

In: Méndez, V.E., C.M. Bacon, R. Cohen, and S.R. Gliessman.
Agroecology: A transdisciplinary, participatory and action-oriented
approach. Boca Raton, FL. CRC Press. (2016)

CHAPTER 10

Agroecology, Food Sovereignty, and Urban Agriculture in the United States

Margarita Fernandez, V. Ernesto Mendez, Teresa Mares, and Rachel Schattman

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10.1 INTRODUCTION

In the last 15 years, movements for just and sustainable food systems in the United States have burst into the national stage. Local action on sustainable and organic agriculture, community food security, food justice, food sovereignty, urban agriculture, local food policy, childhood obesity, local foodsheds, and direct farmer to consumer marketing continues to expand across the country (Holt-Giménez and Shattuck 2011; Allen 2004; Mares and Alkon 2011). Most practitioners in US alternative agrifood movements do not use the term “agroecology,” but share and are guided by similar ecological and social principles and a vision for transforming local and global agrifood systems. While “agroecology” in the United States is a term most often used in association with the academic literature, university research, and educational institutions, this approach has also played a role in the evolution of alternative agrifood movements (Buttel 2004; Wezel et al. 2009). The field of agroecology has evolved from an early focus on integrating ecology into agriculture at the farm scale toward a more integrative study of the ecology of food systems (Francis et al. 2003). This evolution takes the field beyond a technological approach to one that actively pursues sustainability in agriculture and food systems using a systems-based transdisciplinary, participatory, and action-oriented approach (Gliessman 2010; Mendez et al. 2013).

With growing recognition that agroecology is the key agricultural approach to confronting the multiple crises of climate change, global hunger, and the unsustainability of the corporate agrifood

system (Food and Agriculture Organization [FAO] 2014; International Assessment of Agricultural Knowledge, Science and Technology for Development [IAASTD] 2009; Chappell and LaValle 2011; Hurlings and Marsden 2011; de Schutter 2010; de Schutter and Vanloqueren, 2011), we believe it is important to examine the current state of agroecology in the United States, and specifically assess its role both in academia and alternative agrifood movements. Since an examination of all alternative agrifood movements is out of the scope of this paper, we chose to focus on two important initiatives—urban agriculture and food sovereignty. We chose these for two main reasons: (1) food sovereignty has mobilized one of the largest global social movements today and identifies agroecology as one of its key strategies; however, food sovereignty in the United States is a nascent movement and does not so obviously identify with agroecology; and (2) urban agriculture is an essential venue for a global transformation of our agrifood system due to the multiple social, ecological, and economic benefits it provides to a growing global urban population. Thus, the objective of this paper is to explore how agroecology, food sovereignty, and urban agriculture have evolved in the United States and identify opportunities for a better integration between the three in order to advance overlapping goals of creating sustainable agrifood systems. We believe that a greater integration between academia and alternative agrifood movements, and in particular between agroecology, urban agriculture, and food sovereignty, can help facilitate scaled-up change toward more ecologically resilient, socially just, and economically viable agrifood systems.

10.2 EVOLUTION AND SCOPE OF AGROECOLOGY IN THE UNITED STATES

10.2.1 Overview

Agroecology emerged as a response to the negative environmental, social, and economic externalities of the agro-industrial system (Gliessman 1990; Altieri 1987; Rosset and Altieri 1997; Vandermeer 2010), proposing that ecological concepts and principles were needed in order to design and manage sustainable agroecosystems (Gliessman 1998). Although many pioneers of the field (i.e., Altieri, Gliessman, Vandermeer, Perfecto, and Sevilla-Guzmán) worked mostly in the tropics, they were predominantly based in United States and European academic institutions. Susanna Hecht (1995) traces the intellectual lineage of agroecology through influences from tropical ecology, studies of indigenous agriculture systems, ecological methods, rural development, geography, and anthropology. This evolution of a more interdisciplinary approach stems in part from an understanding that in order to analyze the interactions between ecology and agriculture, agroecology must also analyze the interactions between human systems and natural systems (Hecht 1995).

One of the most widely used definitions of agroecology today comes from Francis et al. (2003: 100) who described agroecology as “the integrative study of the ecology of the entire food system, encompassing ecological, social and economic dimensions.” While this perspective expands the focus of agroecology to an interdisciplinary perspective, it was Wezel et al. (2009) who proposed that agroecology is expressed not only as a science, but also a practice and a movement. This evolution in the meanings and applications of agroecology paralleled the rise of alternative agrifood movements in the United States, which were motivated by concerns not only about on-farm sustainability, but also community food security, food safety, labor, environmental health, and broader sustainability issues of the agrifood system (Allen 2004). Although some interaction between agroecology and US agrifood movements can be seen in the 1990s (see e.g., Allen et al. 1991), there seems to have been little integration since.

