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## **Involving Extension in Urban Food Systems: An Example from California**

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*Nationwide, Extension is increasingly involved in local food system work. In cities, initiatives to improve the local food system often include urban agriculture, which has attracted the attention of diverse stakeholders for its many potential social, health, economic, and environmental impacts. This article illustrates how Extension in the San Francisco Bay Area is developing urban agriculture programming and engaging in food-system-related partnerships. It also shares lessons learned from these efforts. In this metropolitan region, Extension practice aligns well with research findings on Extension involvement in local food systems, particularly with the emphasis on providing educational opportunities and resources adapted to unique needs of city residents and working collaboratively with community and government partners to facilitate broader food system change. The results of this case study will be useful for Extension personnel in designing and implementing programs related to urban food systems.*

*Keywords:* urban agriculture, partnerships, social capital, food justice

### **Introduction**

Long taken for granted, urban food systems have become a focal point for city residents, municipal governments, and other stakeholders because of their contributions to the local economy, environmental conditions, public health, and the quality of city life (Pothukuchi & Kaufman, 1999). Alongside this interest in improving urban food systems, cities across the United States have experienced an increase in farmers' markets (Low et al., 2015); home, school, and community gardens (National Gardening Association, 2014); and urban farms (Rogus & Dimitri, 2015). Associated policy initiatives have sought to facilitate agriculture within urban boundaries and increase access to healthy foods for underserved city residents (Low et al., 2015).

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State and local Extension programs have responded to these opportunities by engaging urban residents through food and agriculture-based projects (Fox et al., 2015; Meadows, 2013; Ohri-Vachaspati, Masi, Taggart, Konen, & Kerrigan, 2009). Although Extension has a history of engagement with food production in the city through initiatives such as the Master Gardener Program and the Urban Gardening Program (Reynolds 2011), the current interest in urban food systems represents, for many, a new area of Extension programming and practice (Clark et al., 2016). In a nationwide survey of Extension personnel involved in urban agriculture, 44% of respondents reported they had begun working in this area within the last five years; only 5% reported urban agriculture was their primary responsibility (Diekmann et al., 2016). In addition to county-based Extension programs, regional and national networks devoted to these issues are also emerging. For instance, since 2013, eXtension—an online platform for Extension resource sharing—has had a Community of Practice dedicated to community, local, and regional food systems with more than 400 members, representing all 50 states.

The role Extension plays in urban agriculture depends, in part, on how urban agriculture is defined. As Reynolds (2011) has illustrated, which audiences are targeted and which services are offered depend on how Extension determines what constitutes urban agriculture. Hodgson (2011) offered a broad definition, writing that urban agriculture “entails the production of food for personal consumption, education, donation, or sale and includes associated physical and organizational infrastructure, policies, and programs within urban and suburban environments” (p. 1). Because this definition also incorporates the infrastructure, organizations, and policies that support urban agriculture, it is well suited to urban Extension, which often engages with this supportive structure as well as producers (Diekmann et al., 2016).

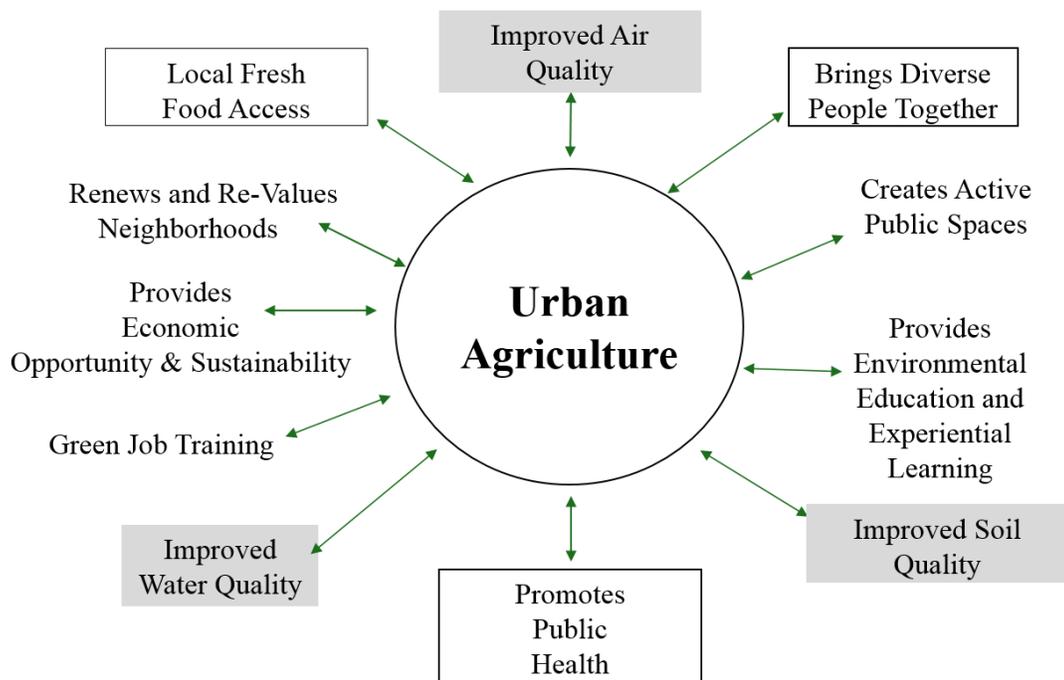
Urban agriculture has emerged as a promising way to address complex urban issues (Daftary-Steel, Herrera, & Porter, 2015), and along with other local food system work, it is a new and evolving area of Extension practice (Clark et al., 2016). This article identifies opportunities and challenges in Extension’s urban food work and explores new programs and new roles for Extension through a case study of Extension urban agriculture programs in the San Francisco Bay Area.

