was conceived and crafted in close collaboration with the hospital's nutrition

services director.

- *When possible, utilize secondary data sets, but be aware of their limitations.* We utilized data already collected by the hospital.
- *Collect primary data to overcome the limitations of secondary data.* We collected primary data to understand vendors' purchase patterns, as no secondary data set existed with this information
- *Input-output models like IMPLAN are useful but also have limitations.* Careful estimation of opportunity costs and customization to reflect the behavior of local actors will create more realistic and defensible scenarios. We carefully addressed opportunity cost, particularly netting out purchases from distributors that were displaced by local purchases. We were unable to calibrate the model to reflect vendors' input purchase patterns due to the small sample size. However, in the end we believe that although we did not field-test all seven modules of the toolkit, the results we produced were sufficient to meet the goals of providing UVMMC Nutrition Services with a measurement (the output multiplier of 1.38) with which to promote its success, gain recognition from the hospital administration and broader community, and create momentum for and inform future program development.

Reflections on Ease of Use

What went well

- We had solid buy-in from UVMMC staff and were able to agree quickly to the scope of the study.
- The secondary data from UVMMC appeared to be complete and were very well-organized and easy to work with. UVMMC staff provided all additional information requested by the research team.
- The vendors who spoke with us and provided primary data were forthcoming and insightful.
- The unmodified IMPLAN model was relatively easy to use; the magnitude of

multipliers in our study is within a credible range.

- Our colleagues with additional expertise in IMPLAN were accessible and helpful.
- The results of the study were well received by and useful to UVMMC stakeholders.
- Given the rigor with which the data were collected, the credibility of the IMPLAN model, and the assistance from outside experts, we believe the results are credible and useful.

What was difficult

- Only a handful of vendors were willing to be interviewed, even with referrals from UVMMC and financial incentives. As a result, there were insufficient data to modify IMPLAN in a credible manner.
- The decision to abandon the modified model went against the methods originally outlined in the research proposal, and thus we failed to contribute to this emerging field of research.

Key Takeaways

- Engage stakeholders early and often to define the scope of work, obtain and vet available data, and vet and frame results to meet stakeholder needs.
- Include on the research team one or more members with expertise with regional economic studies and IMPLAN; seek outside help as needed.
- Using existing (secondary) data saves time, money, and effort.
- Be flexible. Some data may not be available at all (such as, in our case, vendors' purchase data that we wanted to use to modify IMPLAN), or may not be of sufficient quality and quantity to allow for credible analysis or conclusions. Be honest and open about the shortcomings of the data and frame the results and implications accordingly.

Implications for Future Research

The major implication of our study revolves around the difficulty of obtaining farmers' and

other supply chain actors' financial data. Conducting an analysis using Modules 1 to 6 is challenging and time-consuming; modifying IMPLAN (Module 7) is even more so. For some purposes, including ours, stopping after Module 6 or even earlier may be sufficient to meet the goals of the study. For those who wish to utilize Module 7, we offer a cautionary note and suggestions for how to modify IMPLAN to reflect purchasing patterns of businesses engaged in local food systems.

Even when respondents do not feel that expenditure data are too personal or proprietary, the time and effort to collect them are significant. This is a challenge that will likely be faced by many stakeholders in local food initiatives working under tight budget and times constraints. We feel that addressing this is critical to advancing this emerging field. "Improving the funding environment" is aspirational but likely not practical in the current environment. Some practical thoughts and ideas, which are not mutually exclusive and should build on each other, include:

- Include data on expenditure patterns in the Census of Agriculture. While the USDA's National Agricultural Statistics Service (NASS) collects expenditure data in the Census of Agriculture, a missing element is *where* purchases are made. This could be very useful for customizing the sector in IMPLAN. Collaboration with USDA NASS could include working with a representative sample of farms to collect more detailed data on expenditure patterns.
- Gather more data on expenditure patterns from food manufacturers. As local food supply chains become more integrated, it is important to obtain better data on their expenditure patterns.
- Provide greater incentive for farmers and supply-chain actors to participate in data collection efforts. This may be in the form of direct payment. Other nonmonetary incentives for participation should be explored and tested.
- Plan carefully, since data collected as the year progresses rather than retroactively at year's end will be more accurate.

- Partner with farm viability experts such as extension educators who are already working with farmers and have access to their financial records.
- Create and maintain a database with farm and supply-chain actor characteristics and expenditure patterns for use by researchers. Such a database should be sufficiently robust to guide credible extrapolation, yet protect respondents' confidentiality.

Conclusion

This essay reflects on a field test of the USDA local food economics toolkit. We were able to follow most of the key recommendations, including development of clear objectives and scope with stakeholders, use of primary and secondary data, and use of the IMPLAN model (Modules 1 to 6). Through the research collaboration, we were able to publish results in a scholarly journal and fulfill other aforementioned stakeholder objectives (program promotion, recognition, and development). We emphasize, however, the difficulty of obtaining sufficient data to conduct credible modifications of IMPLAN. Specifically, we suggest that researchers and stakeholders create mutually agreed upon goals. It may be that the steps of Modules 1 through 6 (or even fewer) may be sufficient to meet these goals. If modification of IMPLAN is needed (Module 7), it is necessary to budget for adequate time and resources and to have a representative sample of vendors willing and able to provide the needed data.

Future directions of research in this area may focus on developing better, more efficient, and less burdensome methods to gain primary data (O'Hara & Pirog, 2013), by increasing producer participation and overcoming survey fatigue. As one of the first pilots of the USDA AMS toolkit, we hope our study motivates further investigation of the economic impacts of local food systems and encourages collaboration to improve methods and results.

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Factors influencing the use of food storage structures by agrarian communities in Northern Uganda

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Submitted April 21, 2016 / Revised July 6, August 28, October 12, November 18, and November 23, 2016 / Accepted November 23, 2016 / Published online February 23, 2017

Citation: Owach, C., Bahiigwa, G., & Elepu, G. (2017). Factors influencing the use of food storage structures by agrarian communities in northern Uganda.

Journal of Agriculture, Food Systems, and Community Development, 7(2), 127–144.

<http://dx.doi.org/10.5304/jafscd.2017.072.003>

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Abstract

Food storage at the national or global level is important due to its multifunctional roles of enhancing food access, nutrition, and income security at the national, community and household levels. This study assesses the importance of food storage structures and their utilization by farmers cultivating finger millet (*Eleusine coracana*) and common beans (*Phaseolus vulgaris*) in Apac and Arua districts, Northern Uganda. The study encom-

passed a total sample of 782 households producing finger millet and/or beans (388 of which were below and 394 above the poverty line). A binary probit regression analysis was used to identify the factors influencing the household use of improved storage structures.

The findings indicated that only 22% of households used improved storage structures and that usage depended on the age of the household

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Author Notes

This paper was developed from Charles Owach's Ph.D. thesis submitted in fulfillment of the requirements for the award of a doctorate degree at Makerere University, Kampala, Uganda.

This research is an assessment of the extent of use of improved food storage structures in two districts in Northern Uganda and associated factors that are associated with influencing storage use. The two districts covered (Apac and Arua) represent the two farming systems in Northern Uganda, that is, Northern and West Nile farming systems. The analysis was undertaken for households above and below the poverty line in order to guide policy decision-making.

head, education level of the household head, membership in a farmer group or association, family size, and distance to market. The findings also indicate that the postharvest policies of the past did not have any significant effect on household access to improved storage technologies in the study areas. It is generally agreed that usage of improved storage structures leads such benefits as postharvest losses reduction, product quality conservation and increased duration of storage (World Food Programme [WFP], 2015). Thus we suggest that strategies to improve the usage of improved storage structures may be organizing agrarian communities and reaching them with carefully developed postharvest programs. This action could lead to higher usage rates of these technologies in this region.

Keywords

Food Losses; Improved Storage Structures; Postharvest Losses; Agrarian; Households; Poverty; Smallholder; Northern Uganda

Introduction and Literature Review

Globally, about one-third (or 1.3 billion tons) of total food products, valued at almost US\$1 trillion, is lost or wasted annually, almost one-half of which is from developing countries (Food and Agriculture Organization of the United Nations [FAO], 2011). In sub-Saharan Africa (SSA), food loss accounts for 30% of total crop production and amounts to about US\$4 billion a year (World Bank, 2011). This value exceeded the value of total food aid received by¹ SSA for the decade 1998–2008 and equals the value of all cereal imports to SSA in the period 2000–2007 (The World Bank, 2011). Postharvest food losses contribute greatly to food, nutrition, and income insecurity in this region.

¹ According to the United Nations Millenium Project website, “The Millennium Development Goals (MDGs) are the world’s time-bound and quantified targets for addressing extreme poverty in its many dimensions—income poverty, hunger, disease, lack of adequate shelter, and exclusion—while promoting gender equality, education, and environmental sustainability. They are also basic human rights—the rights of each person on the planet to health, education, shelter, and security” (United Nations, n.d., para. 2). The first goal is to eradicate extreme hunger and poverty.

While some SSA nations have made some improvements in achieving the Millennium Development Goals¹ by decreasing the share of their populations suffering from extreme poverty (hunger), 41% (25%) of the SSA population is still reported to be extremely poor (undernourished) (FAO, 2015; United Nations [UN], 2015). Since expenditures on food uses up much of household income in SSA and most residents depend on agriculture and allied activities as their source of income, the impact on food security and poverty of reducing food losses could be immense (Chauvin, Mulangu, & Porto, 2012). The objective of this paper was to assess the use of food storage systems for households cultivating *Eleusine coracana* and *Phaseolus vulgaris* in Apac and Arua districts of Northern Uganda as a strategy for reducing food loss.