In the 1970s, the science of agroecology influenced the emergence of the concept of sustainable agriculture as a practice and movement (Wezel et al. 2009). Simultaneously, the environmental and sustainable agriculture movements and the practice of sustainable agriculture influenced

agroecology as a science (Hecht 1995). As described by Allen (2004), the growth of academic programs with a focus on sustainable agriculture and community food security issues reflected an institutionalization of social movement agendas. For example, social movement work, with leadership from the sustainable agriculture coalition,* was instrumental in passing the US Department of Agriculture (USDA) Low Input Sustainable Agriculture program (now known as Sustainable Agriculture Research and Education [SARE]). The SARE program and other programs under the USDA National Institute for Food and Agriculture have contributed significantly to the growth of agroecology-based programs in universities across the country. As a result, many academic programs promoting the study and application of agroecology benefited from the social advocacy work around food and sustainable agriculture in the 1960s, 1970s, and 1980s.

10.2.2 Higher Education and Research in Agroecology

Agroecology in the United States has been most prominently used and advanced by academics in US universities (Francis et al. 2003; Gliessman 2007). Agroecology courses were initially offered within environmental studies or agriculture programs, with one of the first to be offered by the Environmental Studies Program at the University of California, Santa Cruz, in 1981 (Francis et al. 2003). The late 1980s and early 1990s saw a boom in sustainable agriculture programs in research universities, including the University of California Davis (1986), the University of Maine (1986), Iowa State University (ISU) (1987), the University of Illinois (1988), the University of Wisconsin Madison (1989), the University of Minnesota (1991), Washington State University (1991), and the Center for Agroecology and Sustainable Food Systems at the University of California Santa Cruz (1993). These remain major institutional centers for both sustainable agriculture and increasingly transdisciplinary agroecological research and education. Today, there are more than 55 land grant and private colleges and universities offering undergraduate and graduate degrees in sustainable agriculture and food system studies with 12 of those offering programs and degrees specifically in agroecology.

Higher education institutions have played three roles in the agroecology movement: (1) conducting research on innovative agroecological methods; (2) providing practical educational initiatives for producers through extension programs and outreach; and (3) training students in agroecological approaches through undergraduate and graduate education. The land grant university system, established by the Morrill Act of 1862 and funded by public tax dollars, has a long history of research into agricultural technologies and the subsequent transfer of those technologies to farmers via extension programs (Warner 2007). Initially, this model was seen as a success, as it improved farm productivity and provided abundant food for the nation. However, following the publication of Rachel Carson's *Silent Spring* and James Hightower's *Hard Tomatoes, Hard Times*, the industrial agricultural science produced by land grant institutions came into question, as well as the extension model that granted "expert" status to scientists and relegated farmers to the role of their "clients," which curtailed farmer-initiated innovation (Gliessman 2010; Warner 2006, 2007). Therefore, sustainable agriculture approaches began to be integrated in other pedagogical arenas and stand-alone programs were founded to meet the needs of the growing sustainable agriculture community.

Agroecological knowledge cannot be "transferred" from scientist to farmer as easily as new chemical or mechanical technologies. Ecological farming practices, such as biological insect control or use of cover crops, tend to be information intensive, adapted to a specific site, and labor intensive to implement and monitor (Warner 2007). Additionally, agroecological farming requires not just the insertion of one or two key technologies into an existing agroecosystem, but an entire system redesign (Gliessman 2010). Thus, agroecological research and education are necessarily

* Today known as the National Campaign for Sustainable Agriculture.

transdisciplinary in nature, incorporating elements of plant science, soil science, ecology, economics, political science, sociology, geography, and anthropology, as well as farmer knowledge (Méndez et al. 2013). Since land grant universities have traditionally been disciplinary in nature (Parr et al. 2007), it has been challenging for them to incorporate the new perspectives brought by agroecological education, research, and extension. However, faculty, students, and farmers at universities throughout the United States are increasingly demanding and designing innovative programs and partnerships grounded in that transdisciplinarity and participatory research and extension.

One example of such a partnership is the Organic Agriculture Program at ISU. In 1996, and in response to demand from producers, industry, and citizens, ISU established an organic agriculture and research program housed in the departments of horticulture and agronomy. This program was directed by a new faculty position specializing in organic agriculture, with the goal of addressing the gap in field-tested research and education in organic production (Delate 2002). At the heart of the program was the establishment of four Long-Term Agroecological Research (LTAR) sites, one in each of the four agroecological zones of Iowa. Research at these sites is complemented by on-farm research projects in collaboration with Iowa farmers. Most of these activities are funded by grants from the USDA-SARE and USDA-IFAFS (Initiative for Future Agriculture and Food Systems).