### **Benefits and Challenges of Urban Agriculture**

Much of the interest in projects intended to improve the urban food system stems from their multifaceted impacts, including community building, raising awareness of food and agriculture, and improving access to healthy foods (Fox et al., 2015; Lelekacs et al., 2016). Similarly, urban agriculture’s popularity stems from its many potential benefits for the individual, community, and city as a whole (Daftary-Steel et al., 2015). Urban agriculture can contribute to physical activity and mental health (Armstrong, 2000), consumption of fresh produce (Algert, Diekmann, Gray, & Renvall, 2016), community building (Glover, Parry, & Shinew, 2005), civic

engagement (Saldivar-Tanaka & Krasny, 2004), urban green space (Lovell, 2010), urban environmental sustainability (Brown & Carter, 2003), and education and job training (Vitiello & Wolf-Powers, 2014) (see Figure 1). Although urban agriculture alone cannot solve all these problems, it is an important component of “building socially, economically and ecologically sustainable, healthy, and food secure” cities (Daftary-Steel et al., 2015, p. 27; McClintock, 2014).

**Figure 1. Depiction of Urban Agriculture’s Potential Environmental, Social, and Economic Impacts**



(Source: Adapted from R. Bennaton)

Urban agriculture also faces various challenges that stem from its urban setting and the demands of meeting multiple social and educational goals. These challenges include difficulty accessing land, plots that are frequently small and fragmented, soil contamination, and insecure land tenure (Opitz, Berges, Piorr, & Krikser, 2016; Reynolds 2011). Zoning and other regulations often pose obstacles as many cities limited agriculture within their borders during the 20th century (Vitiello & Brinkley, 2014), and steps must be taken to ensure urban agriculture is seen as a compatible land use rather than a nuisance, especially for local animal husbandry. In addition, urban agriculture operators may lack access to capital and the necessary infrastructure for marketing and processing the food they produce (Rogus & Dimitri, 2015). As Daftary-Steel et al. (2015) have argued, urban agriculture also struggles with the expectation that it will be financially sustainable through the sale of agricultural products while also meeting ambitious social goals. Expanding Extension services and support for urban agriculture is one strategy for overcoming the challenges that urban agriculture faces (Brown & Carter, 2003; Reynolds, 2011).

## **Framing Extension's Involvement in Urban Food Systems**

Recent literature on Extension's involvement in local food systems provides a framework for considering the opportunities and challenges for Extension as it embraces urban food systems and urban agriculture. Several authors have suggested that Extension is uniquely positioned to play an important role in local food systems because of its long-standing relationships with local communities, its programs that span the food system, and the research-based expertise and resources it provides (Clark et al., 2016; Colasanti, Wright, & Reau, 2009; Dunning et al., 2012). At the same time, growing interest in local food systems presents an opportunity for Extension to engage new and nontraditional audiences, creating new partnerships that expand Extension's organizational reach (Colasanti et al., 2009). Clark et al.'s (2016) assessment of Extension educators' roles in local food systems confirmed these assertions. They found educators were focused on the inclusion of marginalized producers and consumers, and their strategies for changing the food system centered on providing resources to build local infrastructure and capacity as well as facilitating connections between food system actors.

The literature on local food systems also challenges Extension to adapt or expand its work in four areas: research and Extension programs, the role of Extension, target audiences, and underlying theory of change.

**Research and Extension programs.** The Extension system already has the capacity to address many of the needs of urban food systems and urban agriculture clientele (Oberholtzer, Dimitri, & Pressman, 2014; Reynolds, 2011). Yet assessments of urban agriculture have revealed that urban agriculture actors have some unique informational needs that necessitate additional research and programming to address topics such as city zoning, urban soil quality, and the design of community urban agriculture projects (Brown & Carter, 2003; Oberholtzer et al., 2014; Reynolds, 2011; Surls et al., 2015). Often urban agriculture has social goals, so there is a growing need for social science research (Surls et al., 2015). In particular, applying a social justice lens to work with urban agriculture clients is important because so many urban agriculture groups aim to address social inequities manifested in the food system and the urban landscape (Reynolds, 2011; Surls et al., 2015). Participatory action research in which researchers and stakeholders collaborate throughout the research process generating information that can be the basis for taking action is a useful but underutilized tool in this setting (Bacon, Mendez, & Brown, 2005; Campbell, Carlisle-Cummins, & Feenstra, 2013; Surls et al., 2015).

