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Urban agriculture in California: Lessons learned from an urban farmer workshop series

Evaluation of workshops offered to urban farmers highlights the need for training to achieve economic viability and access to land.

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Over the past decade, home and community gardening have been on the upswing, according to the National Gardening Association (2021), with increasing numbers of Americans growing edible crops, from vegetables to herbs to fruit trees. As gardening has increased, so too has a related phenomenon that is often called urban farming or urban agriculture (UA). This term means different things to different people. To some who call themselves urban farmers, it means producing food for their own family in their own backyard. For others, urban farming is a commercial enterprise, either for profit or nonprofit, and often, though not always, at a very small scale.

UA comes in many forms, including backyard growers or community gardeners who are scaling up to sell some of their produce, flowers, honey, or eggs; school gardens where produce is grown not only for in-class lessons, but also for sale; gardens where crops are being grown for donation to food pantries; and high-tech indoor agriculture. In addition, UA encompasses

Abstract

Urban farming is an important component of California agriculture, but lack of agricultural census data or common definitions makes it difficult to track and understand. In 2017–2018, a team of University of California Agriculture and Natural Resources (UC ANR) researchers and extension professionals developed a workshop series for urban farmers in California based on results of a prior needs assessment. After conducting 16 workshops in the state's largest urban centers, the team evaluated what participants learned and how they put their knowledge into action. The evaluation highlighted urban farmers' ongoing challenges and found that economic issues such as profitability and land access are some of the greatest barriers for urban farming in California. An unexpected positive outcome was the opportunity for participants to network and meet other farmers. Urban farmers expressed the need for more opportunities for mentoring and building partnerships with other farmers and organizations. Evaluation results suggest that California's urban farmers may be more diverse than California farmers as a whole, and that they are often beginning farmers.

UCCE Specialist Jennifer Sowerwine teaches workshop participants how to conduct an on-farm food safety assessment. Many participants reported using what they learned to identify and mitigate food safety risks on their farms. Photo: Rachel Surls.





Former UCCE Advisor Rob Bennaton discusses soil management with participants at a Los Angeles area workshop. Many workshop participants said their soil management practices improved following their participation. *Photo:* Rachel Surls.

multi-generation family farms that once operated on the edges of cities, but are now surrounded by suburbs. Because UA is emerging and diverse, it has been difficult to quantify, track, and understand. The U.S. Department of Agriculture, which conducts an agricultural census every 5 years, does not distinguish urban farms in its count, so there is no census data for either urban farms or urban farmers.

As UA has evolved in California over the past several years, UC Agriculture and Natural Resources (UC ANR) researchers have worked to understand and address the needs of UA practitioners, including delivery of a multi-region workshop series. The series was designed to provide urban farmers with training and information as well as to identify and assess their needs and challenges.

Assessing urban farmers' needs

Urban farming has sparked attention and action nationwide. Cities, counties, and even state governments around the United States have developed policies to facilitate UA activities (Rangarajan and Riordan 2019). In California, Los Angeles, Sacramento, San Diego, San Francisco and other cities have created policies specifically to promote and facilitate urban farming.

As interest in UA grew, UC ANR researchers and partners teamed up in 2012 to address the needs of urban farmers in California. The team adopted a working definition of UA, a modified version of an American Planning Association definition: "Urban agriculture includes production (beyond that which is strictly for home consumption or educational purposes), distribution and marketing of food and other products within the cores of metropolitan areas and at their edges" (Hodgson et al. 2011).

The team conducted a needs assessment of urban farmers in California in 2013, visiting more than 30 urban farms to learn about their technical assistance needs. They found that urban farms were very small (less than three acres in size on average), were usually led by beginning farmers, and most often operated in a nonprofit rather than for-profit context (Surls et al. 2014). UA was frequently used as a tool for programming around youth development, healthy food access, and social justice. Results also showed that urban

farmers had many practical questions about farming, on topics ranging from regulations to marketing to soil and pest management. In response, the UC ANR urban agriculture team created an online resource portal for urban farmers, offering needed resources and information (Surls et al. 2014).