The ISU program is characterized by an interdisciplinary focus, a strong commitment to farmer participation, and a grounding in whole-systems research. Over 10 academic departments are involved in the activities of the ISU Organic Agriculture Program (Delate 2002), and ISU offers an interdepartmental graduate program in sustainable agriculture. The Leopold Center for Sustainable Agriculture, a publicly funded research and education center established in 1987 and housed at ISU, has offered logistical and financial support to the Organic Agriculture Program. The Leopold Center has also encouraged program staff to allow the priorities of organic and transitioning farmers to guide the research agenda, and cohosted a series of focus groups during the establishment of the program to determine those priorities. Farmer groups such as Practical Farmers of Iowa comprised a substantial part of these focus groups, as farmer networking has historically been the primary means of education on organic farming in Iowa (Delate 2002). Immediate application of the research on Iowa farms is fostered by conducting research on organic farms, despite the additional time involved. This research approach recognizes the complexity of agroecological systems by utilizing and implementing systems theory, which recognizes the emergent properties of agroecosystems, with new relations and phenomena arising at certain junctures within the system (Delate 2002).

ISU's partnership with Practical Farmers of Iowa is a key feature of agroecological research and education. Farmer-to-farmer networks are one of the first routes where many farmers begin to learn about and advocate for a more sustainable form of agriculture, and these social networks have long been the backbone of the agroecology movement globally (Warner 2007; Holt-Giménez 2006; Rosset et al. 2011; Rosset and Martinez-Torres 2012). In many cases, these networks and organizations formed as a response to the absence of research or education in sustainable methods within the land-grant university system. Such was the case, for example, with dairy farmers interested in rotational grazing in Wisconsin, who developed the Southwestern Wisconsin Farmers Research Network, in 1986, to conduct on-farm research and share knowledge about a form of agriculture that was not supported by the University of Wisconsin extension system. By partnering with non-governmental rural organizations, the network was eventually able to secure some state funding, and developed into the Sustainable Agriculture Program that provided funding for farmer groups to conduct their own research and extension (Warner 2007).

Despite the fact that agroecology in the United States is strongest in the academic sphere, and to a certain extent, in extension programs (see Darby et al., Chapter 11 this edition), agroecology as a practice and movement has not taken as strong a hold in the United States as it has internationally (Wezel et al. 2009). As agroecology-based academic programs increasingly offer courses

and curriculum that focus on agroecology as the study of the ecology of food systems (Francis et al. 2003), incorporating participatory, transdisciplinary, and action-based research (Méndez et al. 2013), there will be more opportunities for interactions between agroecology and alternative agrifood movements in the United States. An increased connection between the science of agroecology and movements aligned with its principles can help contribute to systemic policy changes. Leading agroecologists contend that ecological change in agriculture and food systems cannot happen without social, economic, and policy change (Altieri 2009). In order for agroecological change to happen, partnerships between agroecology and alternative agrifood movements are critical. In the next section, we summarize alternative agrifood movements in the United States, using a political lens. We then highlight advancements of two important movements—food sovereignty and urban agriculture—and discuss synergies between these movements and agroecology.

10.2.3 Alternative Agrifood Movements in the United States

In the United States, various food movements have developed under a variety of terms and from different origins (Allen 2004; Mares and Alkon 2011). These include sustainable agriculture, ecological agriculture, organic agriculture, permaculture, multifunctional agriculture, low input agriculture, conservation agriculture, community food security, food justice, food sovereignty, and sustainable/local food systems. These are not monolithic concepts, and different actors in the US agrifood system have differing views and uses for each one of these terms, which can vary according to their social, political, environmental, and economic values (National Research Council [NRC] 2010; Gliessman 2010). As Mares and Alkon argue, “both ‘localized food systems’ and the ‘corporate food regime’ are complex and multidimensional social, political, and economic formations necessitating multidisciplinary and multisectoral research approaches” (2011: 69). Some areas of the food movement, such as community food security and local food, are primarily oriented toward improving access to foods through market-based approaches, and changing consumption behaviors at the individual and household level. Food justice and food sovereignty discourses, on the other hand, point to deeper critiques of the class and race based inequalities that pervade the food system, from production through disposal. When endorsing market-based strategies, food justice and food sovereignty approaches both emphasize that these strategies should be created by and within the control of those most affected by food inequalities, whether that is low-income communities of color or small resource-poor farmers.

In a related vein, Holt Giménez and Shattuck (2011) provide a political characterization of these different perspectives according to the degree of transformation from the current agrifood system that they propose (either explicitly or implicitly), ranging from neoliberal/reform to progressive/radical. Based on this work, we summarize here salient characteristics of those agrifood initiatives that have explicitly engaged with sustainable agriculture and agroecology issues in the United States.