**The role of Extension.** Raison (2010) and others (Colasanti et al., 2009; Dunning et al., 2012; Reynolds, 2011) have suggested that in local food systems work, Extension educators need to combine the traditional role of educator with that of facilitator. In this framing, educators deliver research-based information while facilitators engage in collaborative approaches to solving community-identified problems by acting as resource coordinators and network facilitators.

**Target audiences.** With growing interest in urban food systems, many nontraditional Extension stakeholders (Colasanti et al., 2009) may now be served by Extension. Research has shown urban agriculture operations are diverse in their participants, goals, and need for information and support (Drake & Lawson, 2015; Reynolds, 2011). Food justice and food access are important urban agricultural concerns and a reminder that Extension must prioritize working with stakeholders of all racial and ethnic backgrounds, income levels, and ages (Reynolds, 2011).

**Underlying theory of change.** Dunning et al. (2012) suggested that reshaping the local or regional food system requires a systems approach to problem solving. Adopting a systems approach has organizational implications for Extension. First, coordinating Extension personnel across programs necessitates adopting a more integrated approach to local food systems and urban agriculture (Lelekacs et al., 2016; Raison, 2010; Reynolds, 2011). Second, because existing measures of evaluation might not be appropriate for evaluating food systems change (Dunning et al., 2012), new methods for assessing Extension impact in this area are also needed.

As Extension personnel engage in efforts to strengthen local and regional food systems, the expectations for their work are expanding. As a result, Lelekacs et al. (2016) noted new training is needed “to provide educators with knowledge about food systems research, as well as tools and guidance about working across disciplinary lines, facilitating community engagement, and addressing social dimensions of local food systems” (p. 2). The National Urban Extension Leaders (NUEL, 2015) have made a similar set of observations. As Extension extends beyond its traditional expertise and programming, staff will need to expand their skill sets to include cultural competence, working in interdisciplinary teams, and convening stakeholder groups.

### **Extension’s Approach to Urban Agriculture in California**

In California, a key step toward developing county-level staff positions and programs devoted to urban agriculture has been coordinated attention given to the issue at the state level. Like other Extension systems that have identified healthy, local, or sustainable food systems as a priority (e.g., Lelekacs et al., 2016; Raison, 2010), the University of California Cooperative Extension (UCCE) has made sustainable food systems a strategic initiative (University of California Division of Agriculture and Natural Resources [UCANR], 2009). Research and Extension to support locally and regionally based food systems across the rural-urban continuum falls within this broad and cross-cutting initiative (SFS Advisory Panel, 2010). Concurrent with the growing interest in local food among urban residents, various forms of urban agriculture—such as farmers’ markets, community gardens, and backyard chickens—have become increasingly popular in California’s metropolitan areas from San Diego to Sacramento (Meadows, 2013; Surls et al., 2015). Although UCCE has generally adapted programming to meet the needs of urban and suburban as well as rural communities (Hayden-Smith & Surls, 2014), a study found services and resources for urban agriculture often fell between the cracks in the system (Reynolds, 2011).

Historically, the staffing structure and organization of UCCE has focused on two poles of the food production spectrum. On one pole, advisors and specialists, organized by crop or geographic region, conducted research and Extension targeted toward commercial agricultural operations. On the other, the Master Gardener Program handled noncommercial, small home, school, and community gardening education (UCANR, 2009). UCCE staff were still tapped for assistance by urban growers even though they did not constitute a “core clientele group” (Surls et al., 2015), but in-person support was often challenging because not all populous urban counties had farm advisors (Reynolds, 2011).

To better understand and meet the needs of urban agriculture clientele, the University of California Division of Agriculture and Natural Resources<sup>1</sup> (UCANR) formed a 15-member Urban Agriculture Team in 2012. In the first phase of its work, this team undertook a needs assessment to determine UCANR’s existing urban agriculture activities, understand barriers to engaging UA clientele, and identify resource needs (Surls et al., 2015). Results indicated UCANR staff involvement in urban agriculture was high, and most survey respondents considered urban agriculture relevant to the UCANR mission, but they were hindered by lack of time, funds, and relevant research-based materials (Surls et al., 2015). Urban producers and policy makers reported a need for comprehensive, reliable online resources and identified key areas for support such as pest and water management, marketing opportunities for urban farmers, and best practices for urban agriculture policy. The assessment also revealed several subgroups among potential urban agriculture clientele, indicating that future content and programs should be sensitive to the diverse needs of beginning farmers, established farms, and policy makers. The study found, similar to traditional Extension practice, online materials needed to be supplemented by other outreach such as farm visits and workshops and that materials must be available in multiple languages. Because of the social aspects of many urban agriculture operations, Surls et al. (2015) recommended future Extension work with urban agriculture clientele embrace a social justice lens and engage in collaborative social science research.