Much of these losses in SSA take place at the early stages of the food supply chain, and can be attributed mainly to both pre- and postharvesting losses (Kereth, Lyimo, Mbwana, Mongi, & Ruhembe, 2013). On-farm storage of food crops such as grains is commonly done by households using traditional storage structures (Thamaga-Chitja, Hendriks, Ortmann, & Green, 2004). In eastern and southern parts of Africa, a wide variety of storage structures are used, including wire cribs, polythene bags, and metal silos (Kankolongo, Hell, & Nawa, 2009) (see Figures 1–3).

The postharvest losses of highly perishable food products such as fruits and vegetables, live-stock and fishery products are even higher than for grains, and is attributable primarily to lack of cold chain (continuous cooling system for a commodity), poor processing facilities, and marketing infrastructure (Hodges, Buzby, & Bennett, 2011). Reducing food losses by investing in improved and user-friendly postharvest management offers opportunities for enhancing food security and household incomes in SSA without incurring any additional production costs (Hodges et al., 2011). Improving postharvest management techniques can also help build resilience against current and future climate-related shocks and reduce the need for expanding farmland and damage to environmental services, including carbon sequestration (Stathers, Lamboll, & Mvumi, 2013).



Figure 1. Wire Crib



Figure 2. Polythene Bags



Figure 3. Metal Silo

In addition to building capacity of smallholder farmers in postharvest management, both hermetic and nonhermetic storage technologies have been introduced and tested for efficacy in a number of SSA countries (WFP, 2015). These storage technologies have proven to be effective in reducing food losses. Some of these technologies include

super grain bags, zero fly bags, plastic silos, metal silos, grain safes, and improved granaries (Figures 4–8). Such structures were tested by farmers in Uganda and Burkina-Faso and found to be effective in reducing postharvest food losses by 98%, regardless of the crop and duration of storage (WFP, 2015).



Figure 4. Super Grain Bag



Figure 5. Zero Fly Bag



Figure 6. Plastic Silo (example of a sealed grain container)



Figure 7. Grain Safe



Figure 8. Improved Granary

A number of projects related to food storage innovations have attempted to link smallholder farmers to markets and credit institutions as ways to boost their incomes (Bouquet Wampfler, & Ralison, 2009; Coulter & Onumah, 2002; KENFAP, 2011; United States Agency for International Development–Livelihoods and Enterprises for Agricultural Development [USAID-LEAD], 2012; Woomer & Mukhwana, 2004). Such initiatives have used a participatory approach, as in the case of maize in rural areas of Kenya (Woomer & Mukhwana, 2004) and rice in Madagascar and Tanzania (Coulter & Onumah, 2002). Smallholders in several African countries, such as Niger, Madagascar, Zambia, Malawi, Kenya, and Uganda, have also participated directly in donor-funded inventory credit or “warrantage” system for grains (Bouquet et al., 2009). Similar to the above strategies is the warehouse receipt system also introduced to many countries in eastern and southern Africa (Coulter & Onumah, 2002). Smallholders in SSA are in one way or the other willing to adopt improved structures for postharvest technologies at the household level. This indicates that there is considerable potential for these smallholders to participate directly in collective storage at the community and national levels.

The adoption rate for improved grain storage technologies among smallholder farmers in SSA at the household level, however, is variable (12.7%–74%), with most studies indicating adoption rates below 50% (Aguessy, 2009, as cited in Affognon, Mutungi, Sanginga, & Borgemeister, 2015; Arouna, Adegbola, & Biaou, 2011; Moussa, Lowenberg-DeBoer, Fulton, & Boys, 2011). Some studies have reported abandonment rates as high as 56% to 73% (Adegbola, 2010; Affognon, Mutungi, Sanginga, & Borgemeister, 2015). Other studies reported adoption rates of 12.7% for metal drums used for storage of cowpea in Benin (Moussa et al., 2011); 40.9% adoption of improved granaries for maize storage in Benin (Arouna et al., 2011); adoption rates in Benin of 74%, 45%, and 41% for wooden granaries for storing maize cobs, and for metal cans and polyethylene bags for storage of grains, respectively (Aguessy, 2009, as cited in Affognon et al., 2015). With an adoption rate of improved storage structures of only 5%, farmers

in Benin seems to have the lowest adoption rates, yet when storage technologies are developed using participatory approaches, adoption rates of 80% were reported (Affognon et al., 2015). In Tanzania, a 55% to 64% uptake rate of extension knowledge on control of larger grain borer by farmers was recorded (Golob, 1991). However, the rate of adherence to using such structures by the farmers was only 17%. This could be attributed to various socio-economic factors, such as inadequate capital for the high costs of the technologies, limited technical know-how, and low price variability between seasons, which reduces returns to storage (Affognon et al., 2015; Golob, 1991).

Moreover, there is growing evidence indicating low levels of participation among smallholders in collective storage (Ton, de Grip, Lançon, Onumah, & Proctor, 2014). In Uganda, only 23% of existing capacity of certified warehouses was utilized in 2011, with a majority (90%) of the grain depositors being traders; some warehouses did not have a single farmer registered to participate (USAID-LEAD, 2012). The low utilization of the storehouses was attributed mainly to their poor location, lack of trust in the storage management arrangements (including bad memories by farmers of the functioning of some cooperatives in the past), and unfavorable terms of storage for the farm produce (e.g., a lack of cash advances to farmers at the time of farm commodity deposit, even though farmers often need cash for domestic and social needs) (USAID-LEAD, 2012). The same situation applies to Kenya, where 90% of warehouse grain deposits were from large-scale farmers and traders, leaving only 10% of the space to smallholder farmer groups, a situation due mainly to high storage fees and the relatively small volumes of commodities offered by small farmers, even as farmer groups (Jones & Lowenberg-DeBoer, 2014; KENFAP, 2011).

Various reasons have been attributed to poor utilization of scientific postharvest management technologies by smallholder farmers in SSA. As indicated in a review by Affognon et al. (2015), the problems can be associated with technological, socio-cultural, economic, and political reasons. Poor delivery of the scientific innovations, lack of knowledge of modern conservation methods or

techniques by many SSA smallholder farmers, and inappropriate postharvest technologies have been given as some of the reasons efforts to minimize food losses have been hindered (Bediako, Chianu, & Dadson, 2009; Obeng-Ofori, 2011). Results from a study in Tanzania reported that 96% of farmers have limited knowledge of methods of proper postharvest management (Abass, Ndunguru, Mamiro, Alenkhe, Mlingi, & Bekunda, 2014). Smallholder farmers also may stick to traditional techniques of food conservation for fear of venturing into scientifically new but locally untested methods available from research stations. Winniefridah and Manuku (2013) reported that the people of Matabeleland in the southern province of Zimbabwe preferred traditional ways of storage to modern ways involving the use of agro chemicals due to health concerns. The cost of constructing improved storage structures has also hindered their accessibility to farmers (Jones & Lowenberg-DeBoer, 2014). Furthermore, stringent quality and quantity requirements associated with conservation methods are a constraint for many farmers, as is the case with the warehouse storage system (Onumah, 2010).

In Uganda, postharvest interventions by public, private, and development partners, such as the Marketing and Agro-processing Strategy (MAPS) formulated in 2004, have attempted in the past to promote the use of improved storage structures at the household level by building the capacity of farmers in postharvest loss management and demonstrations on improved storage technologies (cribs, silos, etc.) (Republic of Uganda, Ministry of Agriculture, Animal Industry and Fisheries [MAAIF], 2012a). However, postharvest food losses are still high, as exemplified by the grains sector having 15–30% loss, attributable to the use of poor postharvest handling and storage technologies by farmers (Republic of Uganda, MAAIF, 2012a). A study by Ssewanyana and Kasirye (2010) indicated that appropriate postharvest storage technologies and conservation methods are important in coping up with seasonal fluctuations in household dietary intakes. Yet Ssewanyana and Kasirye (2010) did not examine household usage of improved storage structures or technologies for conserving agricultural and food products. Better

understanding of the types of storage structures and factors influencing the use of improved storage structures are important as they can support evidence-based decision-making and policy formulation, and contribute to attaining household food security.

Materials and Methods

The Study Area

The study covered two districts in Northern Uganda: Apac (longitude 32.15°–32.95°E and latitude 1.65°–2.25°N) and Arua (longitude 30.75°–31.50°E and latitude 2.50°–3.35°N). Apac and Arua were selected as sample districts for a number of reasons. They are major food-producing districts and have long-standing peace and security. Apac and Arua belong to the Northern and West Nile farming systems, respectively. Apac and Arua districts encompass key commercial towns (of the same names) in Northern Uganda; this provides good market conditions for price arbitrage. Apac and Arua districts' human development index (HDI)² of 0.508 and 0.551 in 2005 were 13% and 5%, respectively below the national average of 0.581 (UNDP, 2007). The overall HDI for the Northern region in 2005 was 0.499, which was 14.1% lower than the national average of 0.581 during the same year (UNDP, 2007). Considering some of the factors described above, Apac and Arua districts were considered to be representative of the Northern region. Furthermore, interregional comparisons indicate that the Northern region continues to lag behind in many socioeconomic indicators (Republic of Uganda, Ministry of Finance, Planning and Economic Development [MFPED], 2014). The proportion of the population living in poverty in this region is still high at 43.7% (2012/13); while an improvement from 60.7% in 2005/06, it is high compared to the overall national poverty levels of 19.7% and 31.1% in 2012/13 and 2005/06, respectively (MFPED,

² The HDI is a holistic measure of overall human progress, with special emphasis on living a decent life. It is an index comprising three components that reflect the ends of the development effort: life expectancy index, education index, and GDP index, all weighted by one-third to obtain the HDI.

