

Expanding technical assistance for urban agriculture: Best practices for extension services in California and beyond

Kristin A. Reynolds^{a,b}

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Abstract

Past studies have suggested the expansion of extension programs for urban agriculture (UA). With the growing interest in UA, the case for such programs is even stronger. In order to develop effective extension programs, it is important to begin with an understanding of the diversity of UA activities and the types of assistance that may be useful to operators. It is also important to explore whether extension staff are interested in expanding their programs in urban areas. This study sought to address these questions. It examined characteristics

of UA in the study area, Alameda County, California; operators' challenges and assistance needs; and Extension staff members' interest in expanding programming for urban agriculture. Data was collected through the University of California Small Farm Program from 2006 to 2009, and consisted of on-site interviews with 52 urban farmers and gardeners as well as surveys of Extension staff members and participant observation, which took place throughout the study.

Keywords

Alameda County, community gardens, Cooperative Extension, food justice, small farms, University of California, urban agriculture, urban farming, urban gardening, USDA

Introduction

The three sisters — squash, beans, and corn — flourish on a street corner in a wealthy section of town. Cattle graze within view of suburban housing developments. A beekeeper tends his hives under a highway, just blocks from an emergency food provider. Though perhaps surprising to the unknowing eye, these are typical scenes in many metropolitan areas today. They are examples of

^a University of California Small Farm Program and Geography Graduate Group, One Shields Avenue, Davis, CA 95616 USA

^b Present address: Andrew W. Mellon Post-Doctoral Fellow in Sustainable Urban Food Systems, The New School, 72 Fifth Avenue, Room 525, New York, NY 10011 USA; karfireynolds@gmail.com

Disclosures: The author was employed with the UC Small Farm Program from 2003 to 2009. In 2010 she joined the board of one of the urban agriculture operations included in this study. This was after the data-collection stage of this study ended in 2008. This paper follows up and expands on a research brief that presented preliminary findings from this study, as noted in the Research Methods section of this paper and included in the reference list under Reynolds, K. (2009).

urban agriculture (UA), which can be defined as *agricultural production located in and near urban centers, and that which is integrated in the urban economic, social, and ecological system* (see Mougeot, 2005; van Veenhuizen, 2006).

Urban food production is not a new phenomenon. Since at least the nineteenth century, cities as well as their surrounding landscapes and communities have been host to backyard farms, large-scale public gardens, and educational and market gardens, to name a few examples of UA (Bellows, Robinson, Guthrie, Meyer, Peric, & Hamm, 2000; Blecha, 2007; Hyden-Smith, 2009; Lawson, 2005). The most recent turn toward urban agriculture has been bolstered by the economic crisis, widespread recognition of climate change, rising costs of fuel and food, and the need among many households reduce their food expenditures. This new UA movement has been led by operators, researchers, advocates, and public officials who have recognized the positive role of UA in today's agrifood system. At a federal level, this recognition was symbolized by first lady Michelle Obama's kitchen garden, installed at the White House in 2010 (Burros, 2009). Still, despite enthusiasm from various sectors, support for UA has only begun to address the many social, political, and technical barriers that have limited its success.

In the mid-1990s, U.S.-based research began to explore the multiple community- and personal-development aspects of urban agriculture (see Bellows, Brown, & Smit, 2003; Brown, 2002; Brown & Carter, 2003; Feenstra, McGrew, & Campbell, 1999; Hynes, 1996; Kaufman & Bailkey, 2000; Lawson, 2005). Since then, studies have documented the many benefits of UA, which range from food access to environmental conservation; drawbacks, such as the contaminated state of many urban soils; and challenges, which one study categorized as being related to procedure, government, production site, and perception (Kaufman & Bailkey, 2000). These benefits, drawbacks, and challenges are summarized in tables 1 and 2.

More recently, studies have inventoried land suitable for food production and reviewed

municipal policies that might support or hinder urban agriculture (Balmer et al., 2005; Jones, Ona, Rimkus, & Wells, 2005; McClintock & Cooper, 2009; Unger & Wooten, 2006). In addition to providing useful baseline data, these studies have stood as calls for government agencies and city planners to recognize the potential role of UA in urban resiliency and to take measures to ensure agriculture as a long-term use of urban land.

Over the past two decades, several studies have also made recommendations about overcoming challenges to UA, including raising awareness about the benefits of urban food production; addressing food production through city planning; developing policy measures that facilitate urban agriculture; increasing public acceptance of food production in cities; and increasing technical support and extension services for UA (Brown & Carter, 2003; Feenstra et al., 1999; Kaufman & Bailkey, 2000; Pothukuchi & Kaufman, 1999; Smit, Ratta, & Nasr, 1996). Suggestions for expanding extension services have included:

- integration of urban food-system topics within research and extension programs (Brown & Carter, 2003; Feenstra et al., 1999);
- a return of extension to urban areas (Brown & Carter, 2003; Feenstra et al., 1999);
- applied ecological and agronomic research for urban and culturally diverse settings (Brown & Carter, 2003; Feenstra et al., 1999; Schertenleib, Forster, & Belevi, 2002);
- community-based leadership development for UA and community food security (Brown & Carter, 2003);
- education and demonstrations related to the environmental- and public-health risks of soil contamination (Brown & Carter, 2003; Drescher, 2002); and
- facilitation of information exchange between regions (Smit et al., 1996).

This study sought to explore how related California Extension programs might expand assistance for urban agriculture.

Table 1. Benefits and Drawbacks of Urban Agriculture Cited in U.S. Literature

Benefits^a

Food access and public health

- increased access to healthy, fresh, culturally acceptable foods
- increased affordability of healthy, fresh, culturally acceptable foods
- opportunity for exercise and physical activity through food production

Community and environment

- personal or community development
- community and economic development
- increased or maintained open and green space

Education and training

- educational and job training
- employment opportunities for socially marginalized groups
- youth development

Psychological and cultural

- access to open/green space
- stress relief
- contact with nature
- control of public space
- relaxation
- spiritual connections
- cultural continuity for some immigrant groups
- feeling of creating and participating in an alternative food system

Drawbacks^b

Public health and environmental risks related to:

- improper organic waste disposal (i.e., food and animal waste) due to lack of knowledge and/or lack of access to proper disposal facilities
- incomplete knowledge about sanitation and safety when keeping livestock
- use of brownfields or other contaminated sites
- lack of knowledge and resources (funds, land, etc.) to remediate soil

^a Sources: Ashton, 2003; Bellows et al., 2003; Blecha, 2007; Brown, 2002; Brown & Carter, 2003; Eizenberg, 2008; Feenstra et al., 1999; Francis, 1987, 1989; Hynes, 1996; Kaufman & Bailkey, 2000; McGrew, 1999; Monroe-Santos, 1998; Pothukuchi & Kaufman, 1999.