### **Current Statewide Urban Agriculture Extension Framework**

Currently California’s urban agriculture Extension work occurs along two fronts: a statewide information portal and county-level positions focused on various aspects of the urban food system. Following the completion of the statewide urban agriculture needs assessment, UCANR developed a website (<http://ucanr.edu/sites/UrbanAg>) “to provide practical, science-based information for urban agriculture” (Kan-Rice, 2014, para. 1). The website is designed to help urban farmers achieve both their production and policy goals, with a focus on beginning farmers and land access.

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<sup>1</sup> UCCE is part of the University of California Division of Agriculture and Natural Resources, which is responsible for agricultural and environmental research and education.

As of early 2017, UCCE had five full-time personnel with some portion of their FTE dedicated to supporting urban agriculture; most have been hired within the last four years. There are three Extension advisors: one urban agriculture advisor covering the Bay Area, one food systems advisor covering the North Bay, and one sustainable food systems advisor for Los Angeles. Santa Clara County has an urban agriculture program manager. In addition, an assistant Extension specialist in metropolitan agriculture and food systems has a statewide scope and provides assistance to urban agriculture projects, particularly in stakeholder engagement and participatory research approaches.

Instead of acting as a regional expert in one particular subject, urban agriculture Extension staff are thematically focused and connect farmers to university experts in various fields depending on the need. Currently, urban agriculture efforts within UCCE attempt to integrate multiple statewide Extension programs within a unified framework. The diverse goals and impacts of many urban gardens and farms (Reynolds, 2011; Surls et al., 2015) present an opportunity for UCCE programs that focus on technical support for horticultural production, post-harvest handling, and natural resource management (e.g., Master Gardener, Master Food Preserver, Integrated Pest Management, and Small Farm Programs) to collaborate with programs focused on nutrition, leadership, and youth and community development (e.g., EFNEP, CalFresh, and 4-H Youth Development Programs). Modes of collaboration include sharing human resources between programs for joint workshops and classes; assistance with outreach to target populations; and finding opportunities for partnership on project design, research, and funding requests.

The current statewide distribution of urban agriculture staff results from several interacting factors: (a) centers of major population; (b) municipalities that are close to implementing Urban Agriculture Incentive Zones, a recent state policy intended to increase access to urban land for agricultural purposes; and (c) regions able to arrange shared funding partnerships with local counties. For example, in Santa Clara County, adoption of Urban Agriculture Incentive Zones has intensified interest in urban agriculture and crystallized county funding for a UCCE urban agriculture program manager position. The Extension staffing support structure for urban agriculture has developed from the bottom up, as local conditions propel UCCE offices in various counties to propose new Extension positions to support urban agriculture.

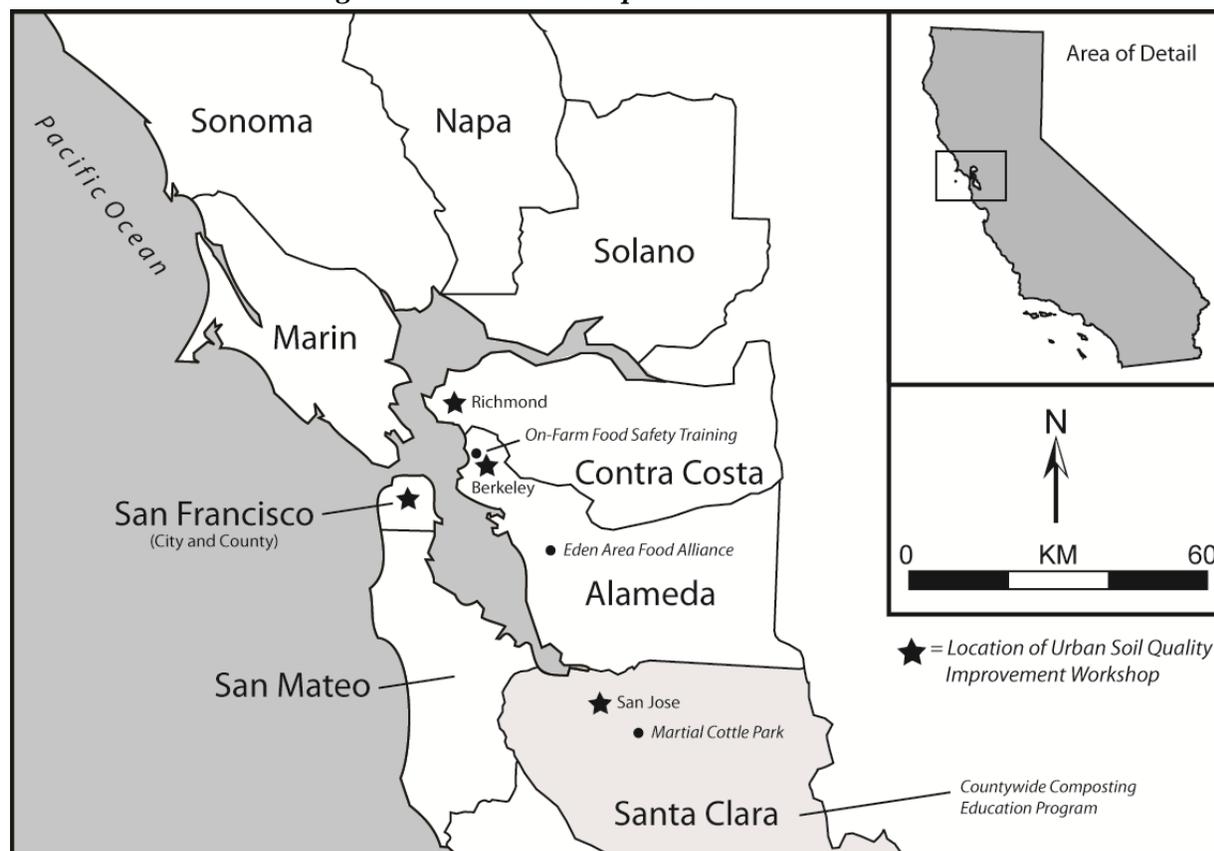
### **Case Study: Urban Agriculture in the San Francisco Bay Area**

