

The New American Farmer – Extension Engagement with Urban Agriculture and Food Systems

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INTRODUCTION

For the past century and a half, the United States has witnessed a decline in the number of farms, and farmers, while farm size has dramatically increased. As long as industrialization and corporate consolidation define the presiding agricultural paradigm, we will face mounting social and environmental challenges in our food systems (Lobao & Meyer 2001; USDA 2017a; Houser et al. 2020; Houser & Stuart 2020; Ashwood et al. 2022). Urban food production is one of many alternatives to these unsustainable, yet dominant approaches to agriculture. Designed appropriately, urban food systems hold great potential for healthy food access, community and environmental resilience, and economic prosperity (Rangarajan & Riordan 2019; Newell et al. (2022). However, urban agriculture is shaped by myriad social and environmental forces that create unique challenges and opportunities for those hoping to facilitate it. This holds true for Cooperative Extension (“Extension”).

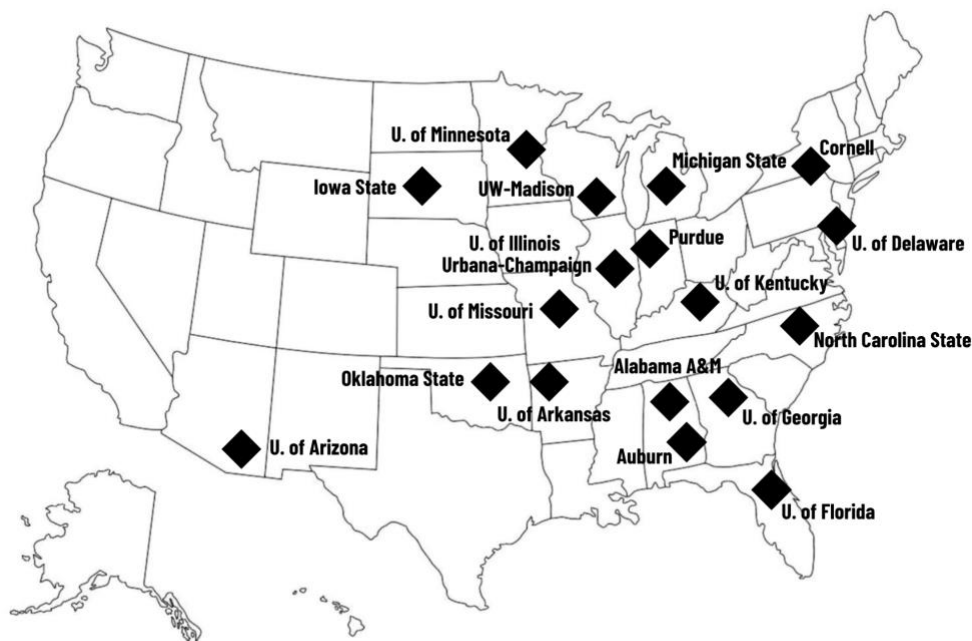
Despite its rural reputation, Extension has long engaged urban communities and their needs (Young & Vavrina 2014; Ruemenapp 2017; Hains et al. 2021). As the outreach network for our nation’s Land Grant institutions, Extension is imbued with a public service mission to “provide agricultural and other training to both rural and urban populations beyond the academy” (Gould, Steele, and Woodrum 2014). As early as the 1960s, Extension authored research-based recommendations on urban food production programming, displaying persistent challenges still seen today, namely the goals of urban agriculture, the staffing and funding needs to bolster urban programming, and the realities of meeting needs and desires of an increasingly diverse service population (Young and Vavrina 2014). These challenges continue to create barriers to the expansion of urban programming while also inspiring creativity and innovation by Extension staff engaged across urban space.