Desire for in-person training

In addition to online resources, the urban farmers interviewed expressed a desire for in-person training. The team embarked on a two-year project to develop and implement a series of workshops for California's urban farmers.

Funded through a UC ANR Competitive Grant, the workshops were geared toward helping urban farmers maximize their success and minimize risks related to operational viability. The 2013 needs assessment highlighted areas where urban farmers needed special training to address soil quality and contamination, water conservation during drought, low yield, economic sustainability, and other issues. These challenges and concerns have been echoed in other UA research and publications nationwide (Diekmann et al. 2017; Pfeiffer et al. 2015; Sowerwine et al. 2020). This project sought to increase urban farmers' understanding of plant growth, animal products, business practices, and regulations in order to promote food safety and minimize the legal risks related to their farming enterprises.

Workshop series topics

The UC Urban Agriculture Workshop Series consisted of four day-long workshops on four different topics. Each workshop series was held in California's largest urban communities: the San Francisco Bay Area, Los Angeles, Sacramento, and San Diego, for a total of 16 workshops conducted between 2017 and 2018. The content for the four topics encompassed:

1. Legal and Regulatory Basics of Urban Agriculture, which included important laws and regulations that urban farmers should understand.
2. Production Issues in Urban Agriculture, which introduced participants to key tenets of crop production, soil management, irrigation and integrated pest management (IPM).
3. Marketing and Business Management for Urban Farmers, which introduced farmers to business planning, marketing, and cash management.
4. Food Safety Basics for Urban Farmers, which covered the basics of food safety, from pre- to post-harvest, and good agricultural practices (GAPs).
5. Most workshops (15 out of 16) were held at urban farms, and featured local urban agricultural practitioners as speakers, along with county agricultural commissioners, environmental health officers, and Cooperative Extension specialists and advisors.

Workshop evaluation method

The team conducted a two-part evaluation to capture information about the workshop participants and how they received and used the information. The first evaluation was administered at the end of each workshop using a “retrospective post-then-pre” evaluation method (Klatt and Taylor-Powell 2005) to assess what participants felt they had learned that day and the overall usefulness of the workshop. In the second evaluation, conducted two to three months after their workshop participation, attendees were asked to respond to an online survey to report whether they had implemented practices or taken specific actions based on what they had learned.

Descriptive analyses of the two surveys were conducted using the Statistical Package for Social Sciences (SPSS). Pearson’s Chi-squared and Fisher exact test were used to evaluate demographic differences between the day of event and post-survey respondents ($P < 0.05$). At the end of each workshop, participants were asked to rate their knowledge on a scale of 1 to 5, with 1 meaning no knowledge and 5 meaning extremely knowledgeable, and then to retrospectively rate their knowledge of the same topic before the workshop began. The team conducted paired sample t-tests on the post-then-pre scores to determine the significance of self-reported changes in knowledge over the course of the day ($P < 0.001$). Finally, answers to open-ended questions on both the day-of-event survey and the post-event survey were coded for themes by two reviewers, providing more nuanced information about the benefits of these workshops, as well as the ongoing needs and challenges of urban farmers.

Workshop participants

The 16 workshops were attended by 581 people in four geographic locations. A total of 290 retrospective post-then-pre evaluations (referred to as “day-of” evaluations) were collected over the course of the workshop series. These represented 192 unique attendees, since some people attended more than one workshop. Day-of evaluation respondents most often identified themselves as gardeners, farmers, and students, followed by beginning farmers, educators, and agricultural nonprofit staff (table 1). Of 192 day-of evaluations, 99 respondents (51.6%) identified themselves as farmers (table 2). Among respondents who identified as farmers, 72% identified themselves as new farmers with fewer than 10 years of farming experience. Very small acreages were typical for those who were farming; 74% reported growing crops on one acre or less and 38% said they use a quarter of an acre or less.