2014). This region experiences recurrent food insecurity problems; expenditures on food were as high as 56% of all rural household expenditures in Northern Uganda in 2012/13 (MFPED, 2014).

The choice of finger millet (*Eleusine coracana*) and common bean (*Phaseolus vulgaris*) was informed by the fact that they are among the main staples of the people in Apac and Arua districts. Mukiibi (2001) lists the main crops grown in Northern Uganda as being cassava (*Manihot esculentus*), maize (*Zeamays*), finger millet, sorghum (*Sorghum bicolor*), cowpeas (*Vigna unguiculata*), groundnuts (*Arachis hypogaea*), pigeon peas (*Cajanus cajan*), rice (*Oryza sativa*), common beans (*Phaseolus vulgaris*), sweet potatoes (*Ipomea batatas*), sunflower (*Helianthus annuus*), soybeans (*Glycine max*), and cotton (*Gossypium species*). In addition to contributing to food security, finger millet and beans are easily storable, with lower post-harvest losses and lower perishability than fruits, vegetables, meat, and fish (Hodges, Buzby, & Bennett, 2011).

Data and Sampling Techniques

In this study, we analyzed data collected in the Uganda census of agriculture 2008/09 by the Uganda Bureau of Statistics (UBOS). UBOS used a stratified two-stage sample design to select small and medium-scale households. The first stage involved the selection of Enumeration Areas (EAs) with probability proportional to size (PPS) in the study districts. The second stage involved the selection of households (ultimate sampling units) using systematic sampling, after stratification based on acres of cropland (UBOS, 2010a). The optimal number of 10 households (respondents) were selected per EA (resulting in samples of 57 and 52 in Apac and Arua districts, respectively) based on cost ratio and intra-class correlation. After exploratory data analysis, the pooled sample size for the two study districts used in the analysis was 782 households.

Households were categorized into two groups: those above and those below the Northern region's poverty line. The national poverty line was equivalent to UGX 62,545 (approximately US\$34.00; US\$1=1,840 UGX at the time of this study) per adult equivalent per month; the northern region rural poverty line was UGX 54,174.47

(US\$29.40) per adult equivalent per month in 2008/09, considering the reference (base) period of 2005/06 (UBOS, 2013). From the total sample size of 782 households, 394 households were above the poverty line and 388 households were below the poverty line. Data analyzed included storage types for food grains; age, sex, and education level of the household head; income status of the household (above or below the poverty line); whether an extension worker had visited the household; the household's access to credit; location variable (district where the household was located); and household size, standardized in terms of how many adult-equivalents are in each family. Household adult equivalencies were based on nutritional requirements using consumption conversion factors as recommended and contained in the World Health Organization's (1985) nutrition guidelines.

Continuous variables (age of household head, number of years of formal education of household head, household size, and household income) were measured at variable mean using t-statistics (Table 1). Categorical variables (sex of household head, access of household head to extension and credit services, and membership of household head in a farmer group or association) were measured as percentages using (χ^2) (Table 1).

Analysis of the storage structures used by households involved two steps. First, from the UBOS census 2008/09 dataset we identified and analyzed the various types of storage structures and households using them using frequency distributions. This was followed by categorizing the use of various storage structures into two broad categories (i.e., households using improved storage facility=1; households using unimproved storage=0), after consulting with UBOS (the data source) and post-harvest specialists.³

Data Analysis

STATA12 statistical software was used for data analysis. Analysis of household use of improved

³ Key: Improved storage facility=1; unimproved storage facility=0. Improved granary=1; Unimproved granary=0; In the house=0; Specific house/room=1; Under shelter outside=0; Cribs=1; Silos=1; Cold storage=1; Under-ground=0; Over fireplace=0; Sealed containers=1; Others=0.

Table 1. Characteristics of Households Growing Finger Millet and Bean in Apac and Arua Districts, 2008/09

Characteristics	Households above poverty line		Households below poverty line		All households above poverty line	All households below poverty line	Overall sample
	Apac	Arua	Apac	Arua			
	Standard deviations in parentheses						
Age of household head (years)	43.2 (15.4)	46.6 (20.8)	43.7 (11.7)	46.3** (13.3)	44.8 (18.2)	44.7 (12.4)	44.8 (15.6)
Education of household head (years in school)	6.2 (2.8)	6.0 (3.3)	5.9 (3.9)	5.7 (4.5)	6.2 (3.0)	5.8 (4.2)	6.0 (3.6)
Household size (adult equivalent)	3.3 (2.0)	3.0 (1.6)	5.4 (1.9)	5.8 (2.8)	3.1 (1.9)	5.6*** (2.3)	4.3 (2.3)
Household income (UGX per capita per month)	69,527 (12,771)	70,956 (13,278)	39,726 (11,785)	37,293 (14,528)	70,185 (13,004)	38,710*** (13,038)	52,253 (20,312)
Sex of household head: Male (%)	73.0	75.9	85.4	79.0	74.4	82.7***	78.5
Household access to extension services (%)	29.0	6.4***	45.6	9.3***	18.3	30.4***	24.3
Household access to credit (%)	5.3	2.7	7.1	15.4***	4.1	10.6***	7.3
Membership in farmer group or association (%)	15.0	3.2***	25.2	13.0***	9.4	20.1***	14.7

*** $p < .01$; ** $p < .05$

Note: The significance levels relate to comparisons across rows.

Source: Uganda Bureau of Statistics, 2010b.

storage structures was done using the probit model developed following the utility theory as suggested by Greene (1997). The probit model makes it possible to generate the marginal effects of the explanatory variables on the probability of adoption, and the model has been used to establish factors affecting adoption (Lapar & Pandey, 1999; Pindyek & Rubinfeld, 1991). The model presupposes that the decision by the household to adopt or use or not to adopt or use improved storage system would depend on an unobservable index Z_i determined by explanatory variables, where the bigger the index, the greater the probability of the household to use improved storage system.

The expression takes the form:

$$(1) Z_i = \alpha + \beta_i X_i$$

Where:

X_i = Number of years of formal education of head of household, as an example;

α and β_i = parameters to be estimated.

Considering a dummy variable with values 1

(if household adopts or uses improved storage system); 0 if not using, and assuming an unobservable threshold for $Z_i = Z_i^*$, the household would adopt or use improved storage if Z_i exceeds Z_i^* .

Assuming Z_i^* is also normally distributed like Z_i , the parameters of the index Z_i can be estimated and information about it obtained, and the values of α and β_i can be obtained. Information on Z_i , α , and β_i was obtained by taking the inverse of equation (1); hence,

$$(2) Z_i = A^{-1}(Z_i) = A^{-1}(P_i) = \alpha + \beta_i X_i + e$$

Where:

Z_i = Household decision to use or not to use improved storage system (1 = household uses improved storage system; 0 does not use); α = Constant; X_i = Vector of explanatory variables; β_i = Vector of parameters to be estimated; e = Error term

The specification of the probit analytical model was as in equation (3) below.

$$(3) \quad Z_i = \alpha + \beta_1 X_1 + \beta_2 X_2 \dots + \beta_9 X_9 + e$$

Where:

Z_i = Dicotomous variable (1 = use of improved storage system; 0 = Otherwise)
 α = Intercept; X_1 = Age of household head (years); X_2 = Sex of household head (Male=1; Female=0); X_3 = Education of household head (years); X_4 = Poverty line (Above=1; Below=0); X_5 = Extension visit (Yes=1; No=0); X_6 = Membership in farmer group or association (Yes=1; No=0); X_7 = Obtained credit (Yes=1; No=0); X_8 = District (Apac=1; Arua=0); X_9 = Household size (Adult equivalent); e = Error term

Results and Discussion

Characteristics of Households

Almost three-quarters of households studied were male-headed. Overall, there was no significant difference in age and education level of respondents below and above the poverty level (Table 1). Irrespective of the type, household access to extension services, credit, and membership in farmer groups or associations were generally low in Apac and Arua districts (Table 1). Households below the poverty line were more likely ($p < 0.01$) to access extension and credit services and to be in organized farmer groups or associations than those above the poverty line (Table 1). Households in Apac district had better access to extension services and were more likely to be members of farmer groups compared to those in Arua district, while those in Arua had better access ($p < 0.01$) to credit services (Table 1). Better access by farmers to extension services in Apac may be attributed to the greater proportion of farmers being in groups, which facilitates extension outreach and adoption of improved technologies (Table 1), in line with results of a study on farmer field schools in Uganda (Lwala, Elepu, & Hyuha, 2016).

In the study districts, extension service delivery was provided mainly by National Agricultural Advisory Services (NAADS). This agency categorized farmers on the basis of their food security, with 70% as subsistence farmers, 25% as semicommercial, and 5% as commercial farmers

(MAAIF, 2012b). The main objective of subsistence farmers is food security (consuming over 50% of their own production); semicommercial farmers sell at least 50% of their production, while commercial farmers grow sugarcane, tea, rice, oil palm, and coffee mainly on large-scale, specialized estates and sell the whole of their production after processing (MAAIF, 2012b).