^b Sources: Dufour, 2009; Kaufman & Bailkey, 2000

Table 2. Challenges to Urban Agriculture Cited in U.S. Literature^a

Procedure-related

- inadequate financial resources for start-up costs, ongoing operations, or staff
- difficulties of integrating food production with social objectives
- lack of financial self-sufficiency and/or reliance on grants for funding
- lack of sound business planning
- lack of access to markets
- seasonal limits
- health risks

Government-related

- zoning
- city planning
- governmental restrictions
- lack of political support

Site-related

- site contamination
- security
- land tenure
- vandalism
- crime

Perception-related

- perception that agriculture is not a legitimate urban activity
- negative perception of cultivating food in cities
- association between food production and exploitation among some cultural groups (e.g., African Americans, Latinos)

^a Categories based on Kaufman & Bailkey, 2000. Sources: Brown, 2002; Brown & Carter, 2003; Feenstra et al., 1999; Kaufman & Bailkey, 2000; Pothukuchi & Kaufman, 1999; Smit, Ratta, & Nasr, 1996.

Precedents: USDA and Cooperative Extension Programs

Cooperative Extension is the national system through which the U.S. Department of Agriculture (USDA)'s National Institute of Food and Agriculture (NIFA) partners with land grant universities in each state to provide research-based information to the public (National Institute of Food and Agricul-

ture (NIFA, 2011). Today, the Cooperative Extension (CE) system includes six major areas: youth development, agriculture, leadership development, natural resources, family and consumer sciences, and community and economic development (NIFA, 2011). Urban agriculture may encompass these issues as well, yet CE has often overlooked the scope of urban food production, resulting in the gaps mentioned above (Brown & Carter, 2003; Feenstra et al., 1999).

Although there is currently no systemwide Cooperative Extension program focused on urban agriculture, USDA programs have facilitated urban food production in the past. The first of these UA-focused USDA programs was the Victory Garden campaign of World War II. Following on the tails of government-driven urban garden programs of World War I and the Depression era (which were sponsored by the War Department and the Works Progress Administration, respectively), the Victory Garden campaign urged residents to grow their own food so that a greater proportion of commercial agricultural products could be sent to armed forces abroad (Hyden-Smith, 2009; Hynes, 1996; Lawson, 2005). Up to 44% of the nation's vegetables were grown in Victory Gardens during World War II (Hyden-Smith, 2009, p. xii; Hynes, 1996). Despite the success and popularity of Victory Gardens, USDA support for urban food production tapered off after World War II.

The USDA's next urban food production program began in 1964, when a county Cooperative Extension director in Philadelphia began to establish community gardens on vacant city lots (Stephens, DelValle, Daniels, & Oehler, 1996). This program developed alongside community-led urban garden initiatives in the wake of that decade's race riots, which had resulted in injuries, arrests, and the closing of local businesses in many urban communities (Stephens, DelValle, Daniels, & Oehler, 1996). Eight years later, a CE agent in Washington state began the Master Gardener Program (MGP), which trained volunteers to provide horticultural advice to home gardeners (Malakoff, 1994). The MGP eventually expanded to 45 states with funding from state departments of agriculture and the

USDA (Geisel & Feathers, n.d.; Gibby, Scheer, Collman, & Pinyuh, n.d.). Today, MGP focuses primarily on home horticulture and pest management issues, and is coordinated at the state and county levels. MGP is complemented in some areas by related "master" programs in composting, food preservation, and/or beekeeping.

At the federal level, legislators initiated a *national* USDA Urban Garden Program (UGP) in 1976. In contrast to the MGP, which relies on volunteers to conduct education for home gardeners in general (with no explicit focus on urban areas), the UGP employed CE agents to "assist in teaching and demonstrating gardening and 4-H type work [e.g., small livestock husbandry], as well as nutrition assistance for low-income families" in large cities (Schaller, 1977, as cited in Stephens et al., 1996, p. 294). Volunteers from the MGP and related master programs were trained to work alongside CE staff. During its first year of operation, the UGP helped create opportunities for low-income residents to grow and preserve vegetables in New York City, Chicago, Los Angeles, Philadelphia, Detroit, and Houston (Hynes, 1996). By 1989 over 3,000 UGP staff and volunteers worked with 200,000 low-income urban gardeners, producing US\$22.8 million worth of produce on a budget of US\$3.5 million (Hynes, 1996, p. 90).

The UGP eventually expanded to 23 cities, until changes in the 1994 federal budget reduced its funding and eventually brought it to an end (Malakoff, 1994; see also Hynes & Howe, 2002; Lawson, 2005; Stephens et al., 1996). A handful of regional CE agencies have continued to operate urban agriculture programs, including the Los Angeles County Common Ground Garden Program, which targets low-income city residents and traditionally underrepresented families for its food production and nutrition education program (Los Angeles County Cooperative Extension, n.d.). However, the UGP's dual focus on food production (including animal husbandry) and nutrition education for low-income urban residents has not been replicated at a national level.

Although CE has faced budget shortfalls in recent

years, its mission to deliver research-based education to the public remains intact. This, along with the growing number and diversity of UA operations, suggests that a more comprehensive focus on UA within the CE system is needed. This paper seeks to address this gap by assessing the needs for and possibility of expanding extension services for a diversity of UA operators.

Overview of Study

This study was conducted in Alameda County, California (in the San Francisco Bay Area) and within the University of California's Small Farm Program and Small Farm Workgroup from 2006 to 2009. The goals of the study were to (a) assess the types of urban agriculture in the study area; (b) explore UA operators' need for technical assistance; and (c) assess county and statewide Extension staff members' understanding of and interest in expanding technical assistance for UA.