Ethnicity of day-of evaluation respondents can be viewed in table 3, with the largest group identifying as white. In regard to gender, 60% of respondents identified as female, 33% as male, and 3% as non-binary. In terms of age, the largest group of day-of evaluation

respondents were in the 25–40 age range (43%), with the next largest group in the 41–60 age range (28%).

What participants learned

Participants overwhelmingly found the workshops useful, with 87% of day-of evaluation respondents rating the workshop as either useful or extremely useful. Day-of respondents reported significant increases in knowledge at the end of each workshop compared to their knowledge at the beginning of the workshop, in every topic area. For example, participants in the “Legal and

TABLE 1. Self-identification of workshop participants

Self-identification categories*	Number of respondents (n = 192)	Day of workshop survey
Gardener	120	62.5%
Farmer	99	51.6%
Beginning farmer (< 10 years)	71	37.0%
Educator	61	31.8%
Agricultural nonprofit staff	40	20.8%
Student	89	20.3%
Urban agriculture policy advocate	37	19.3%
Researcher	28	14.6%
Other	22	11.5%
Farm employee	15	7.8%
Experienced farmer (10+ years)	11	5.7%
Ag professional/resource agency staff	9	4.7%
Municipal employee involved with urban ag	3	1.6%

* Respondents could choose multiple categories to describe themselves.

TABLE 2. Event participants who self-identified as farmers

Farmer categories	Number of respondents (n = 99)	Percent of farmers in each category
Experienced farmer	11	11%
New farmer	71	72%
Farm employee	15	15%
No further designation of farmer type	2	2%

TABLE 3. Ethnicity of day-of-event survey respondents

Respondent ethnicity	Percent of all respondents (n = 192)	Percent of farmer respondents (n = 99)
White	45.8	53.5
Hispanic/Latino	12.5	10.1
Asian/Pacific Islander	8.9	8.1
Black/African American	4.2	2.0
Native American	0.5	1.0
Other	3.1	3.0
Multi-ethnic	4.7	2.0
No response	20.3	20.3
Total	100.0%	100.0%



Workshops were held at urban farms around the state, including Wild Willow Farm in San Diego, shown here. Participants benefited from meeting and learning from experienced urban farmers at their farms.
Photo: Rachel Surls.

Regulatory Basics” workshop reported an improved understanding of policies that impact UA. Attendees at the “Production Issues” workshop reported that they gained knowledge of how to manage pests. Participants in the “Marketing and Business Management” workshop indicated that they gained knowledge of the key elements of a successful marketing campaign, while “Food Safety Basics” attendees reported that they left the workshop with an improved understanding of on-farm food safety risks.

Open-ended responses indicated that participants not only valued the workshop content, mode of delivery, and quality of speakers, but highly valued networking as an outcome of the workshop series. Participants enjoyed meeting like-minded individuals, talking to other farmers and sharing information and advice.

Post-event survey responses

Ninety participants responded to the follow-up survey administered two to three months after the event. The goal of this post-workshop survey was to assess how participants used what they learned, what ongoing challenges they faced, and additional resources they desired. Demographically, there were no significant differences between the day-of-event respondents ($n = 192$) and the smaller group of post-survey respondents ($n = 90$).

Using what they learned

Two to three months after the workshops, respondents indicated that they were implementing what they had learned. Of the 90 post-event survey respondents, 48 (53%) had attended the “Legal Basics” workshop, 32 (36%) attended “Production Issues,” 43 (48%) attended “Marketing and Business Management,” and 40 (44%) attended “Food Safety.”

Regarding legal and regulatory matters, the majority of respondents ($n = 48$) had connected with a regulatory agency or resource-providing organization that they learned about at the workshop (62.5%), engaged in urban agriculture advocacy or policy work (39.6%), took steps toward participating in urban agriculture incentive zones (33.3%), brought their farm operation into regulatory compliance (27.1%), legally expanded

sales to new outlets (18.8%), or taken other steps, such as securing licenses and permits (18.8%).