#### **Study Context**

The nine-county San Francisco Bay Area covers 7,000 square miles and includes more than 100 cities (see Figure 2). It is the fourth most populous metropolitan area in the United States with 7.6 million residents (Metropolitan Transportation Commission [MTC], 2016). Nearly one-third

of the region's inhabitants reside in its three largest cities—San Jose, Oakland, and San Francisco. As one of the nation's most diverse metropolitan regions (PolicyLink & PERE, 2015), the Bay Area has a population in which people of color make up the majority. International immigrants make up 30% of the population, and 40% of Bay Area residents speak a language other than English at home (California Immigrant Policy Center, 2014). The Bay Area is a region with many assets: a diverse population, a robust and innovative economy, and a history of environmental protection. It has also been at the forefront of the movement for fresh, local, and organic foods for decades.

**Figure 2. Map of the San Francisco Bay Area Showing the Location of Extension Programs and Partnerships Described in the Article**



*Note:* Not represented on the map are the Master Gardener and 4-H Programs which are present in each of the nine Bay Area counties.

High land values present a challenge for the region's producers and consumers of food. For low-income households, the high cost of housing can leave fewer resources to spend on food and other goods (Taylor, 2015). Despite the strength of the regional economy, 10% of adults are food insecure, and 6% receive food stamps (Zigas & Becker, 2015). While the Bay Area retains a rich agricultural resource base, much of the region's agricultural land has already been lost to development; more is at risk of being converted for development during the next 30 years. The

high value of land at the urban edge makes it difficult for beginning farmers to find land and places significant development pressure on existing farmers (Zigas & Dominguez, 2013). Despite such challenges, agriculture in the Bay Area stands to benefit from its proximity to urban customers and the regional demand for local, sustainable food (Unger & Lyddan, 2011).

Recent city, county, and state policies intended to strengthen urban agriculture have been an added impetus for UCCE work in this region. At the city level, San Francisco, Oakland, and San Jose have adopted ordinances to facilitate urban agriculture. At the state level, legislators have taken steps to increase access to land by passing the Urban Agriculture Incentive Zone Act, which provides a tax incentive to landowners who commit vacant land to urban agriculture for at least five years. Cities and counties may choose to participate in this program but are not required to do so. To date, the city and county of San Francisco, the city and county of Sacramento, Santa Clara County, the city of San Jose, the city of San Diego, and Los Angeles County have established Urban Agriculture Incentive Zones. In 2014, Santa Clara County voters passed a bond measure that established a regional funding source for urban agriculture and other environmental priorities. The first round of funding, awarded in November 2016, totaled just over \$1.5 million, roughly half of which went to urban agriculture-related projects.

## **Methods**

This article employs a qualitative case study approach to describe Extension urban agriculture programs in the Bay Area. The study draws on the experience of three of the co-authors in developing and implementing urban agriculture programming. These co-authors serve as an urban agriculture advisor, an urban agriculture program manager, and an Extension educator. The case study is bounded by the five Bay Area counties—Alameda, Contra Costa, Santa Clara, San Mateo, and San Francisco—the mentioned positions cover and excludes counties in the North Bay. The description of these efforts focused on two themes: expanding programs and research and the important role of partnerships.

## **Urban Agriculture Extension and Research**

Programmatically, Bay Area UCCE personnel support and lead traditional Extension programs that touch on different aspects of the food system and are tailored to the urban context. They are also developing new programs that address urban-agriculture-specific needs, such as urban produce gleaning and urban soil quality. Through these programs and the outreach provided by program volunteers, UCCE in the Bay Area reaches an increasingly large and diverse urban audience. A few such programs are described below.

## **Tailoring Existing Agricultural and Volunteer Programs**

**On-farm food safety.** On-farm food safety is a concern for both rural and urban growers and is an area where existing materials for rural growers can be adapted to urban settings. Heavy-metal-safe food growing (discussed below) is a uniquely urban food safety concern. In the Bay Area, the UCCE metropolitan agriculture specialist and the urban agriculture advisor offer on-farm food safety training to urban growers and plan to work with Master Gardeners to offer food safety workshops to noncommercial growers. Covering Good Agricultural Practices, key food safety risks, and the development of food safety plans, these workshops teach small and urban farmers to assess and minimize food safety risks on their farms. Follow-up technical assistance to support development of on-farm food safety plans is available upon request.