The neoliberal/reform view represents the perspectives of predominantly corporate, global trade, and development actors. This standpoint advocates the expansion of trade liberalization, increased production, certification schemes, genetically modified organisms (GMOs), and agro-fuels as solutions to the environmental and social challenges facing the current agrifood system. However, these policies and actions tend to approach sustainability through a patchwork approach (often based primarily upon market mechanisms) rather than a whole systems approach (NRC 2010). Stakeholders in this domain have appropriated “sustainable” to include monocultures, GM crops, unjust labor systems, and other practices that do not align with agroecological principles (Rosset and Altieri 1997; Altieri and Toledo 2011). The corporatization of organic agriculture demonstrates how the concept of sustainability can be stripped of its social and environmental values, as well as its holistic approach to fit the agroindustrial model (Guthman 2004; Jaffee and Howard 2010; Thompson 2001). Large agribusinesses, pharmaceuticals, and food processors now produce many of the inputs approved by the USDA National Organic Program for production and processing, have

acquired many of the organic food processors, and sell through a few large retailers (Howard 2009). The increasing consolidation of the agrifood system severely undermines decision-making power at the farm level (NRC 2010; Pimbert et al. 2001). Although the corporate organic food system has made some strides in improving the environmental and health impacts of food production, processing, and nutrition, it still falls short of directly addressing structural issues inherent to the agroindustrial food model (Guthman 2004).

Actors espousing the progressive/radical view are farmers, distributors, processors, consumers, nonprofits, researchers, and local governments who are working toward a radically alternative agrifood system. This perspective views the relocalization of food production, distribution, consumption, and waste management as a key strategy to transforming the agrifood system. This vision seeks to enhance and expand diversified farming, food cooperatives, community-supported agriculture (CSA), farmer's markets, food hubs, regional food system plans, and food sovereignty laws. Many in this domain call for an overhaul of the corporate-dominated agrifood system through structural changes—land reform, shifts in research, credit and subsidies, and increased regulatory pressure on corporate actors (Holt-Giménez and Shattuck 2011; Rosset 2009). These structural changes pursue the reversal of the neoliberal trends affecting the United States and global agrifood system, most notably, increasing market consolidation, which has resulted in oligopsonies, oligopolies, and land consolidation exemplified by the land-grabbing phenomena (de Schutter 2010; Brent and Kerksen 2014; Zoomers 2010). Actors in this domain build on the environmental and health concerns that spurred the organic and sustainable agriculture movement of the 1960s and 1970s, but integrate more recent thinking in terms of food sovereignty, food justice, and human rights. The progressive/radical domains align with the agroecological perspective that seeks a transdisciplinary, participatory, and action-oriented approach, which is the focus of this volume (Mendez et al. 2013; Mendez et al., Chapter 1 in this volume). In the United States, this progressive/radical approach is primarily grounded in projects that seek to empower farmers and farmworkers and support diversified small-scale farms. Perhaps more importantly, actors in this domain move away from a focus on productivity and equally value the social and environmental effects of agrifood systems.

The trajectory of food and agriculture movements in the United States has widened the political and economic spectrum that promotes sustainable agriculture (Holt-Giménez and Shattuck 2011; Kloppenburg et al. 2000). Central to this trajectory has been a dynamic relationship between grassroots movement actors, policymakers, and educators in shaping and reshaping the United States' agrifood system. This dynamic is particularly active in today's political climate, where issues deeply connected to agrifood systems—climate change, peak oil, global food crises, and loss of biodiversity—are prompting a diversity of actors to prescribe, negotiate, compromise, and/or resist varying strategies for a more sustainable agrifood system (Gliessman 2010). As with most social change processes, actions and policies aimed at reshaping the current agrifood system are part of a dialectical process where civil society advocacy, private sector lobbying, and policy making engage and negotiate through different social, economic, environmental, and political interests to develop new alternatives. This produces unique challenges and opportunities for agroecology to contribute in these efforts toward agrifood system transformation. As Altieri and Toledo (2011, 597) state, "the new agroecological scientific and technological paradigm is being built in constant reciprocity with social movements and political processes."

In a review of organizations funded by the three top US funders of sustainable agriculture and food systems initiatives—the USDA Community Food Program, SARE, and the W.K. Kellogg Foundation (Sustainable Agriculture and Food Systems Funders [SAFSF] 2006)—and a Web-based search, we found that very few organizations working on alternative agrifood systems use the term agroecology to describe their work. However, a review of a sample of these organizations' missions and objectives shows a large majority promoting strategies in line with the agroecological principles of systems based, participatory, action-oriented, and transdisciplinary work for agrifood system change (see Mendez et al., in this issue, Chapter 1, and www.agroecology.org for detailed

principles). The organizations that do use the term agroecology, including Food First, Pesticide Action Network, Oxfam America, Heifer International, Institute for Agriculture and Trade Policy, Family Farm Defenders, and National Family Farm Coalition, engage in both domestic and international work. These organizations are connected to international food and agriculture movements that advocate for agroecology as a key strategy to further their goals, including Via Campesina, the Landless Peasant Movement of Brazil, and the Campesino a Campesino Movement.