In terms of food production, participants ($n = 32$) reported implementing a number of recommended practices, including identifying and managing a pest (50%), improving soil management practices (50%), improving the design of their farm or planned farm (34.4%), trying one or more new pest management strategies (31.3%), improving water use efficiency (28.1%), reducing pesticide usage (25%), trying a new crop (21.9%), and other outcomes (12.5%) such as improved ability to manage weeds and planting cover crops.

Respondents also implemented business practices based on the workshops. More than half (53.5%) of all respondents ($n = 43$) developed or improved their marketing plan, 32.6% changed one or more business practices, more than a quarter (25.6%) improved sales, 20.9% tried a new distribution channel, and 18.6% reported some other impact, such as improving labor practices or establishing a formal business (e.g., LLC).

As for food safety, out of 40 respondents, nearly two-thirds (67.5%) had identified food safety risks on their farm as a result of a workshop. More than half (52.5%) had developed and implemented food safety plans for their farm, 35% had begun keeping records to track the food they sold or donated, 30% had trained their workers on GAPs and standard operating procedures (SOPs), and 20% had developed and implemented a soil safety plan. In open-ended responses, many reported developing a plan and schedule to implement food safety practices using the resources provided.

Networking again arose as a central theme, as it had in the day-of evaluations. Participants reported the value of networking to enhance market opportunities, relationship and community building, mentorship, education, and community engagement. For example, one farmer noted, “I met someone [at the workshop] who runs a farmers’ market and later applied to her market.”

Ongoing challenges

In the post-event survey, participants were also asked to identify the most important challenges facing urban farmers (table 4). Of those who responded to that question ($n = 55$), more than half (56.4%) reported the economics of urban agriculture as a challenge. Economic

TABLE 4. Challenges facing urban farmers

Responses to the open-ended question “What are the most important challenges facing urban farmers?”**	$n = 55$	Post-workshop survey
The economics of urban agriculture (costs, business planning, marketing, access to capital, the challenges of making ends meet)	31	56.4%
Land access (finding and getting permission to use land, availability, tenure)	18	32.7%
Networking (having access to information, knowledge sharing, and mentoring, support from other farmers)	14	25.5%
Production-related (soil management, pest management, other production-specific info, and skills)	9	16.3%
Legal and regulatory (understanding laws and policies, working through bureaucracies)	5	9.1%
Other or unclear	3	5.5%

* Responses were summarized by themes, and respondents could share multiple challenges.

challenges included business planning, financing, marketing, and overall profitability due to the high costs of operations. The second greatest challenge was related to finding land and securing tenure, with 32.7% of participants identifying land access as a critical challenge. Networking, including access to information, knowledge sharing, and mentoring, was identified as a challenge by 25.5% of respondents. Production-related challenges such as soil and pest management were identified by 16.3% of respondents. Only 9.1% identified legal and regulatory issues, such as understanding laws, policies and permitting as key challenges. Participants were asked an open-ended question about what additional training or resources they desired. Most of the responses centered around the economics of urban farming, including more detailed practical workshops. They also mentioned resources related to business planning, financing, taxes, insurance, marketing (particularly to restaurants and grocery stores), certifications, and zoning compliance. More hands-on production-related workshops were requested, including practical methods for crop planning, composting, and rainwater catchment.

Strengthening urban farmer networks was another prominent theme, with proposals for establishing some form of enduring network (rather than one-off events), such as an urban farmer association and a directory or network to promote sharing of resources.

Insights from evaluation

Based on evaluation results, the UC ANR Urban Agriculture Workshop series was an effective vehicle for sharing knowledge with urban farmers. Workshop attendees put their knowledge into action, using what they learned to improve business practices, reach new markets, try new production practices, develop food safety plans, and obtain necessary licenses and permits.

Evaluation findings have limitations. Workshop attendees were not necessarily representative of all urban farmers in California. As mentioned previously, the total number of urban farmers in California is unknown. Participants self-selected to attend workshops, complete day-of evaluations, and respond to post-workshop evaluations. Outreach and the workshops themselves were conducted in English and may have missed non-English-speaking audiences. Additionally, participants were a mix of urban farmers along with individuals who were planning to become urban farmers or were simply curious about urban agriculture. Given that the study population was a convenience sample comprising those who attended the workshops, the results have limited external validity. Even so, evaluation results can help to inform what is presently known about urban farmers in California, their challenges, and their needs.