Results of the Uganda census of agriculture indicate that only 10% of the agricultural households countrywide accessed credit during the period 2002/03 to 2007/08 (UBOS, 2010b). The main source of credit was self-help groups (village savings loan associations), which provided loans to 30.8% of households; microfinance institutions (MFIs), which provided loans to 28.7% of households; and families and friends, who provided loans to 17.6% of households (UBOS, 2010b). Banks provided loans to only 10.3% of agricultural households (UBOS, 2010b). Self-help groups, MFIs, and families and friends provided the majority of loans to subsistence farmers and semicommercial farmers; banks provided loans to commercial farmers (UBOS, 2010b). With up to 76% of households required to provide collateral as security for loans, the need for collateral was the main constraint to accessing loans by agricultural households (UBOS, 2010b). The main forms of collateral provided by farmers were land titles (29.1%), character (23.1%), crops (19.0%), and livestock (16.7%) (UBOS, 2010b). Organizing farmers into groups and associations is being done by primarily by development actors and government programs such as NAADS in order to enhance their access to agricultural extension services and credit (MAAIF, 2012b).

Household Production and Storage of Finger Millet and Beans

Results displayed in Table 2 indicate that respondents above the poverty line produced higher quantities of finger millet and beans compared to their counterparts below the poverty line, mainly due to ownership of more agricultural land and better financial resources to hire farm labor. The average land size was 2.2 ha (5.4 acres) and 1.18 ha (2.92 acres) for households above and below the poverty line, respectively (UBOS, 2010b). On average, households above the poverty line stored

Table 2. Per Capita Seasonal Finger Millet and Bean Production and Storage in Apac and Arua Districts, 2008/09 (in kg)

	Households above poverty line		Households below poverty line		All households above poverty line	All households below poverty line	Overall sample
Crop	Apac	Arua	Apac	Arua			
Finger Millet							
Quantity produced	85.5	265.8***	62.7	196.1**	214.9	106.1**	152.3
Quantity stored	30.2	78.7**	15.5	29.0**	55.2	20.4***	39.2
Beans							
Quantity produced	66.5	401.2***	34.5	53.7	202.9	42.6***	116.6
Quantity stored	18.4	62.9***	8.5	18.1	35.5	12.0***	22.9

*** $p < .01$; ** $p < .05$

Notes: The significance levels relate to comparisons across rows; 1 kg = 2.2 lbs.

Source: Uganda Bureau of Statistics, 2010b.

Table 3. Types of Storage Structures Used by Households in Apac and Arua Districts (%), 2008/09

Storage type	Households above poverty line		Households below poverty line		All households above poverty line	All households below poverty line	Overall sample
	Apac	Arua	Apac	Arua			
Improved granary	7.8%	0%	4.4%	0%	3.7%	2.2%	2.9%
Unimproved granary	19.6	35.3	47.0	33.9	28.0	40.3	34.4
Inside house	70.3	64.6	60.5	81.5	67.2	71.2	69.4
Inside specific house or room	15.7	11.5	18.3	25.0	13.5	21.7	17.8
Under shelter outside	0	6.2	4.3	11.7	3.3	8.1	5.8
Cribs	1.0	0	0	2.5	0.5	1.3	0.9
Over fireplace	2.9	20.2	6.1	21.5	12.1	14.0	13.1
Sealed containers	1.9	10.1	0	6.6	6.3	3.4	4.8
Others	0	1.7	0	4.1	0.9	2.1	1.5

Source: Uganda Bureau of Statistics, 2010b.

55.2 kg (121.7 lb.) of finger millet and 35.5 kg (78.3 lb.) of beans per capita per season, while those below the poverty line stored 20.4 kg (45.0 lb.) of finger millet and 12.0 kg (26.5 lb.) of beans per capita per season. Households in Arua district produced and stored larger quantities of finger millet and beans compared to those in Apac district (Table 2); this may be attributed to more intensive farming and generally richer soils in Arua than in Apac (UBOS, 2010b).

Types of Storage Structures Used

As indicated in Table 3, the two most common storage structures used by households were within the residence of the farmers (69.4%) and in unim-

proved granary (34.4%).⁴ The majority of households below the poverty line (>71%) and above the poverty line (67%) stored the finger millet and beans in one of the rooms inside the house they were living in: on the floor (Figure 9), in polythene bags (Figure 2), in pots (Figure 10), and in other places. About 18% of households overall stored grain in a dedicated room of the house they were living in or a dedicated house; the rate varied between households below (22%) and above (14%) the poverty line (Table 3; Figure 11).

A primary reason for the common practice of

⁴ The sum is over 100% due to some households reporting multiple storage types.



Figure 9. Storing Grain on an Open Floor Inside a House



Figure 10. A Clay Pot Used for Storing Grain Inside a House



Figure 11. Storing Grain in a Dedicated Room in a House

storing grain inside a house is to minimize risks such as postharvest losses from predators, pests, and theft (UBOS, 2010b). Less than 3% of households used improved granary structures overall, with households above the poverty level using them at the slightly higher rate of 3.7% (Table 3). An improved granary is a storage structure that is substantially raised off the ground (by about 1 meter or 3.3 feet) and supported by poles fitted with rodent guards, as shown in Figure 8, which sits on concrete blocks and has walls made of mud and wattle and a top made of reeds covered with grass. An unimproved granary is a structure not substantially raised off the ground (about 0.3 meters or a foot off the ground), with the structure sitting on poles or low stones or poles not fitted with rodent guards, as shown in Figure 12, with walls made of mud and wattle and a top made of reeds and covered with grass. The contents of the unimproved granary are prone to attack by rodents,

leading to higher postharvest losses. A lower rate among households of improved granary usage for storage may be attributed to the higher cost of building them, as has been found in previous studies (Adegbola, 2010, cited in Affognon et al., 2015).

Furthermore, a few households stored their food products above the fireplace (4.8%) and in sealed containers in their homes (13.1%) (Table 3). One type of sealed container is a plastic silo (Figure 6). Most of the respondents who stored food in sealed containers were those who were above the poverty line. This suggests that they were fully aware of the advantages of such containers in guarding against postharvest losses and were also able to afford them, as indicated in a report by the WFP (2015).

Despite government efforts to promote the use of cribs (an improved storage structure for grains, shown in Figure 1), less than 1% of



Figure 12. Unimproved Granary



Figure 13. Storage Under Shelter Outside

households were using the technology (Table 3). This may be attributed, in part, to the low access of extension services by farmers (24.3%) as earlier indicated in Table 1 and the high cost of erecting a crib storage facility (Affognon et al., 2015). About 6% of farmers store food products, usually maize cobs and sorghum, by hanging them outside the house under the veranda, with more farmers in Arua district using the practice compared to those in Apac district (Table 3; Figure 13). This may be due to the greater production of tobacco in Arua, and its use by local farmers as a pest-control substance. Hung together with maize and sorghum under the veranda to dry, tobacco provides protection to maize and sorghum against insect pests, a practice categorized as use of botanicals (indigenous technologies) in pest control in a study by Affognon et al. (2015). Close to 8% of farmers below the poverty level and 3% of those above the poverty level reported using this method of storage (Table 3). The higher proportion of the use of this “storage under shelter outside” by farmers below the poverty level compared to those above the poverty level may be attributed to the lower cost of these indigenous methods compared to modern technologies (Affognon et al., 2015).

Results of interviews with various stakeholders revealed that households in the study area generally store crop produce for varying periods, ranging from a week to about six months, for purposes of consumption and sale. These findings are in accordance with results of a study on postharvest food losses in Tanzania, which indicated that the storage period for a number of crops (beans, sesame, groundnuts, sorghum, maize, etc.) ranged from 1 to 6 months (Abass et al., 2014). The major agricultural products usually stored in granaries by respondents in unthreshed forms is cereals, such as finger millet, sorghum, and maize, while legumes (beans, cowpeas, pigeon pea) are usually threshed prior to being stored in houses. Crops normally stored in sealed containers are threshed cowpeas, pigeon peas, and sesame. Selected good-quality maize cobs, finger millet, and sorghum to be used as seed in the coming season are traditionally stored over the fireplace (Thamaga-Chitja et al., 2004).

Storage over the fireplace has some perceived

advantage of reducing pest infestation as a result of reduced moisture content for the cereals, and ultimately improving the shelf life of the cereal seeds. Although these perceptions agree with the findings of research conducted in South Africa (A. T. Modi, personal communication, 2003), which indicated that roof-stored seed over the fireplace had more vigor during germination than commercial maize seeds, results of a study by Thamaga-Chitja et al. (2004) indicated lower germination rates and yields from seeds stored over the fireplace. These inconclusive results call for more research in the performance of these storage methods. Finger millet and sorghum were sometimes stored in unthreshed form under shelter outside in areas where households perceive a low risk of theft of these crops. Other storage methods used by households included baskets made from reeds (Figure 14) and underground silos to mention, to mention but a few (UBOS, 2010b).



Figure 14. Storage Basket Made from Reeds

Categories of Storage Structures Used

The various types of storage structures used by households were categorized into two broad groups: improved and unimproved. To distinguish between improved and unimproved storage structures, the definition of an improved storage structure given by postharvest specialists was used. An improved storage structure is defined as a one “that increases the shelf-life of a given product and maintains its integrity in quantity and quality for a desired period.” Improved storage structures included improved granaries, cribs, and storage in a specific house or room. Unimproved storage

structures included unimproved granaries, houses, under shelter outside, over a fireplace, and sealed containers.