Holt-Giménez and Altieri (2013) demonstrate that agroecology as a social movement is constantly changing, and ownership over the very name of the discipline is contested. In their recent article, they point out that the anticipated need to increase worldwide food production to feed a population that is growing at a dramatic rate has put steam behind a renewed Green Revolution. They call on agroecologists to align themselves in reform or radical camps, implying that those who choose the reformist route are aiding in the cooptation of agroecology. This suggests that the culture of agroecology is both strengthened and weakened by its inclusion of multiple disciplines and foci under a single conceptual umbrella. To better address food system sustainability, the participation of greater diversity of actors is required, along with mediating institutions and public policies that support collaboration. However, the diffusion of focus can make agroecology's goals difficult to communicate and understand.

While much of the recent international focus of agroecology has concentrated on the global south, it is also applicable to agroecosystems in the global north. The northeastern United States is of particular interest when using an agroecological frame because of the relatively small size of many northeastern farms, the recent focus on local and regional food systems, and the high level of access to local and state political processes. There is a notable lack of organizing in the United States under the banner of agroecology, with the exception of a relatively small network of researchers and extension professionals. Rather, we see a more fluid integration of the term "agroecology" throughout literature that pertains to alternative production systems, including organic agriculture (Goodman 2000), sustainable agriculture (Dover and Talbot 1987), and ecological agriculture (Magdoff 2007). We also see organizations devoted to maintaining access to farmland and farming as a livelihood option. Some of these organizations (the National Family Farm Coalition, the Rural Coalition, Farmworkers Association of Florida, and the Borders Farmworkers Project) have allied themselves with international networks primarily representative of small landholders in the global south (La ViaCampesina), demonstrating the overlap of issues faced by landholders and farmworkers in the global north and south. Many principles are shared between these frameworks, the strongest being resistance to the corporate consolidation of agriculture and the food supply and the natural resource depletion associated with industrial agriculture. In the global north, there has been less attention paid to agroecology as a social movement, with social justice and empowerment for farmers and farmworkers finding homes in other frameworks and contexts.

10.3 FOOD SOVEREIGNTY AND URBAN AGRICULTURE INITIATIVES IN THE UNITED STATES

Over the past five decades different social and environmental movements around food and agricultural issues have fueled changes in higher education and government policies, which have laid a foundation for a growing agroecology movement. These movements have also built a strong knowledge base among farmers and activists in terms of ecological farm management, community organizing, and political advocacy. Despite the fact that agroecology in the United States is strongest in the academic sphere, the broadening of the agroecological approach (Francis et al. 2003; Mendez et al. 2013) has made it easier for agroecology and alternative agrifood movements in the United States to interact, as it has opened more spaces for conceptual and applied overlap. This closer interaction can also be facilitated through the participatory action research (PAR) approach. In the

following sections, we focus our attention toward initiatives working on food sovereignty and urban agriculture in the United States.

10.3.1 Food Sovereignty

The concept of food sovereignty can serve as both a policy framework with a strong social and political movement behind it and a conceptual framework that can be implemented by researchers to better understand and address agrifood system inequalities. Born out of farmers' movements protesting the economic, social, and environmental impacts of the neoliberal trade system, food sovereignty seeks to link local progressive actions to a larger political agenda in order to make structural changes to local and global agrifood systems. The concept of food sovereignty was coined at a Via Campesina meeting in the mid-'90s, but its definition has evolved through an iterative process characteristic of the movement's dynamism (Martinez-Torres and Rosset 2010). The food sovereignty paradigm is guided by the following key principles: (1) food as a basic human right; (2) gender equality; (3) genuine agrarian reform; (4) protecting natural resources; (5) reorganizing food trade; (6) ending the globalization of hunger; (7) social peace; and (8) democratic control of food (Wittman 2011; Pimbert 2008). The most recent definition from Via Campesina states that food sovereignty is "The right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts those who produce, distribute, and consume food at the heart of food systems and policies rather than the demands of markets and corporations" (Via Campesina 2007). Leaders in both the agroecology and international food sovereignty movements emphasize that the application of agroecology within agrifood systems is a key strategy to achieving food sovereignty (Altieri and Toledo 2011; Martinez-Torres and Rosset 2010; Cohn et al. 2006). La Via Campesina has explicitly adopted agroecology as its guiding approach for agricultural and farm management (Rosset and Martinez-Torres 2012).