**Volunteer programs.** The Master Gardener Program is a critical component of the UCCE approach to urban agriculture Extension. Master Gardener volunteers are at the “front lines” of providing technical horticultural information to home gardeners, schools, community gardens, and community organizations. In the 2015-16 program year, approximately 300 Master Gardener volunteers in Santa Clara County provided more than 30,000 hours of no- or low-cost educational outreach and support for projects to improve home gardening. Master Gardener volunteers engage in multiple forms of extension and outreach, including demonstration gardens; workshops, classes, and seminars; peer-to-peer mentoring; gardening hotlines; events; websites; Facebook; and a YouTube channel. Master Gardeners often partner with schools and community organizations that focus on improving food access in low-income communities. In Santa Clara County, the Master Gardener Program’s mentoring partnership with food justice program, La Mesa Verde, has provided bilingual gardening training to more than 500 food-insecure families.

Running the Master Gardener Program requires a significant commitment of staff and volunteer time. In Santa Clara County, four UCCE staff devote a portion of their time to training, managing, and recruiting Master Gardeners. They are supported by 12 to 24 temporary instructors, frequently UCCE farm advisors or specialists, who provide technical training to continuing and prospective Master Gardeners periodically throughout the year. Master Gardener volunteers are also actively involved in these functions; it is estimated that they spent more than 500 hours recruiting the 2017 Master Gardener training class.

Well known in rural areas, the 4-H program is increasingly embraced by families in urban areas as a means for city youth to participate in the food system as producers rather than consumers (Wallace, 2011). Through 4-H, urban youth are connected to curriculum and volunteer mentors to set up and maintain diversified vegetable gardens, high density orchards, backyard poultry, and animal husbandry projects (Clark, 2015; UCANR, n.d.). Support from UCCE staff and new partnership models are helping adapt the 4-H model to an urban context.

## Creating New Programs

**Urban soil quality improvement series for urban growers.** One aspect of urban farming that differs from rural farming is concern over soil contamination. In urban settings, lead and other heavy metals from industry, dumping, and adjacent residences, and air-borne contaminants pose health risks (Surls, Borel, & Biscaro, 2016). To address these issues, the Bay Area Urban Agriculture Advisor offers a three-part workshop series on soil quality. The advisor is also beginning to work with East Bay Master Gardeners to train instructors to offer these workshops for community members. Workshops provide attendees with the tools to assess urban growing soils and manage risk in backyard, community, and school gardens and urban farms. The first workshop focuses on physical, chemical, and biological indicators of soil quality. Participants learn to field-assess their soils and improve soil quality. In the second workshop, participants increase their understanding of sampling soils, mapping samples, and interpreting sample results to prevent exposure and manage risk. The final workshop integrates assessments of soil quality with strategies for improving soil quality over the long term with minimal chemical inputs.

## Research and Resources

Adapting Extension research for urban agriculture involves incorporating the needs of culturally diverse constituencies (Brown & Carter, 2003), collaborating with community partners (Reynolds, 2011; Surls et al., 2015), and employing social science approaches (Surls et al., 2015). In the Bay Area, Extension personnel developed a method for measuring garden productivity (Algert, Baameur, & Renvall, 2014) and used this method in partnership with community organizations to assess the impacts of home and community gardens in the South Bay on food supply, affordability, and nutrition (Algert, Baameur, Diekmann, Gray, & Ortiz, 2016; Algert, Diekmann, et al., 2016). This research has been a valuable tool for community building work and policy advocacy. Many individuals and organizations outside Extension are involved in urban agriculture activities or in developing policies, programs, and infrastructure to support urban agriculture, but they may not have time or resources to conduct research. Extension personnel can design comparative studies across organizations and localities to identify common challenges and successful strategies for urban agriculture (Campbell et al., 2013).

In addition to the statewide urban agriculture resources offered on the UCANR website, UCCE personnel in the Bay Area have provided locally-tailored urban agriculture tools. As a member of the Oakland Food Policy Council, the Bay Area Urban Agriculture Advisor was a lead author of *Cultivating Resistance: An Urban Agriculture Toolkit to Support Oakland's Independent Food System* (Pallana, Dekovic, & Bennaton, 2015)—a practical guide for Oakland residents interested in growing or selling raw agricultural products that outlines relevant municipal, county, state, and federal regulations; provides suggestions for accessing land; and identifies resources for starting a small food business.

## **Partnerships and Networks**

Developing partnerships is an important aspect of the role that Extension personnel play as facilitators and network coordinators (Raison, 2010). Partnerships help Extension extend its reach in the community and amplify its impact, particularly in a time of shrinking budgets. Building and maintaining social networks is valuable for Extension because these networks play an important role in the diffusion of innovations, the development of social capital, and cultural change (Lubell & Fulton, 2008). In the Bay Area, Extension urban agriculture personnel are involved in several key partnerships and participate in multi-stakeholder groups aimed at strengthening the food system and addressing food insecurity.