Three extension programs were integral to this study. Alameda County Cooperative Extension (UCCE Alameda) is the extension office that serves the study area. Although UCCE Alameda does not have an UA program, it does have environmental horticulture, nutrition education, youth development, MGP, and school garden programs (University of California Cooperative Extension Alameda County, n.d.). The county director has also been involved with urban food-systems research and has expressed interest in expanding assistance for UA operators. The statewide UC Small Farm Program (SFP) was established in 1979 to provide extension assistance to California's small-farm community. The related UC Small Farm Workgroup is composed of extension advisors¹ and other small-farm stakeholders who address small-farm issues. Each of these programs is part of UC's Division of Agriculture and Natural Resources, which houses California's Extension system.²

¹ "Extension advisors" in the California extension system are equivalent to agricultural extension agents in other states.

² UC DANR announced that it would close the UC Small Farm program in 2009, although the program has restructured

Study Context

As a part of the nine-county San Francisco Bay Area, Alameda County is home to the densely populated cities of Oakland and Berkeley on the bay, as well as less dense yet growing suburbs to the east. Land use in the eastern part of Alameda County currently includes cattle grazing, parklands, and a limited amount of crop production, as well as housing developments and ranchettes.³ As of 2006 there were 253,386 acres of agricultural land in Alameda County, with 1,727 acres having been converted to nonagricultural use between 2004 and 2006 (California Department of Conservation, 2008). In 2007, the Census of Agriculture counted 525 farms, with an average farm size of 390 acres (U.S. Department of Agriculture (USDA), 2007). This represented a 24% increase in the number of farms, and a 24% decrease in average farm size as compared with the prior census (USDA, 2002). The majority of agricultural production consists of hay, pasture, plant nurseries, and wine grapes, with produce and nuts totaling only 1.5% of the economic value of agriculture in 2007, the first year of the field research (Bray, 2008). There are also many urban farms and gardens in the county that produce fruits, vegetables, herbs, honey, and/or livestock products. However, these activities have generally not been reflected in agricultural statistics.⁴

As a whole, Alameda County is demographically diverse and includes sizable populations of White, Asian, Hispanic/Latino, African American, and American Indian/Native Alaskan persons. Median household income in the county was US\$68,263 in 2007 (U.S. Census Bureau, 2008), yet historical economic inequalities persist. In 2006, for example, 11.2% of the overall population lived in poverty, yet African American and Latino groups were overrepresented in these statistics when compared

and continues to operate (Jolly, 2009; Small Farm Program, n.d.).

³ The American Farmland Trust (n.d) describes ranchettes as residences built on lots of 1.5 acres or more.

⁴ The Alameda County Department of Agriculture, Weights, and Measures began to include community gardens in its annual crop report in 2009.

with White and Asian groups (Beyers et al., 2008, pp. 41–54).

In addition to income and poverty, inequalities also extend to the food system in Alameda County. For instance, while parts of the county are known for upscale restaurants, farmers' markets, and specialty grocers defined by their focus on farm-fresh products, numerous studies have documented lack of access to fresh, healthy, affordable, and culturally appropriate foods in certain communities (see Alkon, 2008; Beyers et al., 2008; Cozad, King, Krusekopf, Prout, & Feenstra, 2002; Farfan-Ramirez, n.d.; Farfan-Ramirez & Kelly, n.d.; Fuller, n.d.; Guthman, 2003; Heynen, 2009; Short, Guthman, & Raskin, 2007; Tsai, 2003). A recent countywide health assessment, for instance, found that access to healthy food (e.g., fresh produce, meat, and dairy) was "highly dependent on the neighborhood in which one lives" (Beyers et al., 2008), and past studies have noted that low-income residents of West Oakland (a historically African American district that also has a sizable Southeast Asian population) have struggled for decades with these issues (Alkon, 2008; Farfan-Ramirez, n.d.; Farfan-Ramirez & Kelly, n.d.; McClintock, 2008). Urban agriculture has surfaced as a way to address some of the food system issues mentioned here.

Research Methods

There were two populations of interest in this study: (1) key informants from urban agriculture operations (UA operators); and (2) Farm advisors and staff members (Extension staff) from the UC Small Farm Program, Small Farm Workgroup, and UCCE Alameda. Multiple methods were used to collect data, as described below.

Study Population 1

The UA operators in this study were gardeners and production managers from 52 farms, gardens, and apiculture and/or mushroom-foraging operations located in Alameda County. Operations were included in the study if they: (a) made edible products available to the public through sales and/or community distribution; (b) provided land to urban residents for food production; and/or (c) consisted of household members producing a

significant part of their own food at their place of residence. (This study did not examine smaller backyard gardens, school gardens, or agricultural operations that produced only non-edible products, such as nurseries or hay producers.) Individual participants were selected through snowball sampling, which uses stakeholder input to identify key informants.

Data collection with UA operators took place between mid-2007 and early 2008, and consisted of site visits and interviews. A set of open- and close-ended interview questions was developed with input from local stakeholders. Questions probed characteristics of the operations, agronomic techniques, community development strategies, challenges, and needs for technical assistance. At the beginning of each interview informants were given the most recent SFP newsletter in order to familiarize them with the focus of the program.

Interviews were recorded and transcribed by the author. Responses were analyzed for common themes and subsequently coded for further analysis using the SPSS software package, although the author recognizes the limitations of this approach. UA operations can have numerous functions and, more generally, categories imposed by a researcher risk oversimplifying groups' and individuals' roles and motives. In order to minimize this risk, preliminary findings were shared with a selection of UA operators and Extension staff in the form of a 12-page research brief, and feedback was incorporated into the final analysis (see Reynolds, 2009). This helped verify the validity of the research findings and maintained study participants' voices in the research process.

A series of maps was also created with site location and U.S. Census data using GIS software. This enabled further geographic and demographic analysis. Analysis of these maps is included in the author's dissertation (Reynolds, 2010).