Evaluation results offered insights into the pathways taken into urban farming and the level of experience



of urban farmers. Self-identified gardeners made up almost 63% of participants, suggesting that there may be many aspiring urban farmers hoping to scale up from gardening to farming. Of those participants who did identify as farmers (52%), very small acreages are typical, with almost 75% working on one acre or less. New farmers were by far the most likely to participate, which suggests that many urban agriculturalists are beginning farmers.

Demographically, workshop participants who self-identified as farmers were more diverse than farmers in California as a whole. Just over half of farmer participants (53.5%) self-identified as “white” compared to 94.2% of farmers in California (USDA 2017). Also of note, approximately 60% of day-of-event survey respondents who identified as farmers were female, while less than 40% of all farmers in California are female. These results suggest that urban farmers in California may be more heterogeneous than “traditional” farmers.

The evaluation results also offer insights into what challenges urban farmers are facing; this can help UC ANR’s team and other farm educators craft future outreach programs.

More than half of the participants responding to the post-workshop evaluation highlighted that the economics of urban agriculture was the most challenging issue they faced as urban farmers. The second most mentioned challenge for participants was land access. The literature on urban agriculture also highlights these as major challenges for urban agriculture practitioners (Arnold and Roge 2018; Siegner et al. 2018; Surls et al. 2014). These challenges are mirrored by small and beginning farmers in rural areas. According to Ahearn (2011), having the opportunity to acquire suitable land and achieve profitability of small operations are key challenges that beginning farmers typically face. Constraints may be even more severe in urban communities, where the cost of land and labor is especially high, and small available acreages place limits on production.

UC IPM Advisor Emeritus Cheryl Wilen discusses weed management. Urban farmers are often beginning farmers, and benefit from learning important basics of production, such as the tenets of integrated pest management (IPM). *Photo: Rachel Surls.*

The third most important challenge, which might also be seen as an opportunity, was respondents' difficulty in finding and maintaining networks to provide "go-to" people and organizations for ongoing questions. The workshops themselves provided this networking function to participants; this was one of the most highly regarded elements of the workshops. Not only did participants want access to information from agricultural professionals and their peers; they also desired mentoring and peer-to-peer learning opportunities. More than simply providing new knowledge, increased networking can enhance economic outcomes by helping farmers increase their sales via additional connections (Khanal et al. 2020).

Implications for future training

As farm educators plan future urban agriculture programs, the evaluation results suggest that the most important needs for training, technical assistance, and resources are related to economic sustainability. With very small acreages, urban farmers have limitations on what and how much they can grow. Given the additional economic strain that the COVID-19 pandemic has placed on small farmers since this evaluation was conducted, the need has likely intensified for educational programs related to economic viability.

The challenge of land access is another area in which UC ANR's team and other farmer educators could expand training and technical assistance. This issue is tied to the challenge of economic viability, since land in California's cities is typically very expensive. Urban agriculturalists need guidance on finding land and negotiating low-cost leases.

The results suggest policy directions as well. State and municipal governments could more actively engage with implementing comprehensive policies to support equitable land access. For example, while California law AB551 (Urban Agriculture Incentive Zones) offers property tax incentives for landowners who offer their land for urban farms, it does not address inequities in land access faced by communities of color.

Finally, based on the high value placed on participant networking, the results suggest an important role for UC ANR and other groups to facilitate local connections among urban farmers. This could be done through increasing the time available for networking at future workshops, or by supporting virtual or in-person gatherings where urban farmers can connect.

As California continues to urbanize, and more cities and communities explore ways to support urban farms, UC ANR and other groups that support the state's farmers can be key partners in supporting agriculture on a continuum, from rural to urban. [CA](#)

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