### **Composting Education Program**

Santa Clara County's Composting Education Program is a unique Extension program because of its partnership with the County Board of Supervisor's Recycling and Waste Reduction Commission. Unlike other urban Extension programs, the Composting Education Program receives programmatic directives from the voting members of the Commission's Technical Advisory Committee. Through workshops, events, and school visits, the Composting Education Program targets clientele that align with the mission of the Recycling and Waste Reduction Commission. Combining home composting methods with municipal scale curbside collection information, the Composting Education Program serves as a comprehensive resource for recycling organic waste. As recycling trends shift toward diversion of organics and new statewide initiatives take hold, the Composting Education Program brings attention to state mandated soil health and waste reduction initiatives.

The UCANR partnership with the County Recycling and Waste Reduction Commission provides a new model for how Extension programs are provided to urban communities. Through direct engagement with municipal decision making processes, the Composting Education Program has the ability to respond dynamically to the changing needs of urban clientele. The responsiveness of the Composting Education Program is particularly significant given the continually shifting demographics and economic status of urban residents. The Composting Education Program also acts as a direct connection between city recycling programs and other urban agriculture Extension programs.

### **Martial Cottle Park, Santa Clara County**

The flagship urban agriculture partnership for Extension in Santa Clara County takes place at Martial Cottle Park. This park is a 287-acre tract of land located in a mixed residential and commercial neighborhood in south San Jose. A working ranch for 150 years, the land for the park was transferred to the County of Santa Clara by the last living owner, Walter Cottle Lester,

with instructions that the space be dedicated “exclusively as a public historical park that informs and educates the public about the agricultural heritage of the Santa Clara Valley” (Regents of the University of California & Santa Clara County, 2015, p. 1).

The county of Santa Clara has begun implementing this vision of the park as a bridge between the agricultural past and present for city residents through strategic partnerships with UCCE and others. The public/private partnership model employed by the county engages government agencies, for-profit commercial enterprises, and nonprofit organizations in stewardship of various sections of the parcel. The largest section of the park is leased to a commercial farm that produces organic vegetables for sale in grocery stores and at an on-site farm stand. The City of San Jose and the county of Santa Clara are working to establish a community garden onsite; UCCE and an urban forestry nonprofit will provide technical support and training to the gardeners.

In 2015, the role of UCCE at Martial Cottle Park was formalized through a Memorandum of Understanding between the Regents of the University of California on behalf of Santa Clara County Cooperative Extension and the County of Santa Clara (Regents of the University of California & Santa Clara County, 2015). UCCE received stewardship of 16 acres. The park’s agricultural education mission fit well with UCCE programs, and the co-location of several UCCE programs also offered new opportunities for shared programming and outreach.

All UCCE programs at Martial Cottle Park engage in or have planned several types of Extension: demonstration sites with planned bilingual interpretive signage; multilingual training, classes, and workshops; and one-on-one mentoring. The location of UCCE near paths and adjacent neighborhoods provides access to urban audiences and offers great potential for experiential learning. Currently, all planned projects include a demonstration site where hands-on trainings are or will be held.

- Master Gardeners provide short classes and workshops on home gardening; seedling production; adaptability of vegetable cultivars for Santa Clara Valley home gardens; and drought-tolerant landscapes, habitat gardens, and California native plantings. Recent funding from the Santa Clara County Open Space Authority will finance the construction of a teaching pavilion that will enable the Master Gardener Program to expand community classes and its partnership with La Mesa Verde to mentor low-income San Jose residents in growing their own food. The program is also poised to collaborate with the UCCE nutrition education programs on garden-based learning in low-income schools in San Jose.
- The Composting Education Program provides training and demonstration to farmers and gardeners in the establishment, maintenance, and use of a compost site for livestock bedding and waste, residential waste, and agricultural waste at small and medium scales.

- The 4-H Youth Development Program maintains a small acreage livestock farm adjacent to a park path that garners significant public attention. The project trains and mentors youth to raise small ruminants while educating the public through interpretive signage about sustainable livestock management and ranching practices.
- The Small Farms Program is planning a beginning farmer training at the park that will offer courses on the cultivation, harvest, and marketing of specialty crops. Four acres of vegetable crops will also be tended by participating farmers. Courses will engage diverse community members with socioeconomically and culturally appropriate outreach and content. Although not designed exclusively for urban farmers, by the nature of the location, lessons will be adaptable for urban growers.

### **Food System Networks**

Food policy councils and food system alliances bring together diverse food system stakeholders to address issues of local concern. Typically, they make recommendations on food policy to city, county, and state governments; raise residents' awareness of the food system; encourage connections and communication among various food system actors; and undertake food system projects and research (Clancy, Hammer, & Lippoldt, 2007). For Extension and others, participating in networks helps to build connections between people and produces results at a greater scale than a single individual or organization could alone (Wenger, McDermott, & Synder, 2002). In the Bay Area, UCCE urban agriculture personnel participate in several city and county networks aimed at changing food policy, preserving local agriculture, and improving healthy food access.