Study Population 2

Extension key informants (Extension staff) consisted of SFP advisors, members of the UC Small Farm Workgroup, and staff members from

UCCE Alameda, who had expressed interest in urban agriculture. Data were collected through participant observation⁵ of three types of intervention: (a) a study tour of Bay Area urban production and marketing sites, organized in fall 2006 to familiarize Extension staff with urban agricultural and food issues; (b) facilitated discussions about UA, which took place between 2007 and 2009; and (c) email surveys of Extension staff, which were administered immediately after the study tour and the facilitated discussions. Field notes and written survey responses were analyzed for common themes.

Limitations of This Study

One limitation of this study was that Alameda County Cooperative Extension has no farm advisors. This, along with budgetary constraints within the entire University of California Extension system, limited the potential to develop a new UA program. Nevertheless, the study addressed issues that could be approached through innovative program planning and that are applicable beyond the study area.

The small sample size among the UA operator population ($n=52$), also limited the inferences that could be drawn from the findings. Nonetheless, use of characteristic themes for analysis and discussion may be a useful framework for communicating about the diversity of UA operations.

Findings Part One: Urban Agriculture Operators

Main Purpose

Key informants were asked questions about the characteristics and main purpose of their

⁵ Participant observation is a qualitative research methodology in which an investigator establishes and maintains a many-sided and situationally appropriate relationship with an individual or group in a natural setting for the purpose of developing a social scientific understanding of that association. This may entail participation in and intentional observation of normal activities or planned interventions, as well as documentation of observations through field notes (Lofland, Snow, Anderson, & Lofland, 2006, pp. 16–19).

operations. The following four themes emerged through analysis of these responses.

Theme one: Community gardens and orchards (CG). Community gardening is perhaps the most familiar example of UA. Community gardens and orchards (CGs) in this study provided garden space to community members to grow produce, herbs, and flowers for themselves and family members. Many gardens also integrated native plants into the garden space. Sales of garden products were prohibited in most cases.

City agencies, regional government districts, and/or nonprofit organizations provided resources and oversight of garden sites for most of the community gardens in this study. These included one or more of the following: a staff coordinator, land tenure, water supply, basic site maintenance (e.g., trash collection), and other resources (tools, donated seeds, etc.). Gardeners typically paid a small annual fee (between US\$10 and US\$75) to the coordinating agency or organization for these services. In some cases the staff coordinator was highly involved with all aspects of the garden, from registering new members and assigning plots to providing supplies. In other cases, gardeners themselves formed committees that managed these and other activities, including public garden days and seasonal garden clean-ups.

Theme two: Community food security; food justice; youth development (CFS/FJ/YD).

Several of the UA operations in this study focused on social justice and community empowerment, which they addressed through food production and related activities. These community-based operations differed from the community gardens described above in that their activities reflect a *de facto* critique of the social system. Three concepts were integral to these operations' activities:

- (a) *Community food security* (CFS), which is defined as “the ability of all persons [to obtain], at all times, a culturally acceptable, nutritionally adequate diet through local, non-emergency sources” (Gottlieb & Fisher, 1996, p. 24);

- (b) *Food justice* (FJ), which considers social and economic inequities that give rise to food insecurity among various social groups, emphasizing local community control (Gottlieb & Joshi, 2010; Levkoe, 2006; People's Grocery, 2009); and
- (c) *Youth development* (YD), which has been described as “as the natural process through which youth grow into adults; as a set of principles underlying youth programs that encourage thriving among youth; or as a set of practices that foster the development of young people” (Heck & Subramaniam, 2009).

CFS/FJ/YD operators produced food specifically for low-income communities, fostered youth development among underprivileged youths, and/or provided job training to local residents. Each operation employed a garden or farm manager who oversaw the production of vegetables, fruits, and herbs, along with chicken- and beekeeping in some cases. Sales and distribution methods included corner farm stands, sliding-scale pricing, and a model of community supported agriculture (CSA) in which shares for lower-income members were subsidized by higher-income members' shares. Some of the operations also used direct sales through farmers' markets and



Figure 1. Community Garden (CG) Plot

Photo by the author.



Figure 2. Vegetable Beds at a CFS/FJ/YD Farm

Photo by the author.

high-end restaurants to increase revenue and support other activities.

The operations that incorporated YD into their programs worked mainly with youth of color in underprivileged communities to help them develop a sense of empowerment and personal responsibil-

ity. Education about life skills such as healthy eating, seeking and maintaining employment, and community leadership was incorporated into activities that included food production, produce sales, and peer nutrition education.

Theme three: Sustainable living and self-provisioning (SLSP). Several informants practiced UA as a personal effort to live more “sustainably” and/or engage in a degree of food self-provisioning. These operators generally questioned the ecological sustainability and/or social equity of the agrifood system. As a response, they opted to produce a significant amount of their own food using what they believed to be more sustainable methods. All of these informants grew produce and herbs, and some also kept bees and/or raised small livestock, including chickens, goats, pigs, and rabbits, in their backyards. Although focused on self-provisioning, each of these operations engaged in some form of community education, including hosting occasional farm or garden tours and providing informal consultation to other urban residents.

Theme four: Commercial production. The commercial UA operations in this study were privately held, small-scale farms and ranches, and apiculture and mushroom-foraging operations. Primary activities were production, harvest, and sales through various channels. Products included a wide variety of fruits and vegetables, chicken, beef, lamb, honey, and mushrooms. Sales outlets included farm stands, farmers’ markets, CSAs, restaurants, agritourism, and wholesalers. Many of these operators also donated a part of their unsold produce to local food banks and other emergency food providers.



Figure 3. Goats at SLSP Site

Photo by the author.