Results showed that a majority (78%) of households growing millet and beans still used unimproved storage structures (Table 4). A higher proportion of Apac households below the poverty level (24.8%) used improved storage facilities compared to those in Arua district (11.6%); this may be attributed to the higher per capita income in Apac (Tables 1 and 4). A similar study conducted in Kwara State in Nigeria by Adetunji (2009) indicated that 32% of farmers used improved storage (semimodern and modern storage techniques). In their review of literature, Affognon et al. (2015) showed that farmer/household adoption of improved postharvest technologies in SSA varied from 12.7% to 74%, with most studies reviewed revealing adoption rates of less than 50%. In the same literature, high disadoption rates of 56% to 73% were reported in one study. Besides limited access to finance by farmers, the other reasons indicated as causes of low adoption and high disadoption were limited technical know-how, weak innovative delivery systems, and inappropriate technologies (at times) due to inadequate involvement of beneficiaries in selecting technology (Mutambuki & Ngatia, 2006; Obeng-Ofori, 2011).

Factors Influencing Household Use of Improved Storage Structures

We employed a probit regression technique to assess factors affecting the use of improved storage structures by households in Apac and Arua districts. Results of the probit model are presented

in Table 5. Overall, the model fitness and explanatory power for the pooled data for Apac and Arua districts was satisfactory ($R^2 = 0.1155$; $\chi^2 = 46.06$; $\text{Prob} > \chi^2 = 0.0000$). Significant variables were age of household head, education of household head, membership in farmer group or association by household head, family size, and distance of the household to the nearest local produce market (Table 5).

Results of analysis of households growing finger millet and beans indicated that the variables age, sex of household head, education level of household head, access to credit, household size, and agricultural land size influenced adoption (use) of improved postharvest structures by varying magnitudes (Table 5). Access to credit by households increased the probability of adoption of improved storage structures by households growing millet and beans by 52%. This may be attributed to credit making it easier for households to purchase the required storage construction materials (poles, wire mesh, etc.) and to hire labor to construct the structures, as corroborated by related postharvest studies in sub-Saharan Africa (Mutambuki & Ngatia, 2006; Obeng-Ofori, 2011).

An increase in the age of a household head by one year increased the probability of adopting improved storage structure by 43% for bean-growing households, and by 21% for households above the poverty line. Similar results were obtained by Maongo, Assa, and Haraman (2013), Okoedo-Okojie and Onemolease (2009), and Lwala et al. (2016). With age comes more experience and resource accumulation, but only to a certain point, when conservativeness or risk aversion to technology adoption is observed.

Table 4. Proportion of Households Growing Finger Millet and Beans Using Improved and Unimproved Storage Structures in Apac and Arua Districts (%), 2008/09

Storage type	Households above poverty line		Households below poverty line		All households above poverty line	All households below poverty line	Overall sample
	Apac	Arua	Apac	Arua			
Improved	27.1	24.8	24.8	11.6***	26.0	17.8	21.9
Unimproved	72.9	75.2	75.2	88.4	74.0	82.2	78.1
Total	100	100	100	100	100	100	100

*** $p < .01$

Note: The significance level relates to comparisons across rows.
Source: Uganda Bureau of Statistics, 2010b.

Table 5. Factors Influencing Household Usage of Improved Storage Structures for Finger Millet and Beans in Apac and Arua Districts, 2008/09

Variable	Finger Millet-growing Households	Bean-growing Households	Millet and Bean-growing Households	Above Poverty Line	Below Poverty Line	Apac	Arua	Apac and Arua
	<i>Marginal effects</i>							
Age of household head (years)	0.06 (0.15)	0.43*** (0.12)	-0.13 (0.09)	0.21** (0.09)	0.14 (0.11)	0.20 (0.12)	0.16 (0.10)	0.18*** (0.07)
Sex of household head (Male)	-0.49** (0.21)	0.13 (0.10)	-0.34 (0.18)	-0.21 (0.12)	-0.11 (0.08)	-0.18 (0.12)	-0.13 (0.12)	-0.13 (0.08)
Education of household head (years)	0.07 (0.05)	0.12 (0.08)	0.16** (0.07)	0.09 (0.08)	0.08 (0.06)	0.16** (0.08)	0.10 (0.06)	0.11** (0.05)
Poverty status (Above poverty line)	0.09 (0.07)	-0.11 (0.02)	0.16 (0.07)	NA	NA	0.02 (0.01)	0.03 (0.02)	0.02 (0.01)
Extension visit	-0.06 (0.05)	0.12 (0.08)	-0.05 (0.04)	0.09 (0.09)	-0.07 (0.05)	0.05 (0.03)	-0.02 (0.01)	-0.05 (0.02)
Membership to farmer group	0.20 (0.18)	0.13 (0.12)	0.07 (0.02)	0.11 (0.08)	0.16 (0.08)	0.06 (0.04)	0.27** (0.14)	0.13** (0.07)
Obtained credit	0.16 (0.02)	-0.11 (0.11)	0.52** (0.25)	0.27 (0.26)	-0.09 (0.05)	0.33 (0.23)	-0.09 (0.07)	0.07 (0.05)
Household size (Adult equivalent)	0.14 (0.10)	0.20** (0.08)	0.14 (0.08)	0.07 (0.06)	0.26*** (0.08)	0.12 (0.10)	0.16** (0.07)	0.16*** (0.06)
Agricultural land (ha)	0.07** (0.04)	0.03 (0.03)	-0.04 (0.01)	0.02 (0.02)	0.02 (0.02)	0.04 (0.01)	0.03 (0.02)	0.03 (0.02)
Distance to market (km)	0.04 (0.01)	-0.04 (0.03)	-0.03 (0.03)	0.04 (0.01)	-0.07** (0.03)	-0.04 (0.03)	-0.06 (0.03)	-0.05** (0.02)
Chi-square	16.30	42.56***	22.03***	18.53**	32.07***	21.65**	31.70***	46.06***
Log likelihood	-28.38	-88.81	-33.23	-55.98	-115.68	-85.76	-87.03	-176.44
R ²	0.2231	0.1933	0.2490	0.1420	0.1217	0.1121	0.1541	0.1155

** $p < .05$; *** $p < .01$; standard errors of coefficients of marginal effects are in parentheses.

Notes: (1) NA indicates not applicable; (2) the significance levels relate to comparisons across rows.

Source: Uganda Bureau of Statistics, 2010b.

Education improved the likelihood of adopting improved storage structures. The present findings indicate that the probability of using improved storage structure is correlated with the level of education of the household head; an increase by one year increased the probability of using improved storage technology by 16% for Apac district, 11% in both study districts, as well as for households growing finger millet and beans (Table 5). Similar results were found in studies of the adoption of improved storage structures for maize in Benin (Adegbola et al., 2011, cited in Affognon et al., 2015), and metallic grain silos in Malawi (Maongo et al., 2013). There is no doubt that education improves the rate at which new techniques

and skills can be absorbed and applied by farmers, and this might explain increasing adoption rates as years of education increase.

Membership in a farmers' group or association improved the probability of household use of improved storage structures by 27% in Arua and 13% across both study districts (Table 5). This agrees with findings from previous adoption studies of improved granaries for maize in Mozambique (Cunguara & Darnhofa, 2011). This might be an indication that organized farmers are empowered (including enhanced diffusion of knowledge and information about new technologies) and have improved bargaining power for cost-effective technology acquisition compared to their counterparts

(Okorley, Adjargo, & Bosompem, 2014). Adoption by group members might also be due to peer pressure (Lwala et al., 2016; Malima, Blomquist, Olson, & Schmitt, 2014).

Household size increased the probability of using improved storage structures. An increase in household size by one adult equivalent increased the probability of using improved storage structure by 26% for households below the poverty line, 20% for those growing beans, and 16% for households in Apac and Arua districts (Table 5). Similar results were obtained by a study investigating the adoption of improved storage technologies for fresh yam in Benin (Adegbola et al., 2003 cited in Affognon et al., 2015), and a study of the effect of farmer field schools on adoption of technologies in eastern Uganda (Lwala et al., 2016). Construction of improved storage structures often requires intensive labor, and family labor is a major source of on-farm labor in developing countries. In most developing countries in the past, the people residing in a village were more or less an extended family and therefore could assist each other for most of the activities. However, with the recent increase in rural-urban migration in a number of developing countries by those in search of better employment opportunities and an improved standard of living, a number of rural families have lost massive family/village labor resources. This accelerated rural-urban migration to urban areas, particularly by youth, has escalated labor costs for agriculture in the rural areas; this is certainly the case in Uganda, with possible impact on the adoption of intensive labor technologies in agriculture, including for postharvest technologies (Government of Uganda, 2015).

The distance of a household from the nearest local produce market was negatively associated with use of improved storage structure. An increase in distance from a household to the local produce market of one kilometer (0.6 mile) reduced the probability of use of improved storage technology by 7% for households below the poverty line and by 5% for those in Apac and Arua districts (Table 5). Similarly, market-oriented maize farmers in Benin, with better access to market, were found to more easily adopt improved storage structures (Adegbola et al., 2011 cited in Affognon

et al., 2015). Reduced market access associated with an increase in distance to the market makes households less market-oriented in their production decisions, leading to low marketable surpluses for storage. This may be due to limited awareness of the advantages of using improved storage structures, such as reduced postharvest losses, as well as low access to postharvest storage technologies in the rural areas of Uganda largely due to credit constraints (Government of Uganda, 2015).