Purpose

This literature review intends to present a comprehensive look at what Extension has accomplished in urban food systems and outline best practices for future programming. In this review, we bring together current literature on urban Extension with direct input from eighteen Extension staff members in eighteen states gathered via phone and Zoom interviews during the summer of 2022 (see Appendix). “Personal communication” refers to these conversations. Throughout this review, we are cognizant of three structural limitations to Extension’s role in

urban food production: 1) varying definitions of urban agriculture, 2) structural maldistribution of resources across the rural-urban interface, and 3) systematic marginalization of communities of color.

Figure 1. Map of Participating Institutions



Urban agriculture's boundaries shift across space, time, and positionality of the person(s) doing the defining. In interviews, some Extension staff associated urban agriculture with commercial food production in metropolitan centers, particularly involving spatially efficient growing or other innovative strategies such as high tunnel season extension, hydroponics, permaculture, urban forestry, etc. (personal communications, June-July 2022). Other Extension staff preferred the language of *local* or *alternative* food production, referring to operations outside the traditional industrial monoculture model (personal communications, June-July 2022). Many agreed that urban agriculture signals a unique form of economic exchange in which the selling and sharing of products happen on a smaller scale, often between neighbors. These staff members argued food consumed close to where it was grown could fly under the *urban* flag, even if it were technically grown or distributed outside city limits. Additionally, staff in different states positioned themselves and their communities concerning the urban in localized ways. For example, some Extension staff, farmers, and consumers in largely rural states may bristle at the language of *urban* agriculture, while being receptive to the same program offered under a banner of the *local* (Dobbins et al. 2020; personal communications, June-July 2022). In some areas, producers may identify with the urban food movement, while similar producers elsewhere may identify more with an alternative or agroecological labels.

Dobbins et al.(2020), discusses the role of urban agriculture in Arkansas, a predominantly rural state. Understanding this, the authors argue, lends context to this essential piece of successful collaboration between actors within food systems on a state level. The authors employed the “Agro-Ecological Educator Theory,” which stresses love, dialogical communication, and praxis to guide their analysis of 16 qualitative interviews conducted with urban farmers in Arkansas. These urban farmers, even when the producers themselves did not identify with that marker, were defined as “small-scale, fewer than 10 acres, diversified, and sustainable farming within city limits that engages with the market, the community, or both.” This research stresses the need for developing more localized definitions for urban agricultural production to help strengthen Extension programming. Extension agents are encouraged to investigate state-specific contexts to better understand the relevance and needs of urban agricultural production, especially in rural states (Dobbins et al. 2020).

We recognize that agriculture in all forms serves to feed a global population that is predominantly urban (United Nations, 2019). Nevertheless, we cannot speak of the urban without considering the rural. Indeed, both the existing literature and findings from interviews stress the entangled nature of urban and rural community needs, desires, challenges, and successes. As Extension has historically oriented itself toward the rural, translation to the urban comes with novel obstacles and opportunities (Fox & Peterson 2017; Fox et al. 2017; Ruemenapp 2017; Narine, Ali & Hill 2021). Namely, competition for funding in urban and rural counties may give rise to unintentionally destructive narratives of Extension abandoning the rural. Indeed, not all people think Extension ought to serve urban needs and desires (Fox et al. 2017). But rather than viewing urban and rural communities as distant and opposed (and ignoring the suburban), scholars recommend more nuanced and localized approaches to Extension’s involvement in these interconnected geographies (USDA 2019; Narine, Ali & Hill 2021; Remley et al. 2021). We hope that giving attention to urban agriculture does not appear as a divisive warning sign to Extension’s valuable investments in rural communities, but rather as an opportunity for collaborative and mutually beneficial innovation emphasizing diverse local contexts.

Equally, Extension must be aware of the histories of racial segregation, redlining, gentrification, and resource restriction. All too often, ‘urban’ is used as code for economically underserved communities and communities of color. However, urban agriculture, to this point, has largely benefitted white and wealthy communities (McClintock 2008; Hoover 2013; Reynolds 2015; Conrad 2020). These social inequities are ubiquitous, persistent and integrated into our food systems at all levels (Conrad 2020; personal communications, June-July 2022). Simply put, without understanding and responding to this context, urban agriculture programming will not serve as a vehicle for just, equitable, and collaborative community engagement (Walcott et al. 2020).