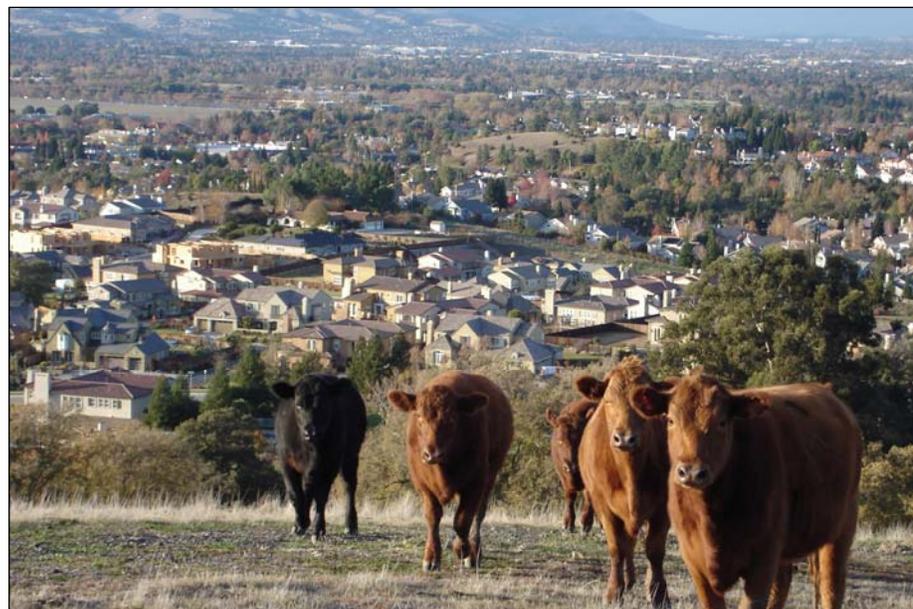


Figure 4. Commercial Cattle Ranch at a City's Edge

Photo by the author.

While commercial production was the common theme among this set of operations, informants also expressed concerns about wider agrifood systems issues, including the decline of small farms and small-farm profitability, the ecological impacts of agricultural production, and the need to educate nonfarmers about food and agriculture.

Figure 5 shows the number of operations within each of the four themes. Figure 6 shows the distribution of sites throughout the county. In some cases multiple operations were located at one site. These are noted on the map. Additionally, some operations had multiple sites.

Figure 5. Number of Operations with Each Theme (N=52)

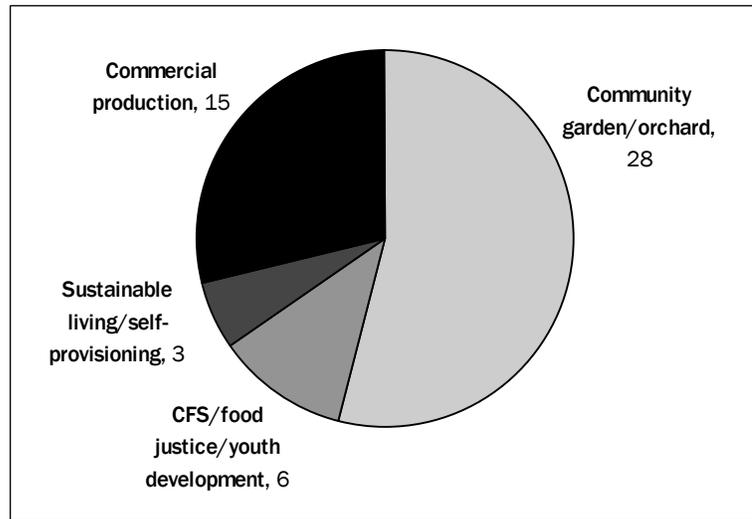
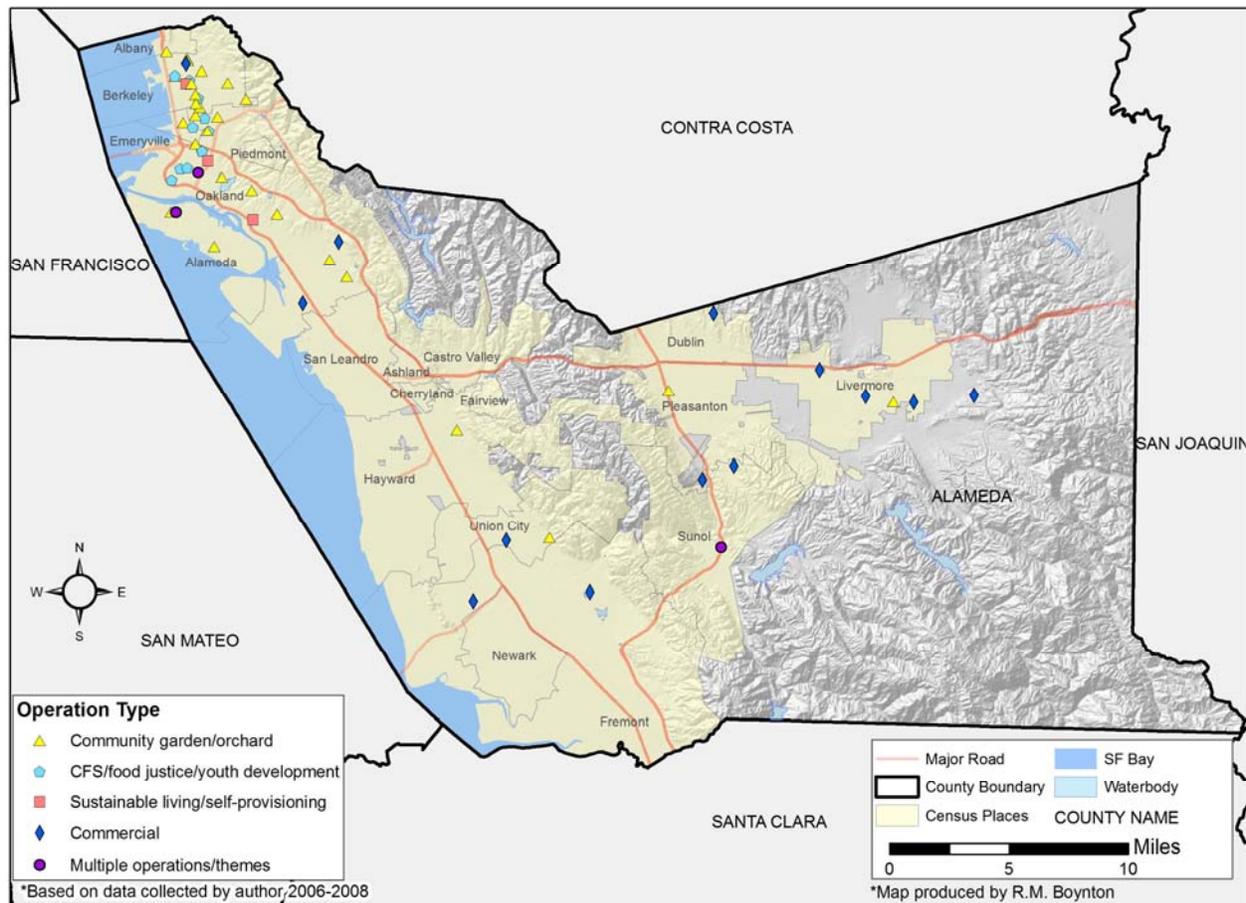