The Eden Area Food Alliance is one such network. It serves Ashland and Cherryland, two unincorporated urban communities in Alameda County, and has focused on land access for urban agriculture and healthy food access (McKnight, 2015). Resident-driven, the Alliance responds to community members' needs and interests as well as new policy opportunities. In response to the passage of the state Urban Agriculture Incentive Zone Act, the Eden Area Food Alliance surveyed vacant land in the community to determine its potential for urban agriculture and possible inclusion under the new law. Current initiatives are focused on food recovery, with participating Extension personnel able to make connections between the Food Alliance and UCANR resources. Currently, a sister organization, WE Run Food, is in the early stages of coordinating with the local Public Health Department and a statewide Extension specialist on developing county-specific food safety protocols for food recovery and gleaning groups. Both groups are also involved in a collaboration with UCANR and the Geospatial Innovation Facility at UC Berkeley to map front yards that have underutilized fruit trees for future gleaning efforts.

## **Lessons Learned**

Bay Area Extension personnel have learned a number of lessons through their urban agriculture-related work; these takeaways can be potential considerations for other Extension urban agriculture programs.

### **Adopt a Context-Specific Approach to Urban Agriculture**

The needs and goals of urban agriculture operations are very diverse, even within a single metropolitan region. It is important to begin urban agriculture work by determining what future clientele are trying to achieve and what resources they need and then tailoring Extension support accordingly. In one Bay Area county, Reynolds (2011) identified four distinct models of urban agriculture, each with its own purpose, challenges, and needs for information and assistance. Drake and Lawson (2015) reminded Extension that community gardens are “as diverse as their locations,” (para. 22) with different goals and organizational structures that will affect how advice and best practices are received and implemented.

### **Partnerships Are Key for Magnifying Impact and Maximizing Limited Resources**

In Santa Clara County in particular, partnerships with the county have been essential for developing urban agriculture programming. Similarly, partnerships have been an important piece of Extension’s work in urban food systems elsewhere (e.g., Fox et al., 2015). By working in partnership with nonprofit organizations, local government, and others, Extension can magnify the impact of existing programs and leverage available resources. Involvement might also deepen relationships with multiple stakeholders and offer new opportunities to learn about key issues within various communities in the region.

### **Do Not Underestimate the Importance of Extension’s Role as a Network Coordinator**

In addition to providing technical content, an important contribution of Extension urban agriculture work is helping urban farmers build a social network. Urban farmers often have little formal farming experience and may lack a network on which to rely for advice (Oberholtzer et al., 2014). Social capital can be critical to the success of urban agriculture (Glover et al., 2005), but it develops slowly over time through repeated interactions (Lubell & Fulton, 2008). Drawing on their strategic position in the local community, with connections to people and organizations that span the food system (Dunning et al., 2012), Extension staff can help newcomers to urban agriculture build a social network, which may be integral to their success.

### **More Institutional Support for Integrated Programming Is Needed**

Although urban agriculture personnel are tasked with connecting Extension programs that span the food systems, this can be difficult, and receptiveness varies from county to county. Despite similar goals, existing programs often remain compartmentalized (Clark et al., 2016). More administrative guidance could assist with the coordination of existing Extension programs to jointly address urban food system or urban agriculture issues. In addition, Extension personnel's urban agriculture efforts may be fragmented because of their other responsibilities. More staff time or more positions devoted to urban agriculture are still needed and can help to fully realize the potential of this area of work.

### **Elevate Social Science and Social Justice Research**

Urban agriculture is closely associated with social outcomes (Surls et al., 2015), and many urban agriculture organizations in the Bay Area and elsewhere apply a social equity lens to their work. In this context, research that is action-oriented and responsive to community priorities is a key part of the relationship between Extension and urban communities. To effectively engage with many urban agriculture organizations, it is important for Extension to prioritize collaborations that can address participants' concerns with community building and social justice (Reynolds, 2011; Surls et al., 2015). Extension has an opportunity to expand its role in advancing the just sustainability (Alkon & Agyeman, 2011) of urban communities through action-oriented partnerships.

### **Summary**

In the Bay Area, UCCE's urban agriculture program has arisen organically through a combination of factors, such as increasing interest from residents and the availability of new funding partnerships to support urban agriculture-related positions. These new county-based UCCE urban agriculture staff positions are also supported at the state level by UCANR's Urban Agriculture Team, which includes an Extension Specialist in metropolitan agriculture, and UCANR's urban agriculture website. As suggested by Raison (2010), UCCE personnel working in urban food systems are taking on dual roles: as educators who offer an expanding set of programs and as facilitators who participate in partnerships and networks.

Both in theory and in practice, Extension urban food system work aligns with the National Urban Extension Leaders' vision for urban Extension (NUEL, 2015). Through educational programs, research, partnerships, and networks, Extension personnel in the Bay Area strive to develop inclusive, interdisciplinary partnerships and collaborate with local partners on community-based initiatives.

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