Many principles of agroecology are directly linked to the goals of food sovereignty (Altieri and Toledo 2011). For example, agroecology advocates for farmer autonomy by relying on local, renewable resources and minimizing external inputs linked to industrialized agrifood structures (synthetic fertilizers and pesticides, commercial seed, machinery, etc.) (Rosset and Altieri 1997). In addition, a respect and value for the knowledge and priorities of farmers aligns with food sovereignty principles of autonomy, equity, and a relocalization of food systems (Altieri 2009). Agroecology's focus on farmer self-sufficiency can be perceived as a "subversive act" by those with a neoliberal view. Ultimately, the redesign of agricultural systems, by harnessing ecological processes inherent in natural systems, enables independence from the agroindustrial system (Coleman and Damrosch 2010). For these reasons, agroecology is the essential foundation for food sovereignty processes and goals. We agree with many other authors who advise against a strict definition of food sovereignty (Wittman 2011; Boyer 2010; Jarosz 2014), as we view it as a process, a vision, a means, and an end at the same time and because it is a multidimensional, context-dependent approach. Hence, food sovereignty requires flexibility to be adapted to unique situations. In this sense, it is similar to the concept of agroecology, which is guided by a number of key principles that can be adapted to distinct contexts (Altieri and Toledo 2011; Gliessman 2007). The ongoing challenge has been how to connect local forms of resistance grounded in food sovereignty and agroecology to larger social and political movements for structural change. In the United States, a growing number of alternative agrifood movements are identifying with and applying the food sovereignty framework to their unique struggles (Schiaivoni 2012; Ayres and Bosia 2014; Block et al. 2011; US Food Sovereignty Alliance [USFSA] 2014), but few explicitly link their conceptualization of food sovereignty with agroecology as has been done in international movements.

A salient example of this is Brazil's Landless Workers Movement (Movimento Sin Tierra [MST]), a member of Via Campesina who takes as its primary action the occupation of land so that

it can be used by landless rural workers. The MST has embraced agroecology to guide management strategies in lands that have been occupied and transferred to landless families. In 2005, the MST founded the Latin American School of Agroecology, which was designed to train members of the MST and Via Campesina in the principles of agroecology, as grounded in a social and political movement to change the global agrifood system (MST 2014). Although the integration of agroecology into rural social movements like the MST and Via Campesina is not without struggle (Delgado 2008; Rossett and Martinez-Torres 2012), the successes of these international movements are significant in reshaping rural food systems, particularly in the global south.

In March 2011, Sedgwick, Maine, became the first US town to pass a food sovereignty ordinance. Within 6 months of Sedgwick's ordinance, food sovereignty ordinances had been passed in Maine, Vermont, Massachusetts, Georgia, North Carolina, Utah, Wyoming, and Montana. These ordinances are meant to protect the rights of local producers, in particular meat and dairy farmers, so that they can produce artisanal products without the financially prohibitive laws that are meant to control quality and safety in large meat and dairy operations—quality and safety issues that are often irrelevant in small operations. These ordinances have been framed, in part, as a response to the Food Safety Modernization Act that was signed by President Obama in January 2011 and that increases the power of the federal government in the control of food safety. Food sovereignty in the United States represents a politicization of the sustainable food movement at the local level defending the values of self-reliance, self-provisioning, and autonomy. Just as with other alternative agrifood movements in the United States, the concept and discourse of agroecology is not employed. As a movement at the national level, the USFSA was formed, in 2010, “to end poverty, rebuild local food economies, and assert democratic control over the food system” (USFSA 2014). The USFSA serves as a venue for catalyzing food sovereignty movements in the United States and connecting them to similar movements abroad. Members of the USFSA are diverse, representing rural farm groups, urban farm groups, migrant farmworker groups, and policy/advocacy groups.

US food sovereignty initiatives have interacted with agroecology much less than initiatives on the international stage. As Ayres and Bosia (2011) noted, food sovereignty articulates in different ways in different locales with distinct historical, political, and cultural contexts. For example, in the state of Vermont (as in other states), food sovereignty often unfolds as an autonomous, antiregulatory approach eschewing the dominant agrobusiness corporate model and embracing localism, rather than embracing a broader and more deeply integrated framework provided (at least in part) by agroecology. Social, economic, and political changes needed to address issues related to food sovereignty cannot happen without ecological change. Agroecology provides the framework with which to make that ecological change without losing sight of greater systemic forces affecting the sustainability of this change. While food sovereignty movements in the United States and abroad have emerged predominantly from rural landscapes, urban agriculture, globally and in the United States, is a ripe and dynamic venue for food sovereignty (Schiavoni 2009; Block et al. 2011).