This briefly summarizes a partnering, more comprehensive literature review; both of which are organized in two sections. In section one, we provide an overview of existing Extension programming focused on commercial food production and those centering on individual and community-level food production. These categories are rarely clean-cut, but they do serve to direct more effective Extension programming. In section two, we offer findings and recommendations for future Extension involvement with urban communities. We define three action clusters: 1) Complicating the rural/urban dichotomy, 2) Tackling structural and institutional power dynamics, and 3) Intensifying strategies for community resilience.

BACKGROUND

Commercial Food Production

In the past decade, we have seen expanded emphasis on Extension education related to urban food production. Many Extension offices around the country now offer urban agriculture certifications, various skill-building workshops, and access to demonstration farms. Educators continue to provide one-on-one technical assistance, as well as publicly available how-to guides for beginning urban farmers (Gazillo et al. 2020; Little et al. 2019; Whittinghill & Sarr 2021; personal communications, June-July 2022). On the other hand, some Extension offices may not offer urban agriculture training themselves but are equipped to refer community members to relevant outside organizations and materials (personal communication, July 2022).

Commercial food production refers to growers who cultivate their crops and/or livestock primarily for profit, including those who are involved in direct market sales, such as farmers' markets and community-supported agriculture programs, and those who sell their products to grocery stores, restaurants, and other distributors. Since 1974, the USDA has defined a farm as "any place from which \$1,000 or more of agricultural products were produced and sold...during the year" (USDA 2022). Commercial growers may not rely on food production as their main source of income. Urban and small-scale farming has become a less viable *full-time* position as many farmers also work off-farm in one or multiple part-time jobs (Lobao & Meyer 2001; Fernandez-Cornejo et al. 2007; Hunold et al. 2017; Weiler 2021). These variable economic contexts inform the current state of commercial urban food production.

Sanders et al. (2022) provide a social network analysis of urban producers in Arkansas, including where producers get information about urban agriculture and was part of a larger needs assessment of programming related to urban and local food populations. Many urban farmers are first-generation and do not have family technical production information or skills found in rural communities. For Extension to offer itself as a resource, it needs to understand where such producers are currently seeking information related to sustainable, organic, and small-scale farming. The study sought to describe the information-seeking behaviors of producers, the interaction between producers, and the social network patterns of producers. The data was collected through semi-structured interviews and a follow-up survey. Producers most commonly

get their information from on-farm demonstrations or face-to-face education and training, as well as online sources such as social media, websites, and videos. Less often, they seek information from email sources or workshops. Very seldom do they seek out print books or publications. Participants preferred sources such as YouTube and seemed to rarely use social media as a mechanism for communicating directly with other producers. Key players in the network were closely clustered, indicating an opportunity for Extension to intensively target local leaders in that sphere (Sanders et al. 2022).

The literature provides a wealth of state-specific case studies demonstrating the effectiveness of stakeholder and community collaborations, which may serve as models for new programming across the country (Fox et al. 2015; Little et al. 2019; Rangarajan & Riordan 2019). For example, Fox et al. (2015) describe a project by Ohio State University to serve an urban neighborhood in Columbus. The project involved a Community Food Assessment, workshops on food production, strategic planning and networking, and collaboration with the Ohio State district Extension office. The project aimed to increase food production, business and employment, healthy behaviors, and community and civic strength.