The sex of the household head and size of agricultural land were significant only for households growing finger millet (Table 5). Female-headed households growing finger millet were 49% more likely to adopt improved storage structures than their male counterparts (Table 5), probably due to the associated advantages of reduced postharvest losses for improved food security and commercial purposes (WFP, 2015). As shown in Table 5, an increase in agricultural land by one hectare (2.47 acres) improved the likelihood of household adoption of improved storage structures by 7%, likely due to better possession of financial resources to hire farm labor and increased millet output, in line with results obtained by a study by UBOS (2010b). Contrary to a priori expectations, income of household (poverty status) and access to extension did not seem to explain the use of improved storage structures by households in Apac and Arua districts. Poor access to extension service, as shown in Table 1 above, could be one of the plausible reasons.

Conclusions

This study has revealed that a majority of households in Uganda still use unimproved storage structures for conserving agricultural produce. This seems to suggest that past postharvest policies and interventions have not yet had a significant effect on enhancing the use of improved storage structures by households in Apac and Arua districts. While age of household head, education of household head, membership in a farmer group or association by household head, access to credit, family size, and distance of the household to a local produce market influenced household usage of improved storage structures, household income and access to extension service did not. It is thus

appropriate to maintain and accelerate the mobilization and organization of households into farmer groups or associations as one of the important vehicles for making farmers aware of the benefits of improved postharvest storage structures, due to the positive effect of membership in farmer groups or associations on use of these technologies. Support to rural farmers' education in the context of rural development could lead to increased farmer access to knowledge and information that are beneficial to facilitating postharvest technologies, as demonstrated by results of analysis in this study. Enhancing market access by increasing the number of rural markets equipped with appropriate facilities that meet quality standards for food safety would enhance market access for farmers and use of improved storage structures by households. Support to increase household access to credit would also promote adoption of improved postharvest storage structures. However, future research needs to examine the benefits and costs associated with various on-farm storage structures. Knowledge of farmer perceptions about improved storage structures might also provide a clue as to what extension package should be used to disseminate these technologies.

Acknowledgement

The authors would like to extend special thanks to Prof. Bernard Bashaasha, principal of the College of Agricultural and Environmental Sciences, Makerere University, Kampala, for his useful comments and support. We also thank the various anonymous JAFSCD reviewers and the Uganda Bureau of Statistics for providing the agricultural census 2008/09 dataset.

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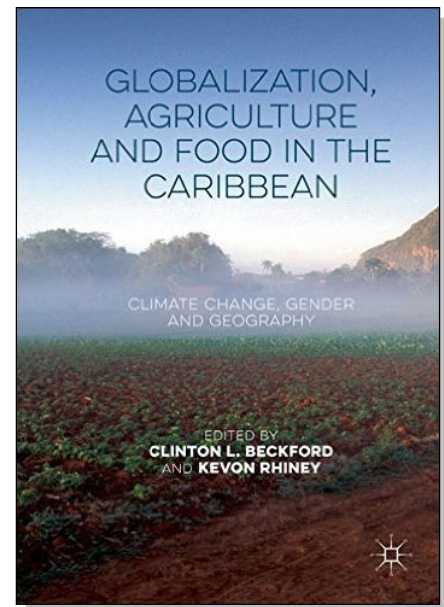
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Globalization and food systems restructuring in the Caribbean region

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Review of *Globalization, Agriculture and Food in the Caribbean: Climate Change, Gender and Geography*, edited by Clinton L. Beckford and Kevin Rhiney. (2016). Published by Palgrave MacMillan. Available as hardcover and ebook; 304 pages.
Publisher's website: <http://www.palgrave.com/us/book/9781137538369>



Submitted November 6, 2016 / Published online February 23, 2017

Citation: Lowitt, K. (2017). Globalization and food systems restructuring in the Caribbean region [Book review]. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 145–147. <http://dx.doi.org/10.5304/jafscd.2017.072.005>

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In a time of intensifying concerns about food security and climate change, this edited collection by Beckford and Rhiney explores how global economic and environmental change are impacting the food systems of Caribbean Small Island Developing States (SIDS). Although SIDS have been recognized as a “special case” for sustainable development because of their unique susceptibilities to environmental and economic change

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(United Nations, 2011), they have been relatively underexplored in contemporary food scholarship. This collection, featuring nine case studies of island food systems based on the research of 10 authors, all with Caribbean roots at the University of the West Indies, is thus a welcome and timely addition to the literature.

One of the most compelling attributes of this book is its local-level look at global challenges. The book offers insights into how globalization is interacting with the social, ecological, and cultural particularities of SIDS to shape food and community outcomes. From indigenous Carib communities in St. Vincent to coffee farmers in Jamaica, the book focuses on the people directly experiencing the

impacts of globalization and their attempts to carve out livelihoods. While the struggles of these communities are well documented throughout its chapters, the book also offers optimism. I appreciate that most of the chapters offer practical policy strategies for addressing the complex food and agriculture problems examined. The reader also cannot help but feel that the region's diversity of people and landscapes is a tremendous asset. That said, I would have liked the theme of diversity to have been pushed even further in the book. Jamaica is overrepresented in the case studies, and more contributions from the smaller islands would have given a fuller picture of the unique vulnerabilities and strengths of the region.

This edited volume is divided into four parts. Part I: Framing the Discussion contains two chapters. Chapter 1 by Beckford and Rhiney sets up the key themes for the book, presenting an historical overview of the impacts of globalization on the society, culture, and food systems of the region from the early days of European colonization and slavery to the contemporary period characterized by neoliberalism. In Chapter 2, Rhiney explores in greater depth the recent transition that has taken place in many Caribbean states, shifting from primarily agriculture-based economies to service-based economies heavily reliant on tourism. He concludes with a convincing argument for more integrated strategies that could enhance development synergies between the tourism and agriculture sectors.

Part II: Global Change and Food and Agriculture consists of four chapters examining the effect of globalization on export crops in the region. The first chapter in this section (Chapter 3), by Clarke, looks at the effects on female former sugar workers of the closure of the sugar industry in St. Kitts. Based in rich qualitative data, Clarke describes how gender norms have limited women's ability to enter small-scale farming as an alternative livelihood strategy in the post-sugar economy. She puts forward a compelling argument for reforming "gender-blind" land and agricultural policies in order to support sustainable livelihood transitions for women. The second chapter in this section (Chapter 4), by Fingal-Robinson, looks at the extent to which fair trade in St. Lucia reduced the

negative effects of trade liberalization on banana farmers. Fingal-Robinson presents a balanced assessment of the positive and negative effects of fair trade, determining that while many benefits have been realized, further steps are needed to truly redress inequalities in global trade. The last two chapters in this section (Chapters 5 and 6) focus on Jamaica. In Chapter 5, author Burrell considers how small-scale cane farmers were affected by the loss of preferential markets for sugar and the adaptive strategies they used to sustain their livelihoods. In Chapter 6, author Mighty looks at the coffee industry. Presenting the perspectives of processors, dealers, and farmers as they deal with falling global prices for coffee, it is a nice counterpoint to the previous chapters that focused on the farmer level.

Part III: Climate Change and Food and Agriculture consists of four chapters looking at how farmers, fishers, and the agriculture industry perceive the impacts of climate change. Chapter 7 by Smith is significant as it is the only chapter in the book that begins to engage with issues faced by indigenous communities. Chapter 8 by Beckford and Norman is the most technologically focused of the chapters, assessing the capacity of tissue culture and protected agriculture to address growing pest and disease problems for farmers. Chapter 9 by Constable and Chapter 10 by Baptiste focus on small-scale farmers and small-scale fishers in Jamaica, offering a complimentary view of how actors in both these sectors are responding to climate change.

Part IV: Synthesis consists of a chapter by Beckford and Rhiney in which they present a summary of key findings from the book and outline future directions for addressing food and agriculture problems in the region. In the final sections of this chapter, Beckford and Rhiney present strategies for enhancing agricultural resilience, focusing on the themes of climate-smart agriculture, community adaptation strategies, and gender. Unfortunately, these divisions seem artificial given that the earlier chapters in the book clearly indicated the interconnected nature of climate, community, social, and economic challenges. While some valuable strategies are put forward, I would have liked to have seen the

authors put together a more holistic list of strategies for resilient agriculture in which gender and community are cross-cutting themes rather than separate considerations.

This book is a valuable resource for scholars, policy-makers, and practitioners interested in the complex relationships between environment, food, and society in the Caribbean. While the book is clearly relevant to those interested in Caribbean agriculture and tropical geographies, it is also of value to those studying food systems more broadly, as the small islands described in this

volume are, in many ways, microcosms of the tendencies and contradictions inherent in globalizing food systems.