10.3.2 Urban Agriculture

While local and slow food movements get much of the media attention, the politics of urban food justice and the practices connected to urban agriculture are among the most dynamic alternative agrifood initiatives in the United States. Many organizations working on sustainable food systems in urban areas are based in and led by low-income communities of color, drawing significant inspiration from environmental justice action and theory. Both urban agriculture and food justice have long independent histories. The history of urban gardening in the United States reflects a cyclical process of urban garden creation and destruction that moves in conjunction with economic crisis and recovery. Urban gardening in the United States dates back to the economic depression of the mid-1890s, when the city of Detroit allotted 455 acres of land and seed potatoes for planting, to 945 families. The temporary leasing by the city of abandoned land spread to more than 20 cities in

the United States, but with the increase in real estate development these gardens were short-lived (Hynes 1996). The next revival of urban gardening came with the "liberty gardens" of World War I and then the postwar "victory gardens," which were part of a national campaign to supplement food shortages and "maintain morale on the homefront" (Kurtz 2001). The war gardens were part of a collective effort that reflected the current cultural and national ideals with "an estimated five million gardeners rallying to such slogans as 'plant for freedom' and 'hoe for liberty' (Hynes 1996). However, once the immediate need to produce food subsided so did governmental support. With the economic crisis felt in cities across the country in the 1970s came a new wave of urban gardens, many of which still exist today. This new wave of urban agriculture brought with it a more explicit framework of racial and economic justice (Mares 2014). Over the past decade, hundreds of urban gardens and nonprofit organizations, such as Just Food, The Food Project, Rooted in Community, Food What!, and Community Harvest, have emerged as part of the local food, food justice, and youth empowerment movements. As importantly, urban agriculture projects have also found significant support from municipal governments, such as Seattle's P-Patch Program coordinated by the city's Department of Neighborhoods (Mares 2014).

Today there are over 16,000 community gardens and urban farms across the country (American Community Gardening Association [ACGA] 2011). Community gardens provide a host of ecological, social, and economic benefits. Extensive research on urban farming, including community gardens, greenbelt gardens, and personal gardens, assert that growing food within city limits significantly contributes to an increased quality of life by building social capital, improving access to food, providing jobs, improving mental and physical health, and providing a multitude of environmental benefits, such as reducing a community's carbon footprint (Fernandez 2006; United Nations Development Program [UNDP] 1996; Blair et al. 1991; Brown and Jameton 2000; Glover 2004; Pinderhughes 2003; Saldivar-Tanaka and Krasny 2004). As urban populations continue to increase globally, policies that promote urban agriculture and its associated benefits are ever more pressing.

The most recent economic crisis has brought interesting imperatives and opportunities for urban agriculture, especially in cities that have experienced significant postindustrial decline. For example, between 2005 and 2009, tens of thousands of properties were left vacant and abandoned in the City of Cleveland and Cuyahoga County, Ohio, after a dramatic increase in foreclosures. The local government created a land bank to turn foreclosed properties back to productive use, including urban agriculture. Thanks in part to recommendations by the Cleveland-Cayahoga Food Policy Council, the city now has one of the most progressive urban agriculture zoning policies in the country. In addition to supportive zoning policies, the city created a program to make available publicly owned urban properties from the land bank for food production on both single and 5-year leases, is piloting an irrigation program to reduce water costs to urban farmers, and is helping negotiate other obstacles to entrepreneurial urban farms like liability insurance. As of August 2011, Cleveland has leased some 60 parcels to entrepreneurial urban farms and community gardens (Walsh et al. 2015).

There is a wide variety of political expressions in current urban agriculture movements, some of which overlap with more overtly political calls for food justice. Food justice connects efforts to expand access to healthy food with a critique of historical patterns of racism (Alkon and Agyeman 2011; Alkon and Norgaard 2009). The concept emerged from historical struggles over racial and environmental justice in urban centers in the United States and tends to take a social, rather than consumer perspective on food systems change, and in many ways is among the strongest movements for food system change in the urban United States (Holt-Giménez and Shattuck 2011). While food justice is a more recently defined term, its roots can be traced to civil rights efforts like the school breakfast program initiated by the Black Panther Party in Oakland, California, in January 1969, as part of the group's militant struggle for racial and economic justice (Patel 2011). Groups organizing under the food justice banner work primarily on creating access to healthy food in low-income

communities (both in terms of improving quality, convenience, and affordability in the “food environment” and increasing purchasing power). But food justice organizations are not limited to this framework—organizations under the banner of food justice are also creating farmworker-owned cooperative businesses, organizing and advocating for better working conditions across the food chain, opening locally or cooperatively owned grocery stores in low-income communities, establishing buying clubs, addressing health disparities through education, connecting low-income consumers with fresh produce from local farmers through CSA systems, and developing youth leadership. The Detroit Black Community Food Security Network, for example, uses urban gardening as part of a broader agenda including addressing structural racism and lack of black ownership in the food system. This broader agenda includes moving beyond looking only at food security and food justice toward food sovereignty by prioritizing rights to land and food and linking this to a contestation of the dominant agrifood regime.