Gazillo et al. (2020) provide a thorough overview of emerging agricultural trends and their relevance to Connecticut municipalities. While some recommendations are state-specific, much of the information here is generalizable to the country. In particular, the authors recognize the growth of urban agriculture, the need for strategies to address climate change, and the need to address the history of inequality and dispossession that has shaped modern agriculture. This guide outlines several potential benefits, barriers, challenges, and impacts of agriculture, often with an urban focus. The authors highlight several case studies of agricultural projects in the state. Most notably, they describe a shared kitchen in New Haven that works to connect rural and urban growers with small business owners. Extension agents should take note of how these rural-urban linkages may serve as a key component of successful (urban) agricultural initiatives. Lastly, the authors also advocate for very inclusive definitions of farming to account for all sizes, income levels, activities, technologies, products, and geographies. Otherwise, municipalities may lose out on developing innovative and diverse agricultural economies (Gazillo et al. 2020).

Furthermore, strategies that stress collaboration, justice, equity, and cultural competence also contribute to the success of Extension's involvement with commercial urban food systems (Colby & Kennedy 2017; Diekmann et al. 2017; Lee, Kim, and Park 2018; Conrad 2020). For example, Colby & Kennedy (2017) addresses the history of tension within Extension between serving public/personal versus private/commercial needs among privileged and non-privileged audiences in Washington State. In particular, the authors describe five barriers to reaching diverse populations: 1) Extension agents are largely white, female, older, and highly educated; 2) educators are often unaware of social and cultural barriers to making programming "relevant" to marginalized groups, including language barriers; 3) marginalized groups have less influence over shaping Extension programming; 4) Extension has grown to prioritize corporate agriculture; and 5) agents perceive themselves as *already* serving marginalized populations, which suggests

they are willing to work with diverse groups, even if they are not currently and/or meaningfully succeeding in that endeavor (Colby & Kennedy 2017).

Likewise, Conrad's (2020) study explores the influence of white supremacy culture in US food systems to encourage anti-racist strategies for addressing food insecurity and barriers to healthy food access. Whiteness permeates understandings of and discourse around health, nutrition, food production, and agricultural space by promoting white ideals that effectively erase the past and present situations of BIPOC communities. White supremacy culture perpetuates systemic inequities and injustices at all stages of the food system. This report outlines several white supremacy narratives that shape food systems in the US, including: "If only they knew," "Vote with your fork," "Communities can't take care of themselves," "Failure to listen," "Build it and they'll come," "Pull yourself up by your bootstraps," "Focus on food charity," and "Good vs. bad foods." These narratives obscure power dynamics and disempower communities. The report challenges food system actors to push against white supremacy culture in all agricultural, food justice, environmental, educational, and policy work (Conrad 2020).

Meanwhile, there is a growing collection of reporting on commercial farmers' needs, barriers, and challenges. These reports include state-specific needs assessments (Surls et al. 2015; Gaolach, Kern & Sanders 2017; Sanders et al. 2021; Sanders et al. 2022; Whittinghill & Sarr 2021), national surveys (Oberholtzer, Dimitri & Pressman 2014), and theoretical framings (Daftary-Steel, Herrera & Porter 2015; Rangarajan & Riordan 2019). Urban zoning laws present a unique challenge to urban producers. Researchers commonly identify the need for more inclusive local policies and updated zoning laws, as current policy often restricts property owners and renters from personal and commercial food production (Surls et al. 2015; Rangarajan & Riordan 2019). Relatedly, urban growers often face the challenge of maximizing production in limited space, and/or in poor-quality/contaminated space (Whittinghill & Sarr 2021). Additionally, based on a survey analysis of 40 urban growers in Louisville, KY, Whittinghill, and Sarr (2021) identified shared challenges: deficient financial resources and support, limited access to clean water, barriers to farm certification, pests and diseases, soil contamination, and inconsistent record keeping. Likewise, research by Oberholtzer, Dimitri & Pressman (2014) examined national survey data identifying urban farmers' primary needs. Production challenges were the highest-ranked area of concern by urban farmers surveyed, with managing pests and weeds, climate management, maintaining yields, and infrastructure as additional priority challenges. Farmers also identified heightened challenges around profitability and financing, with secondary concerns around farm labor and access to land. They also desired technical assistance with business and financial planning, marketing and distribution, product development, land access, legal issues, food safety, water use, and other core issues associated with logistical and environmental issues (Oberholtzer, Dimitri & Pressman 2014).