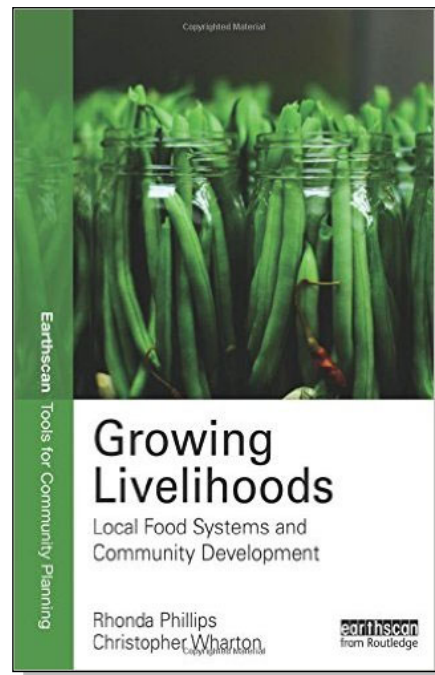
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Building communities while building food systems

Review by Gregory Zimmerman *
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Review of *Growing Livelihoods: Local Food Systems and Community Development*, by Rhonda Phillips and Christopher Wharton. (2016). Published by Routledge/Taylor & Francis. Available as hardcover, paperback, and ebook; 270 pages. Publisher's website: <https://www.routledge.com/Growing-Livelihoods-Local-Food-Systems-and-Community-Development/Phillips-Wharton/p/book/9780415727068>



Submitted November 28, 2016 / Revised January 24, 2017 / Published online March 3, 2017

Citation: Zimmerman, G. (2017). Building communities while building food systems [Book review]. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 149–151.
<http://dx.doi.org/10.5304/jafscd.2017.072.007>

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The title of the journal you are reading is *Journal of Agriculture, Food Systems, and Community Development*. That title suggests that there is a strong

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tie between food systems and community development. In general discussions around food systems and as those of us who work in food systems go about our specialized work, that tie is not always clear, though it should be. *Growing Livelihoods: Local Food Systems and Community Development* helps make it clearer. With fewer than 250 pages, it is not an encyclopedic treatment of food systems and community development but rather an overview of what can be and is being done in communities around the country.

The authors are Rhonda Phillips, professor in the Department of Agricultural Economics and

dean of the Honors College at Purdue University, and Christopher Wharton, a nutrition professor at Arizona State University. They bring extensive, practical, first-hand experience in building communities while building food systems. Twelve additional contributors bring even more perspective and experience ranging from research to policy analysis to on-the-ground work.

Phillips and Wharton set the premise for the book in the preface, namely “this book is intended for anyone interested in eating better and fostering better quality of life in their own communities.” But an even better description of the book is in Chapter 1: “the model organizations we highlight throughout [this book] represent some of the best ways we have seen to grow local food systems while also improving livelihoods and community well-being.”

In setting up the book for later discussion, Chapter 1 is wide-ranging, from the role of food in culture to food security and sovereignty, to sustainability, with a focus on how local food systems can help advance those concerns. The authors also provide sufficient background for readers to appreciate the multiple facets of community development. My work in community development typically centers on the connection between economic development and environmental sustainability. I try to remember that developing a community also means building the capacity for people to participate in decision-making and helping develop new leaders, but again, as we work in our specialized roles, it's easy to lose sight of the larger picture. This chapter helps us all remain focused on that larger picture, and how local food systems can fit into it. A rather long sidebar explains the Sustainable Livelihood Framework, which can bring a broader perspective to economic development that incorporates sustainability and social justice, though the later chapters do not return specifically to this model. The chapter concludes with Wendell Berry's essay “The Pleasures of Eating” to show the connections between food and the general well-being of individuals and communities.

Subsequent chapters address components of food systems and describe leverage points, areas in which initiatives can lead to better communities through a better food system. Topics include direct

farm-to-consumer sales, improving access to local foods for people at risk of food insecurity, food-based businesses across the value chain, the role of farmers markets in building community, food hubs, and cooperatives. Each chapter presents stories about initiatives designed to meet needs in specific communities. And these communities are diverse, including Burlington, Vermont; New Orleans; New York City; rural Indiana; Phoenix; and many more. Many of the stories and some entire chapters are written by the people working directly on the programs described, and are accordingly valuable. I will have the students in my food systems seminar read them.

These examples are intended to be inspirations for other communities to develop community while improving food systems. They are inspirational, but including specifics of how they got started, built their constituencies, and overcame barriers could help communities move from inspiration to implementation. The examples would have been more powerful if presented as case studies with lessons learned. The advantage of the inspirational approach that stays out of the implementation details is that the book is a quick, enjoyable read. The disadvantage of that approach is that upon reading about a great project in region X, someone might dive right into starting a similar project in region Y without fully understanding the prerequisites for success in their region. Successful projects require a needs assessment, an environmental scan, finding champions, securing local buy-in, and much more beyond just a great idea. Readers should understand that the book highlights projects that are working well in their home communities, and is not a guide for how to do such projects themselves.

The final chapter summarizes major themes about building community through building local food systems and emphasizes the role of policy development. To provide further inspiration, an almanac provides an example of a specific initiative in each of the 50 states and Washington, D.C. These summaries, each about a page long, show that good work is going on all across the country, not just in, for instance, Vermont.

This book can help people working across the food system and those working in community

development see that our work extends beyond our specializations. The book should inspire others to start programs in their own communities or even inspire others to get into this line of work. Read through the book. If one of the examples strikes a chord, look into it further, contact the people who worked on it, and get more of the details you

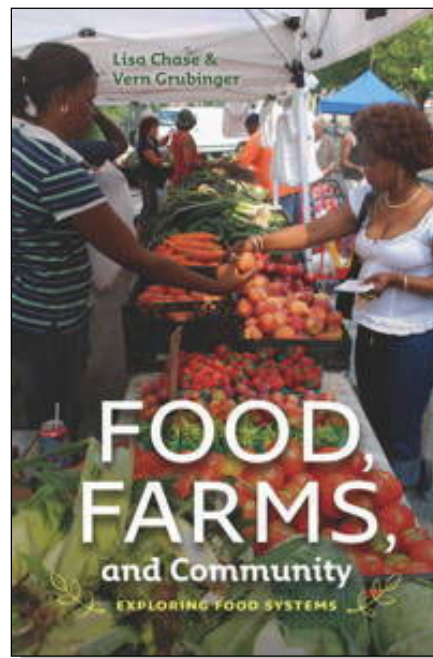
would need to implement a similar project in your community. Our work requires inspiration, but also preparatory work and follow up. I know of (and have worked on) projects that turned out to be somewhat successful, but short-lived. With a more complete understanding of the community, they could have been so much more.



The food systems textbook we all have been craving!

Review by Heather Johnson*
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Review of *Food, Farms, and Community: Exploring Food Systems*, by Lisa Chase and Vern Grubinger. (2014). Published by University of New Hampshire Press. Available as paperback and ebook; 288 pages. Publisher's website: <http://www.upne.com/1611684216.html>



Submitted May 10, 2016 / Revised January 25, 2017 / Published online March 8, 2017

Citation: Johnson, H. (2017). The food systems textbook we have all been craving! [Book review]. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 153–155. <http://dx.doi.org/10.5304/jafscd.2017.072.006>

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Natural resource specialist Lisa Chase and vegetable and berry specialist Vern Grubinger, both with University of Vermont Extension, offer an approachable introduction to

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food systems in *Food, Farms, and Community: Exploring Food Systems*. With the aim of providing a tool for educators, students, and general readers wanting to better understand our food system, Chase and Grubinger explore critical issues, provide case studies that show what is currently being accomplished, and suggest ways to further improve local food systems.

At its core, *Food, Farms, and Community* is a call to action for academia, farmers, policy-makers, business people, and all other stakeholders in the food system to collaborate in an informed way to help address the multitude of challenges within the modern food system. The operative word here is *informed*: educating readers is what the book does

best. Where popular books and documentaries, such as *The Omnivore's Dilemma* and *Food Inc.*, have increased public awareness of the scale and scope of food issues, *Food, Farms, and Community* delves deeply into the issues as well as some possible solutions.

While noting that food systems are complex and nonlinear, Chase and Grubinger lay out their conceptualization of the food system in a more or less linear fashion, which gives the book's structure a logical sequence. The content of *Food, Farms, and Community* is split between explanations of the food system and agriculture in the first few chapters, and further exploration into specific topics of concern such as agricultural labor, farm-to-school initiatives, climate change, and agritourism in later chapters. Depending on the reader's prior knowledge, the book can be approached in a linear fashion or each chapter can be read separately based on one's interest.

Chapter 1, Introduction to Food Systems, begins by describing the food system as a whole. The authors explain the food system as a web that can be viewed and analyzed from the perspective of the individual's desires. They also explain that the food system itself consists of many smaller systems, such as farming systems and social systems, as well as levels ranging from individual to global. The authors present many diagrams that clearly show how some of the smaller systems and individual perspectives work with regard to the larger food system.

The focus of chapter 2, Local Food Systems, is apropos since this is the level at which most food systems work is planned and executed. This chapter has a solid introductory explanation of the complicated definition of "local," the sociology of purchasing locally, and the response of governmental agencies and nongovernmental organizations to the increased demand for local foods. The authors are unbiased as they assert that local foods are not inherently good and emphasize the need for sustainable agriculture. At the end of the chapter the authors remind us that, important as the local food system may be, the global food system has problems that require (or demand?) solutions as well.

The authors address agribusiness in chapter 3,

The Business of Food and Farming. This chapter is necessary because by the nature of its enormous complexity and even a little purposeful marketing, it is hard to grasp the many components and transactions that make up agribusiness. Here they give a comprehensive overview of food market types, the current state of agriculture in the U.S., and the "farm-to-plate" economy. To further help the reader understand the relationship of agricultural economies to states, the authors use Vermont as a case study. The case study takes the reader on a walk-through of Vermont's agricultural economy, providing a better picture of the importance of agribusiness to states' economies.

Chapter 4, Values in Food Systems, includes topics such as consolidation, horizontal and vertical integration, and lack of transparency within the food system. The connection between nonmonetary values (externalities) and the food supply chain is discussed in a refreshingly explicit way. The authors go into just enough detail about the problems that can arise from not balancing monetary and nonmonetary values to inform the reader, while not overwhelming them. Toward the end of the chapter the authors present Shepherd's Grain and Sustainable Harvest Coffee as two examples of agricultural companies that successfully center their business around environmental and social values. This chapter also includes a "sampling" of people from the past to the present who have challenged society to change the focus of values in food systems.