Figure 6. Urban Agriculture Sites in Alameda County, California



Challenges

Key informants were asked an open-ended question about their biggest challenges: *What would you say are the biggest challenges to achieving your operation's goals?* Responses were analyzed and grouped by the operation's main purpose, as shown in table 3. Top challenges for each group are discussed below.

CG challenges. Top challenges mentioned by community garden informants were interpersonal relationships within the garden and time constraints. According to some key informants, community gardeners did not always come together to accomplish common tasks such as weeding paths, even when cooperation was one of the garden's stated missions. As an informant from one garden explained, a main challenge was:

to keep the work in communal areas. To develop our sense of community that goes beyond being a good gardener...to avoid

the possessive sense that people always have...[to develop a sense that] this is a public place and we have a *privilege* to be here, that we don't have a *right*. [But this is an attitude that] you confront.

A coordinator from another garden expressed similar sentiments, noting that the "number one challenge" was the attitude of the gardeners. "They don't band together the way the South L.A. Farm and others did," she explained, making reference to the 2006 standoff between community gardeners and the landowner of a 14-acre community garden in Los Angeles (see Barraclough, 2009). She also mentioned racial tension within the garden as an example of the challenges to creating community. (The membership of this garden was ethnically diverse and was made up mostly of Mexican, but also Caucasian, West African, Japanese, and Afghan gardeners.)

Lack of time was mentioned as a challenge related

to gardeners needing to schedule their gardening activities around their jobs, as well as the fact that some gardeners did not live in the neighborhood surrounding the garden. Time was a more significant issue during the winter months because early nightfall limited visibility in many gardens and contributed to concern about personal safety, especially for women.

Table 3. Top Challenges Mentioned for Each Theme

Challenges (number of responses)	CG (n=28)	CFS (n=6)	SLSP (n=3)	Commercial (n=15)
Lack of time	8	1	2	1
Relationship with surrounding community	1	2	1	2
Funding (start up, expansion, paying staff)	2	4		3
Lack of agricultural infrastructure	1	1		2
Crime and/or misuse of garden ^a	6	2		
Ag not seen as a legitimate urban activity	1	2		1
Biophysical and/or environmental factors ^b	6			3
Lack of institutional support ^c	6			3
Horticultural skills and/or knowledge (among gardeners, youth, and/or volunteers)	3	3	1	
Interpersonal relationships within garden	15	1		
Land tenure and/or cost	2		2	
Managing farm and/or organizational activities		4		5
Costs of farming and/or cost of supplies	1			5
Creating community market farm		3		
No response	1			

^a Violence, theft, vandalism, drug use, drug sales, and/or other use of garden for nongardening activities.

^b Pests, weedy species, shade, climate, etc.

^c Lack of governmental, municipal, and/or university support.

Note: Numbers total greater than the number of respondents due to multiple responses.

CFS/FJ/YD challenges. The top four challenges mentioned by CFS/FJ/YD informants were funding; managing disparate farm and organizational activities; lack of horticultural knowledge among gardeners, youth staff, and volunteers; and creating a new type of community market farm.

Since all of the CFS/FJ/YD operations in this study were managed by nonprofit organizations, it is not surprising that funding was one of the most frequently mentioned challenges. (Funding is often a challenge for nonprofit organizations.) Specific funding issues related to starting or expanding agricultural production and paying staff. In terms of managing diverse activities, challenges related particularly to balancing farming with other responsibilities, including tasks not directly related to food production (e.g., youth counseling, fundraising, and grant-writing). These findings concur with those of past studies (see Feenstra et al., 1999; Kaufman & Bailkey, 2000; Lawson & McNally, 1998).

Half the CFS informants mentioned lack of horticultural skills among youth participants and volunteers as a challenge in terms of production efficiency. This challenge pertained mainly to the youths' and volunteers' limited gardening experience, whereas the adult staff members did have these skills. Rather than viewing this as wholly problematic, however, informants reiterated that youth development was one of the main goals of their UA operation; youth participants were there *in order to* gain these and other skills.

Half the informants also discussed the challenges associated with creating a new type of farm that was neither a community garden nor a fully commercial operation. One informant described this as "community market farming":

We call them [community market farms] to make a distinction with community gardens. But if you just say that they're market farms, that implies that they're a purely commercial endeavor, which would mean that you'd be marketing [the products] at as high a price as you could. "Community

market farms" means it's run like a market farm as much as possible in terms of trying to be as productive as possible and as efficient as possible, but the food benefits — is *for* the community. And there's a lot of community involvement.

Other informants expressed similar concerns, noting that despite having significant gardening experience, they had needed to develop additional agronomic skills in order to manage food production for community distribution and/or sales. As one farm coordinator explained:

For us, we're like in the no-man's land between small farmers and gardeners. We're really trying to produce...on a larger scale using those types of methods, but [we] don't have all the skills and knowledge around that. [We] have never started it from the ground up.

Two of these informants mentioned that they learned farm management skills (such as strategizing successional plantings for consistent harvests and marketing) during their operation's first season.

SLSP challenges. The top challenges mentioned by SLSP informants were time and land tenure and/or cost of land. Time as a limiting factor was related to the fact that the operators of each site held one or more paid jobs that were not a part of their food-production activities. As for land tenure, each of the operations had a different land access situation, so no clear pattern emerged.

