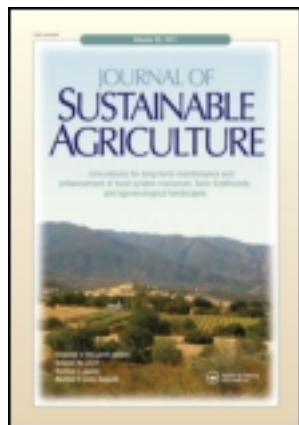


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Agroecology and Alternative Agri-Food Movements in the United States: Toward a Sustainable Agri-Food System

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The concept of agroecology in the United States is born out of a dialectical process of co-production of knowledge whereby the science of agroecology has shaped and been shaped by alternative agri-food movements, policy, and local practice. This article examines the relationship between agroecology and alternative agri-food movements and identifies opportunities for greater engagement. The article concludes with a discussion of the challenges and opportunities to scaling up agroecology and sustainable agri-food systems.

KEYWORDS *agroecology, agri-food movements, food systems, food sovereignty, food policy councils, urban agriculture*

INTRODUCTION

In the last 15 years, movements for just and sustainable food systems in the United States have burst onto 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 is expanding across the country (Allen 2004; Holt-Giménez and Shattuck 2011; Mares and Alkon 2011). Most practitioners in the U.S. alternative agri-food movements do not use the term agroecology, but are guided by the same ecological and social

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principles and a vision for transforming local and global agri-food systems. While agroecology in the United States is a term most often used in association with the academic literature, university research, and educational institutions, it has played a role in the evolution of alternative agri-food movements (Wezel et al. 2009). The field of agroecology has evolved from an early focus on farm ecology 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 (S. R. Gliessman 2010, Mendez et al., this issue).

With growing interest and a new focus on agroecology as a scientific discipline (Tomich 2011), we believe it is important to review the roots and current connections between agroecology and alternative agri-food movements in the United States. The goal of this article is to examine the interaction between agroecology and broadly defined alternative agri-food movements, and identify opportunities for a better integration between the two in the United States in order to advance overlapping goals of creating sustainable food systems. We follow Allen's (2004) framing of agri-food movements as "a large group of people working together to achieve sustainability and community food security" (5). As a transdisciplinary, systems-based, participatory and action-oriented approach, agroecology's engagement with alternative agri-food movements has the potential to be mutually beneficial. Agroecology can provide an analytical framework and research-action approach that identifies complex ecological, social and economic problems within an agri-food system and supports the development of transformative solutions through participatory approaches. Alternative agri-food movements' interaction with agroecology can ensure that the discipline remains true to its goal of combining distinct epistemologies, in particular those of farmers and other food system actors and scholars. This engagement can help facilitate scaled-up change toward more ecologically resilient, socially just and economically viable agri-food systems, which broadly represents the vision shared by agroecologists and agri-food movement actors alike.

THE EVOLUTION AND SCOPE OF AGROECOLOGY IN THE UNITED STATES

The first scientists to use the term "agroecology" had roots in both the biological sciences and agronomy (Wezel et al. 2009). The term first appeared in the scientific literature in the 1930s, gaining traction through the 1960s with the merging of agronomy and ecology in research (Hecht 1995; Wezel et al. 2009). Agroecology emerged as a response to the negative environmental, social, and economic externalities of the agro-industrial system (Rosset and Altieri 1997; Vandermeer 2010) by proposing that ecological concepts

and principles be applied to the design and management of sustainable agroecosystems (S. Gliessman 1998). While the first 40 years of agroecology as a discipline were mostly focused on on-farm processes and developing an ecological framework of analysis, by the 1970s and 1980s, agroecology had adopted a broader, more transformative view of agricultural and food systems (Altieri 1989; Wezel et al. 2009). 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.

The most widely used definition of agroecology today comes from Francis et al. (2003) who describe agroecology as “the integrative study of the ecology of the entire food system, encompassing ecological, social and economic dimensions” (100). While the Francis et al. definition expands agroecology’s focus as a scientific discipline, Wezel et al. (2009) importantly identify agroecology as not just a science but also a practice and a movement. This expanded definition of agroecology paralleled the rise of alternative agri-food movements in the United States representing concerns not only about on-farm sustainability, but community food security, food safety, labor, environmental health, sustainability, and livelihoods in the food system (Allen 2004). This expansion of both agroecology as a field, and a widening in the realm of concern of movements for *sustainable agriculture* to more *just and sustainable food systems* continues to influence the discipline.