Just as with food sovereignty in the United States, there has been little interaction between agroecology and urban agriculture. Agroecology can be an important tool for urban agriculture in the United States and abroad, but very little research has looked into the concept and practice of “urban agroecology.”

Agroecology’s key principles provide an essential toolkit for optimizing urban agriculture’s multiple benefits. Most notably is the principle of diversified farming systems, which internalizes soil fertility and pest management without the need for toxic chemicals, many of which have restricted use in urban areas. Diversified farming systems can also produce a variety of food crops that can contribute to improved nutrition. Recent research from agroecologists Philpott et al. (2014) look at factors that drive species richness and abundance of arthropod populations in urban landscapes, including community gardens. Arthropods are essential species for the functioning of ecosystems, including urban ecosystems, and are especially important for the pollination of food crops. Partnerships between urban agriculture movement actors and agroecologists are not common, but have great potential to be mutually beneficial. Given urban agriculture’s diverse goals that span social, ecological, and economic spheres, agroecology’s transdisciplinary, participatory, and action-oriented approach can help the scaling-up of urban agriculture with urban farmers as key protagonists.

10.4 INTEGRATING AGROECOLOGY AND ALTERNATIVE AGRIFOOD MOVEMENTS IN THE UNITED STATES: CHALLENGES AND OPPORTUNITIES

Across the United States, there is a growth in food policy councils, food sovereignty ordinances, new farmers, the urban food justice movement, and educational institutions offering agroecology-based programs. Collectively, this reflects a growing influence of transformational and transdisciplinary approaches in alternative agrifood movements both within society and academia (Allen 2004). A marked rise in youth, women, and minority groups farming and politically organizing around food systems brings a new dynamism to agrarian movements, many of whom may be interested in, or potentially already incorporating agroecological principles to their work. The growing links between concerns about the environment, health, food security, poverty, and social justice reflect an emerging systemic understanding of agriculture as a social and ecological activity in addition to an economic one.

One key challenge to creating sustainable agrifood systems is to connect progressive local actions to a larger political agenda in order to remove structural barriers to the scaling-up of these systems (Holt-Giménez and Shattuck 2011; Mares and Alkon 2011). Federal policy that perpetuates the agro-industrial model, market concentration, and the orientation of research and extension toward these sectors, are central barriers to the scaling-up of sustainable agrifood systems (Reganold et al. 2011). Alternative agriculture receives comparatively little state support for

extension services, storage, distribution and processing facilities, affordable credit, and insurance policies (Carolan 2005). Furthermore, land values in the United States are divorced from their productive uses (USDA, Economic Research Service [ERS] 2011) and over half of US cropland is rented, often on single-year leases where incentives are low for agroecological innovation (Carolan 2005). Until producers have access to land and infrastructure and are consistently paid a better price for both their product and the environmental services they steward, sustainable agrifood systems will be on tenuous footing (Robertson and Swinton 2005).

On the consumer side, economic justice is a challenge for the movement. With nearly 15% of Americans on food stamps, purchasing power in low and middle income communities is often insufficient to purchase enough food, much less food from alternative networks (Food Research and Action Center [FRAC] 2011). Although food justice movements are making strides to increase accessibility to sustainable products, systemic change in federal policy is necessary to reorient monies that currently support the production of abundant, cheap and nutritiously deficient food toward diversified farming systems that produce nutritious diets at an affordable price.

Urban agriculture and food sovereignty movements in the United States are crucial to the advancement of alternative agrifood systems. Agroecology can contribute to this process by partnering with social movements and local food system actors through PAR. As Patricia Allen points out, there is a dearth of studies of alternative agrifood movements and great potential for further collaboration between academia and agrifood movements (Allen 2004, 2008). Agroecology can complement other research and action frameworks (e.g., rural sociology and political ecology) in order to better understand and analyze strengths and weaknesses of agrifood system strategies and identify solutions for ecological, social, and political action. Because agroecology espouses participatory and transdisciplinary approaches it dovetails with the democratic, multistakeholder, systems-based approaches embraced by many agrifood movements (Mares and Alkon 2011). Furthermore, with its use of PAR it aims to empower people to become well-informed agents of change for themselves and their communities. Likewise, agrifood movement actors can enrich agroecology students and researchers by helping them remain grounded in analysis of real problems and real solutions. Social, economic, and political changes needed to address issues of food justice, food sovereignty, and food security cannot happen without ecological change. Likewise, ecological change cannot happen without social, economic, and political change. Agroecology provides technological, scientific, and methodological tools that can contribute to facilitate this change (Altieri and Toledo 2011). Hence, we believe that a deeper interaction between agroecology and alternative agrifood movements could provide additional impetus to transforming current agrifood systems to more sustainable ones.

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