Commercial operation challenges. The two challenges cited most frequently by commercial operators were managing diverse farm activities, and the costs of farming and related effects on profitability and the ability to stay in business. While these are issues faced by small-scale farmers in general, being located in or near a city may have intensified the impact of these challenges. For example, the cost of land is typically higher in urban areas, which has been found to necessitate a higher degree of diversification and more complex

business-management skills in order for farms to remain financially sustainable (Heimlich & Anderson, 2001). Several other issues related more specifically to being located in an urban area. These included lack of governmental and/or institutional support for agriculture; lack of an agricultural infrastructure, including a skilled labor force, supply stores, and equipment repair services; and a lack of a network of local operators. Again, these findings concur with those of past studies (see, for example, Esseks, Oberholtzer, Clancy, Lapping, & Zurbrug, 2008; Sokolow, 1996).

Information and Assistance Needs

In addition to discussing challenges to their operations, key informants were asked, *Are there any types of information or assistance that are not available that would be useful to your operation?* Again responses were aggregated and grouped by theme (see table 4).

CG needs for information and assistance. The top information and assistance needs mentioned by CG informants were networking among gardeners and collective work within the garden. Technical aspects of gardening, soil testing, food production and/or distribution resources, and business

management were also mentioned. (Although most community gardens prohibited sales of produce, a few did allow gardeners to sell their produce.)

Nearly half of CG informants indicated that they did *not* need additional information or assistance. In a separate line of questioning, many of the informants reported getting horticultural and soil-testing information from the Internet and books, as well as the MGP. This likely explains the high percentage of “none needed” responses among these informants.

CFS/FJ/YD operation needs for information and assistance. Informants from CFS/FJ/YD operations cited three information and assistance needs equally: extension and technical research assistance (beyond gardening information); funds and staff; and compilation of information about UA practices.

Again corresponding to the challenges discussed above, specific technical needs included assistance with scaling-up from small gardens to market gardening, and periodic on-farm consultations. For instance, one farm coordinator explained her vision

of an urban farming extension agent as “someone who just kind of came around and, you know, spent a few hours every other month... checking in, helping you do some farm planning,” adding that “production is just a part of what I do... there’s a lot of literature out there, but I don’t learn by reading.”

Table 4. Needs for Information and Assistance by Number of Responses

	CG (n=28)	CFS (n=6)	SLSP (n=3)	Commercial (n=15)
Extension or technical assistance ^a		2	1	1
Production or distribution resources	2	1		1
Gardening information	4	1	1	
Soil testing and/or contamination information	3	1		
Farm business management	2			2
Funds or staff	1	2		
Information compilation and guidance on finding information	1	2		
Networking or collective work	7			
City services	1			
None needed	12		1	11
No response	1			

^a That is, beyond gardening information.

Notes: Numbers total greater than the number of respondents due to multiple responses.

Another informant felt that CE and other governmental agencies should do more to assist UA operators. She explained:

Through collaborative system of agricultural support in the United States, urban areas are shut out. Farm subsidies for urban agriculture [would be helpful]. Extension, government offices, a city department of food... The Extension service at the county level should have programs for urban agriculture, and cities should have a Department of Agriculture — a Department of Food.

One CFS/FJ/YD informant had specific suggestions about how to deliver information to a broad range of UA operators. He explained that “there is a lot of information, but it’s hard to get because it’s time-consuming.” He also pointed out that “not everyone is online, or uses Internet, or can download and print documents — especially seniors who are not as familiar with computers. Having hard copies and flyers would be good for them.”

SLSP operation needs for information and assistance. SLSP operators mentioned only two needs for information and assistance: gardening information and an urban agriculture extension agent. One operator explained that she and her urban-farming peers spent a considerable amount of time teaching others about farming techniques, including urban livestock husbandry. Although she was glad to share her knowledge with others, the growing number of requests had begun to take away from the time this operator was able to spend on her own farming activities. She explained that an extension agent would be very useful because “hundreds of people are getting backyard chickens and they need support — they’re confused!” She also expressed a need for more technical support with raising goats: “I know there’s books, but I need a person to tell me what to do. So that would be really nice if there was an urban farming extension agent... That would be awesome.”

Again, the small sample size limits the inferences

that can be drawn from these responses. Still, they do provide preliminary information about the types of assistance that could help individual UA practitioners.

Commercial operation needs for information and assistance. Eleven of the 15 commercial operators stated that no additional information or assistance was needed. Several informants, especially beginning operators, indicated that they typically accessed information through the Internet or other resources, and/or had personal connections with other farmers on whom they called for assistance when needed. Some of the more seasoned commercial operators indicated that they relied upon their own experience in making management decisions.

Despite the fact that the majority of commercial operators in this study indicated not needing additional assistance, several informants did mention that information about farm business management would be useful. One operator explained that producing in an urban area meant that he did not have connections with other producers who might provide him with guidance on managing his farm business. Another operator stated that more extension personnel were needed “to buffet resistance to agriculture” in the area. He explained: “It’s working in reverse. We need more [help] to educate the urban people, and we’re not gettin’ it from Extension. They’ve cut out the personnel [but] people take food for granted in this country.”

“None Needed” responses. As discussed above, many informants indicated no need for additional information or assistance. It is important to reiterate that this question specifically addressed *assistance and information needs*. It did not probe other issues such as policy, zoning, or advocacy. Moreover, informants’ knowledge that the study was being conducted through an extension program likely influenced responses. For instance, policy change was not mentioned as a “need,” although comments made during some of the interviews suggested that policy changes would help overcome certain challenges. To this end, future research should explore UA practitioners’ opinions of

needed policy changes, zoning, and advocacy more explicitly.

Findings Part Two: Extension Staff

As described above, the second population of interest in this study (Extension staff) consisted of SFP advisors, members of the UC Small Farm Workgroup, and staff members from UCCE Alameda. Facilitated discussions and email surveys revealed several key points about their understanding of UA and interest in working with UA operators.

Definition of urban agriculture. Over the course of the study, several Extension staff indicated a lack of clarity about the term “urban agriculture.” This was surprising since each facilitated discussion and survey was prefaced with the definition used in this study.⁶ One farm advisor wrote:

To be honest, I still have trouble with the definitions — “Urban” [is] agriculture within the city boundaries; “peri” [is] just on the edges and outside the city. But where do you draw the line between rural and peri [urban]?? And is one more commercial (peri-) and the other community garden (urban)? I don’t think so. In the context of our jobs both are commercial to me. I used to just call it all “commercial farming on the urban-rural interface.”