From its inception as a discipline, agroecology in the United States evolved simultaneous to movements for more socially and ecologically sustainable agriculture, although, as a term, its adoption in movement discourse remains sparse. 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 reflects an institutionalization of social movement agendas. For example, social movement work, with leadership from the Sustainable Agriculture Coalition,¹ was instrumental in passing the U.S. Department of Agriculture (USDA) Low Input Sustainable Agriculture program (now known as Sustainable Agriculture Research and Education-SARE). The SARE program, as well as other programs under the USDA National Institute for Food and Agriculture, has contributed significantly to the growth of agroecology-based programs in universities across the country. Hence, many agroecology based academic programs emerged as a result of social advocacy work of the 1960s, 1970s, and 1980s.

In academia, agroecology courses were initially offered within environmental studies or agriculture programs, with one of the first to be offered by the University of California, Santa Cruz's Environmental Studies Program 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 (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 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 (Sustainable Agriculture Education Association 2012).

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, there will be more opportunities for interactions between agroecology and alternative agri-food 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 agri-food movements is critical.

AGROECOLOGY AND ALTERNATIVE AGRI-FOOD MOVEMENTS

In a review of organizations funded by the three top U.S. funders of sustainable agriculture and food systems initiatives—the USDA Community Food Program, SARE and the W.K. Kellogg Foundation (Sustainable Agriculture Education Association 2006)—and a web-based search, we found that very few organizations working on alternative agri-food 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 agri-food system change (see Mendez et al, this issue, 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 La Via Campesina, the Landless Peasant Movement of Brazil, and the Campesino a Campesino Movement. In the following section, we outline four areas within the U.S. alternative agri-food movement that have varying degrees of interaction with agroecology and where an increased engagement can be mutually beneficial. The first two represent initiatives in agri-food movements for policy change while the second two represent growing producer movements in urban and rural sectors.

Food Policy Councils and Community Food Assessments

Food Policy Councils (FPCs) are advisory bodies made up of a wide range of stakeholders from each sector of the food system, including anti-hunger advocates, government officials, universities, nonprofits, community-based organizations, and the private sector. Nearly 100 councils across the United States have emerged, many of them in the last 5–10 years, to confront the multifaceted problems of food systems (Harper et al. 2009). In the absence of state agencies or departments dedicated only to food systems issues, councils engage in food system research, provide a platform for coordination between different stakeholders, make policy recommendations, and can be charged with writing food policy (Harper et al. 2009). Many FPCs begin their work with, or result from a community food assessment, which consists of participatory research to systematically collect and disseminate information on local food system issues and inform strategies for change (Pothukuchi et al. 2002). Most FPCs aim to improve food systems by making them more environmentally sustainable and socially just (Harper et al. 2009). Some effective councils have been able to dramatically expand the area under urban agricultural production while others have improved equitable food distribution (Harper et al. 2009). Agroecology aligns with FPCs and community food assessment's system-based approach to research and action. Agroecologists can partner with local food system actors to design and implement community food system assessments and to systematically analyze these initiatives. Agroecology offers a research framework to analyze complex relationships between ecological, social, political, and economic aspects of a food system with particular emphasis on the ecology of a system.

Food Sovereignty

The concept of food sovereignty was put forth by La Via Campesina, an international peasant organization, in 1996, as “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” (La Via Campesina 2007). Food sovereignty is a policy framework guided by the following seven principles: food as a basic human right, genuine agrarian reform, protecting natural resources, reorganizing food trade, ending the globalization of hunger, social peace, and democratic control (Pimbert 2008). Leaders in the international food sovereignty movement have embraced agroecology as a key strategy to achieving food sovereignty (Cohn et al. 2006; Martinez-Torres and Rosset 2010; Altieri and Toledo 2011). In March 2011, Sedgwick, ME, became the first U.S. town to pass a food sovereignty ordinance. Within six months, communities in seven additional states passed similar ordinances (Vermont, Massachusetts, Georgia, North Carolina, Utah, Wyoming, and Montana). These ordinances are meant to protect the rights of small local producers in response to financially prohibitive laws intended to regulate safety in large operations. The movement is building at the national level as well; in 2010, the U.S. Food Sovereignty Alliance (2011) was formed “to end poverty, rebuild local food economies, and assert democratic control over the food system.” 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.

Urban Food Movements

The politics of food justice and the practice of urban agriculture are among the most dynamic venues contributing to the development of alternative agri-food systems. Many organizations working on sustainable food systems in urban areas are based in and led by low-income communities of color (Alkon and Agyeman 2011). Although urban agriculture dates back to the 1890s and has seen several boom and bust cycles in conjunction with economic crisis and recovery (see Hynes 1996 and Fernandez 2003), over the past decade hundreds of urban gardens and nonprofit organizations² have emerged as part of the contemporary local food, food justice, and youth empowerment movements. Today there are over 16,000 community gardens and urban farms across the country (American Community Gardening Association 2011). These green spaces provide multiple services such as building social capital, improving food security, providing jobs, improving mental and physical health, and environmental benefits, such as reducing a community’s carbon footprint (Fernandez 2003; United Nations Development Program 1996).