The next 10 chapters address specific food system challenges, apparently chosen based on current public and academic attention. The topics are presented in a way that addresses both small and large farms, regardless of market type or geographical location; each chapter could be a stand-alone article. The chapter topics are farm labor, farming and the environment, climate change, energy, food access, farm-to-school initiatives, agritourism, food safety, beginning farmers, and conservation of farm land. I would encourage readers to pick the areas that most interest them, read those chapters first, and then read the remaining chapters. Each chapter identifies the challenges, the history of any movements around the topic, special issues, and suggestions on how to approach

changes in that particular subject. Each topic is supported by case studies that help the reader understand real-world progress, challenges, and benefits. The case studies provide an excellent starting point for classroom discussion and thinking about what food system changes might result in improvements.

Throughout the book are scattered examples of the ways that individuals are finding solutions to particular challenges. In the final chapter, Improving Food Systems, the authors discuss ways to approach changing food systems on a larger scale. I found this to be the most valuable part of the book since it goes beyond problems and into strategic solutions. This section of the book is particularly useful to a student for two reasons, the first being that in classes there is often so much focus on identifying and understanding challenges that no time is spent discussing solutions or where to even start. Secondly, I found that as a food system student entering from the agricultural science side, this chapter gives a much-needed taste of the basic principles and strategies used to create change. For example, the authors describe strategic planning practices such as creating a positive vision statement and then creating SMART goals. The authors describe approaching food system reform with a trilevel timeframe: short-term adaption, mid-term mitigation, and long-term transformation. All three levels must be in motion at the same time, with transformation as the ultimate goal. Lastly, the authors ask the reader to think in a systems way, remembering that while working on one's particular section of the food system to be aware of the

effects in other parts. Many of these terms and theories are not present in agricultural food systems curricula but would be familiar to students in other fields such as community health. Agriculture schools should take note of this inclusion, as more and more agriculture students are wanting to work in nontraditional fields such as planning and policy.

It is unrealistic to expect *Food, Farms, and Community*—in only 288 pages—to be a comprehensive book about as complex a subject as our food system. However, while the book provides much needed historical overviews for some aspects of the food system, such as food safety, much of the general history of our food system is left out. The authors, for example, do not mention the Green Revolution or the farm bill. I was also surprised that there is no discussion of the role of land-grant university research and extension in the food system.

Overall, food system components and challenges—often subjects that leave one a little overwhelmed and even discouraged—are presented in this book in an uplifting, almost empowering and (much needed) critical way. For the general audience, *Food, Farms, and Community* is a valuable resource. For educators and students such as myself the book could be a primary text or a beneficial resource for an undergraduate introductory class on food systems, if coupled with additional readings on agricultural history, land-grant universities, and agricultural science. I suspect it would be less useful in a graduate seminar or as a source of citable material.



Landscape of displacement and place

Review by Sarah J. Martin *
Memorial University of Newfoundland

Review of *Real Pigs: Shifting Values in the Field of Local Pork*, by Brad Weiss. (2016). Published by Duke University Press. Available as hardcover, paperback, and ebook; 312 pages. Publisher's website: <https://www.dukeupress.edu/real-pigs>



Submitted November 21, 2016 / Published online March 8, 2017

Citation: Martin, S. J. (2017). Landscape of displacement and place [Book review]. *Journal of Agriculture, Food Systems, and Community Development*, 7(2), 157–159. <http://dx.doi.org/10.5304/jafscd.2017.072.008>

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As I was reading Brad Weiss's book *Real Pigs: Shifting Values in the Field of Local Pork*, Hurricane Matthew was wreaking havoc on the U.S. East coast, and North Carolina's industrial pig farm lagoons of waste were overflowing (New York Times Editorial Board, 2016). The storm brought the horrific environmental effects of North Carolina's confined animal feeding

operations (CAFOs) into view once again. Once again, because the lagoons were breached in 1996 and again in 1999, when Hurricane Floyd and Hurricane Fran set down. Around the same time, journalists were uncovering the unsavory political and legislative changes that fostered North Carolina's CAFO model of pork production, including the growth of contracting and excessive corporate control. While this story will be familiar to many readers, Weiss has written a fascinating account of how a niche market has developed, centered on pastured local pork in reaction to this CAFO "landscape of displacement."

Real Pigs is an ethnography of the values of consumption of the local pork market in the Piedmont Region of North Carolina. It is an

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exploration of how communities, or publics, gather and create values such as authenticity and discernment centered on the Ossabaw Island hog. In contrast to the industrial hog production landscape that “undermines the kind of depth of connoisseurship required for the appreciation of *terroir* [taste of place]” (p. 8), Weiss traces the practices that underpin and sustain webs of qualifications and build “an economy of quality” (p. 8). He describes an “ethos-driven cuisine” that drives the people who raise, fabricate (that is, break down an animal carcass), and market pork, as well as those who consume it. For example, the farmers market is described as a niche within the capitalist relations where values are set, in concert with other sites such as the farm and restaurants. Raising animals for meat requires not only farms, and farmers to breed, care for, and feed the animals, but also the work of transforming the animals into something consumable. This requires many interventions, and many hands to do the labor. From butchering, to markets, and then to the table, taste is mediated as animals are raised, killed, fabricated into edible portions, prepared, and consumed. Throughout the book, Weiss asks us to reflect on the values and qualities that make up human-animal relations as animals become meat. The values of farm to fork, and snout to tail, are concrete, and produced through these values, according to Weiss.

Weiss provides a compelling and fascinating account of the rise of industrial hog farming in North Carolina. The structure of industrial hog farming limited alternative relationships for animal raising, distribution, and marketing. A few large corporations benefitted from the state’s targeted tax breaks and subsidies, and in turn leveraged the legislative and political support to limit marketing opportunities outside the corporation’s ambit, leaving few opportunities for independent farmers to access processing facilities and markets. It is within these limited spaces that pastured pork arose.

This book is the story of how those outside that system developed a small but vital pastured-pig niche-market with an array of support. A pilot program was developed initially in 2002 to supply the national natural meat wholesaler Niman Ranch as they attempted to expand. While the project

failed, it left a minimal infrastructure of pastured pork production that was supported by agricultural extension expertise from state colleges, grants from the Golden LEAF Foundation,¹ and a community of local farmers. Both public and private support fostered the connections for production, yet the demise of the Niman Ranch project broke the connection to a market for the pork. The result was that a group of farmers, artisans, and other non-state actors developed direct marketing and with it a new set of connections to consumers.

There are some wonderful stories in the book such as the Ossabaw Island Hog and its progenitors, which are the key “agricultural icon of the Piedmont and the movement to promote local foods” (p. 61), highly valued for its flavor. This breed is unusual because it was isolated for centuries after the Spanish introduced it to Ossabaw Island off the coast of Georgia; it is related to the hogs that are used for *Jamón ibérico*, a highly valued artisanal charcuterie product in Spain. The result is that this niche market on the one hand developed locally, but on the other also drew on cosmopolitan values and tastes. Weiss describes how “real pigs” were made through a chain of qualities (such as connoisseurship) and practices (such as butchery). As a former meat cutter, I was especially interested in the chapter “Pigs in Parts,” where Weiss describes how connections are built between the pigs and a discerning public through performative butchery workshops. The workshop participants interact with the pig’s carcass, experiencing “fleshly discomfort” with an “incomplete pig” (p. 163). Weiss weaves a fascinating tale of connections and disconnections that produce locality, taste, and discernment.


The strength of the book is the political economy analysis of the industrialization of livestock, and how a niche market was at once a product of it and also a reaction to it. A few areas that would benefit from further work include the concept of connections and the role of the state and governance. With regard to connections, even though industrial hog production is unjust, violent,

¹ The Golden LEAF Foundation is funded through the settlement agreement between North Carolina (and 45 other states) with tobacco companies.

and environmentally destructive, it is still made up of connections. What is the practice of discernment when purchasing pork from a supermarket? Who eats the industrial landscape—and is there such a thing as an industrial *terroir*? The second area would be a closer examination of issues of class and race. We know that the industrial diet and environmental degradation have uneven effects across class and racialized communities. Although Weiss does address some of these issues, further research in this area would be welcomed.

The second area that would benefit from further research is the roles of the state and of nonstate actors' rules and regulations. The state is mostly sidelined in Weiss's account, except for an important discussion of expertise and agricultural extension. The governance of this niche market is shaped partly by the rules of farmers markets and partly by the involvement of nonprofits and other nonstate actors. So unlike the corporate-state bargain that facilitated the growth of the industrial model, this niche market relies on market connections, and almost exclusively on voluntary principles. Weiss passingly mentions the precarious

position of farms and supporters of local pork, such as chefs who lose money when utilizing local pork items. The state has long been involved in supporting agriculture; will these self-governing, voluntary efforts be sustainable?

Real Pigs will be of interest to practitioners who are developing new markets, with its biographical stories of the people who are building the connections and its portrait of how taste is constructed in place. Making pigs local, according to Weiss, involves animal husbandry, marketing strategies, and social networking. Yet he is sensitive to the cosmopolitan values that inform "locality." The book will be of interest also to those who are exploring how markets are built and sustained over time, and how complex relationships support often precarious niche markets and foodways. 

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