Several advisors also mentioned that most of their clientele would be considered urban producers, as explained in an email from another advisor:

I would say that the majority of farmers I work with (>80%) are strongly influenced by the ag-urban interface and would have major concerns over most, if not all, of the areas mentioned [as characteristics of urban agriculture]...Essentially all of [southern California] west of Riverside, as

well as all of the coast, as well as a solid wide band from San Bernardino thru Bakersfield, Fresno, and then the [northern San Joaquin] Valley. There would only be pockets of areas that would be NON urban or peri-urban by the definition here.

This lack of clarity about urban agriculture is important to note in terms of its potential effects on expanding UA extension programs. As a case in point, this study relied upon definitions typically used within the UA movement, yet these were not meaningful to farm advisors. While the study was developed in order to assess the need for a UA extension program, much of the dialogue between Extension staff members during the three-year study process centered on how urban agriculture was defined rather than whether or not a new program should be developed.

Identifying and working with clientele. Just as farm advisors did not conceptualize agriculture itself as “urban” or “nonurban,” several advisors emphasized they did not identify their target clientele based upon location (i.e., whether they produced in urban or rural areas). Rather, advisors distinguished between commercial and noncommercial operators, explaining that they viewed small-scale commercial producers as their target clientele, and referred noncommercial operators to the MGP for assistance.

As discussed above, not all UA operators in this study were involved in the commercial sector, but this did not mean that they were growing food simply as a hobby or leisure activity. Some operators grew and distributed food that essentially bypassed the conventional market structure, which had failed (whether by design or neglect) to meet the needs of their communities. Others relied upon food they produced themselves, including animal products, to feed household members. This suggests a need for more extension assistance for UA operators whose food-production goals are neither leisure nor fully commercial, and/or whose farming activities extend beyond horticulture.

Past work with UA operators. Despite farm

⁶ The term “peri-urban” was replaced by “urban edge” over the course of the study because it became apparent that nonacademic stakeholders often were confused by the term as used in much of the UA literature.

advisors' focus on commercial operations, it is important to point out that several advisors had worked with noncommercial urban gardeners and farmers in the past, and continued to do so. Activities ranged from conducting crop variety workshops for gardeners to helping establish noncommercial urban farms and community gardens. Additionally, several Extension staff members indicated an interest in addressing additional UA topics in the future. Responses to surveys emailed at strategic points throughout the study indicated particular interest in community-based food systems research and efficient use of vacant land for food production, along with a more general interest in connecting small-scale farmers with urban markets. To be clear, some farm advisors questioned whether certain issues such as nutrition or urban food policy fell within their domain. Still, the interest expressed by several advisors and staff members suggests the possibility of moving beyond a piecemeal approach to assisting UA operators, to a more coordinated one.

Discussion and Recommended Practices

This article has attempted to provide baseline information about the dynamics of urban agriculture in one California county, as well as perspectives about UA held by farm advisors and other Extension staff. The findings of this study build upon past research by offering a framework for conceptualizing UA based on main purpose, and exploring how purpose may correlate with challenges and operators' need for technical assistance. It has also provided perspective on how operators' and farm advisors' understandings of urban agriculture may differ, and how this might affect future efforts to expand UA Extension programs. Four overarching recommendations may be useful to this end.

First, as suggested by its six areas of focus, the Cooperative Extension system has the institutional capacity to address many (though perhaps not all) of the information and assistance needs identified by UA operators in this study. In addition to topics addressed by existing programs, Extension programs for urban agriculture should include assistance with:

- **market gardening** (i.e., crop planning for community food production and distribution);
- **urban livestock husbandry** (e.g., basic livestock and beekeeping skills);
- **soil testing**, including information about the importance of testing soils in urban areas, where to have tests done, how to interpret results, and how to minimize risks of contamination;
- **marketing**;
- **business management** for both commercial and noncommercial operations;
- **community development**, including networking, community relationships, intercultural relationships, and antiracism; and
- **educating nonfarmers** about the importance of agriculture in urban areas.

Second, because the way in which UA is defined can affect the availability of extension assistance, efforts to expand technical support and educational programs should begin with the development of a context-specific definition of UA. Care should be taken to include all types of UA activities in a given area, as well as systematic assessments of clientele (i.e., the full spectrum of UA operators), their diverse needs, and the accessibility of Extension services regardless of location, technological capabilities, etc. All stakeholder groups should be represented fairly in such processes.

Third, an important factor related to social justice in the food system that has not been addressed in this article is the history of discriminatory practices enacted by the USDA toward African American, Native American, Latino, and women farmers (see Farm and Food Policy Diversity Initiative, 2009; Hoffman, 2009; MacPherson, 2006; Myers, 2001; Treviño, 2009). This, along with the links between race, income, and urban food access discussed in the beginning of this article, underscores the need to place priority on serving the full spectrum of UA operators from all racial and ethnic groups. Program development should evolve with the

expectation that some groups may need more substantial assistance than others, whether this is due to economic status, educational attainment, access to technology, or systemic inequalities. To this end, USDA agencies, including Cooperative Extension, might learn effective strategies from UA operators who have actively worked to address issues of food justice and community empowerment through their programs.

Finally, as noted above, the CE system is in a budget crisis that has brought an end to many programs in recent years, as the budgetary changes did for the Urban Garden Program in the 1990s. While this reality may limit the development of new programs that require additional financial and human resources, it may also present an opportunity for CE to engage more fully in cooperation with urban farming and gardening communities.

As discussed in this article, UA operators have innovated production, marketing, and community-empowerment approaches through experience and knowledge exchange. A commitment on the part of CE to learning from, along with providing assistance to, UA operators may be a next step in expanding the practice of sustainable urban food production. This work should be approached through cooperation, dialogue, and a commitment to co-learning. By integrating these approaches into future work with urban agriculture, the Cooperative Extension system may be able to participate more fully in realizing the profound and lasting changes that are needed to create a more sustainable and socially just urban food system — in California and beyond.

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