There are a wide variety of political expressions in modern urban agriculture movements, some of which overlap with more overtly political calls for food justice. Food justice connects access to healthy food with historical patterns of racism and classism (Alkon and Norgaard 2009; Mares and Alkon 2011). Groups organizing under the food justice banner work primarily on

improving quality, accessibility and affordability of food by increasing production, marketing and distribution of food from urban gardens and local rural farmers for low-income consumers, opening cooperatively owned grocery stores, and establishing food system education and youth leadership programs (Fernandez 2003; Alkon and Norgaard 2009). These groups variously employ agroecological practices. For example, Dig Deep Farms in San Leandro, CA, an urban farm run by youth of color, has been experimenting with agroecological methods to farm on steep land originally developed with the Campesino a Campesino movement (E. Holt-Gimenez, personal communication. July 30, 2012).

The Re-Agrarianization of the Rural Landscape?

Agriculture remains concentrated in large landholdings—9% of farms produce 63% of the value of agricultural products sold—but, for the first time since World War II, there is a significant increase in the number of small farms.³ More than 18,000 new farms were established between 2002 and 2007, raising the total number of small farms to 1.9 million or 91% of all farms⁴ (USDA 2007). These small farms tend to be managed by younger operators and are more diverse in terms of production and income shown through mixed organic operations, value-added and specialty products, government supported conservation programs, agri-tourism and recreation, and off-farm employment (USDA 2007). Diversification is an important agroecological strategy to reduce economic and environmental vulnerability and mediate risks, as well as manage ecological diversity (Amekawa 2011).

Another key strategy to minimizing risk is partnerships between farmer and consumer through a community supported agriculture (CSA) model. In the 2007, USDA census more than 12,500 farms marketed through the CSAs, though this number is contested (see Galt, forthcoming), and may be closer to 2,900. Direct sales of agricultural products were up 18% from 2002 to 2007. In 2011, there were more than 7,000 farmers' markets, a 130% increase since 2002 (USDA Agricultural Marketing Services 2011). According to the 2007 census, 44% of organic producers sold locally (within 100 miles) and 30% sold regionally (between 100 and 500 miles). Organic farms often sell to the nation's more than 400 local food co-ops (Coop Directory 2011).

With the increase in new farmers, there are a growing number of organizations designed to support them with access to land, capital, technical assistance, farmer to farmer networks, marketing advice, trainings, and advocacy. Two such organizations with a national focus are the Greenhorns and the National Young Farmers Association. Regional new farmer organizations include the Northeast Beginning Farmers Project, New England Small Farm Institute, Michigan Young Farmer Coalition, and Appalachian Sustainable Agriculture Project. Farmer incubator programs, such as the Intervale Center in Burlington, VT, help minimize common entry barriers—land, capital,

equipment, and knowledge. This increase in new small farmers represents an essential player in efforts to change the dominant agri-food system, and a growing constituency for agroecological research and extension. Not only are they leading changes in farm management but also in the production and dissemination of knowledge by employing farmer to farmer learning methods that have been essential to the scaling up of agroecology in other countries (Simon Reardon and Perez 2010) and have also been successfully applied in the United States (see Warner 2007).

TOWARD SUSTAINABLE AGRI-FOOD SYSTEMS

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 agri-food movements both within society and academia (Allen 2004). The growing links between 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.

The challenge to creating sustainable agri-food 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-Gimenez 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 agri-food 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 2011) and over half of U.S. 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 agri-food 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 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 diverse, nutritious diets at an affordable price.

Food policy councils, community food assessments, food sovereignty, urban agriculture, and the growth of new small farmers are crucial to the advancement of alternative agri-food systems. Agroecology can contribute to this process by partnering with social movements and local food system actors through participatory action research. As Allen (2004, 2008) points out, there is a dearth of studies of alternative agri-food movements and great potential for further collaboration between academia and agri-food movements. Agroecology can complement other research and action frameworks (e.g., rural sociology, political ecology) in order to better understand and analyze strengths and weaknesses of agri-food 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 agri-food movements (Mares and Alkon 2011). Furthermore, with its use of participatory action research it aims to empower people to become well-informed agents of change for themselves and their communities. Likewise, agri-food 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 the technological, scientific, and methodological basis to facilitate this change (Altieri 2012). We believe that a deeper interaction between agroecology and agri-food movements in the United States can contribute to the creation and scaling up of sustainable agri-food systems.

NOTES

1. Today, the Sustainable Agriculture Coalition is now known as the National Campaign for Sustainable Agriculture.

2. Examples of these organization include Just Food, The Food Project, Rooted in Community, Food What!, Community Harvest, The Detroit Black Community Food Security Network.

3. The USDA defined a small farm as a farm with less than \$250,000 in sales.

4. This increase is occurring in farms with fewer than 50 acres (increase by 15%) and fewer than 10 acres (increase by 30%).

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