Researchers have called on extension agents, among others, to continue to raise awareness of training programs, farm certification, soil testing, and other educational opportunities to promote higher levels of environmental, economic, and social sustainability in urban areas (Whittinghill & Sarr 2021). Researchers have recognized a need for targeted

assistance with start-up costs and training in business planning, accounting, and marketing skills (Rangarajan & Riordan 2019). Extension is well-versed in offering programs relevant to *horticultural* knowledge and techniques but needs to make greater efforts to reach growers who require training on the *business side* of food production (Oberholtzer, Dimitri & Pressman 2014; Sanders et al. 2022; personal communication, June-July 2022).

On a more micro-scale, researchers have explored Extension educators' range of understanding of urban agriculture as well as the dynamics of interpersonal relationships between Extension educators and urban growers. For example, work done by the University of Florida Cooperative Extension's Urban Extension Task Force showcases results from semi-structured interviews with Extension agents about their perceptions and behaviors around "urban" Extension, using a sample from the Tampa Bay metro area (Harder & Wells 2017). Agents reported that responsiveness to unique local contexts is important to Extension's success in urban areas, and that urban-specific knowledge and experience among Extension agents is also important, though secondary to attentiveness to context. Challenges of urban Extension include the presence of multiple service providers in urban versus rural settings and the best role for Extension in that environment. These authors found that participating Extension agents either considered urban and rural Extension as similar and requiring the same ingredients and approaches, or they viewed urban Extension as unique and requiring targeted programming. The former group suggested that considering urban as distinct from rural could cause problems rather than result in good outcomes. Those advocating a perspective that urban is unique and in need targeted programming identified high population density and low land availability as characteristics requiring unique approaches. Agents believing urban to be unique stressed the "resource-rich" urban environment and positioned Extension as one among many organizations with parallel goals, such as the Boys and Girls Club and the Health Department, suggesting a networking and connector role for Extension in which it fills the gaps rather than "competing" with other organizations, as well as going to spaces where consumers already go, rather than having them come to the Extension office, or even opening satellite Extension offices in well-trafficked areas (Harder & Wells 2017).

A more critical view offered by Dobbins et al. (2021) explores the relationship between county Extension agents and urban farmers in Arkansas. Particularly, the authors focus on county Extension agents' perceptions of urban agriculture – their awareness of, their involvement with, their ability to assist with, and any barriers to working with urban growers. Survey data collected from 57 agents were analyzed using descriptive statistics. Results indicated that agents believed that Extension offers valuable resources for urban farmers, despite them having infrequent interaction with urban farmers and self-identified as having low levels of knowledge relating to urban agriculture. Notably, these results differed between the responses of agents in more populous counties and those in less populous ones. This preliminary research identifies significant gaps between county Extension agents and urban producers. Therefore, the authors argue that understanding the needs and motivations of urban farmers is one of the first

steps for effective program development and building successful relationships between Cooperative Extension and urban growers (Dobbins et al. 2021).

Similarly, a Florida study (Campbell & Rampold 2021) documented positive views held by local government officials regarding local food production, but a low-level knowledge of what urban agriculture involves and how it can be implemented. Findings support increased informational efforts by Extension with urban governmental stakeholders. The authors also suggest that the reliance on a rural/urban dichotomy does not account for unique circumstances and food production needs across space and could be inhibiting policy development and governmental investment in urban agriculture. The study advocates for continued research on knowledge, attitudes, and perceptions of urban agriculture across disparate stakeholder groups, including governmental officials (Campbell & Rampold 2021).

Despite these challenges, commercial urban food production has continued to gain legitimacy. Namely, the recent establishment of the USDA Office of Urban Agriculture and the growing number of funding opportunities offered through the USDA and other organizations work to give more attention and priority to urban food production on a national scale. A search on Grants.gov produced several opportunities related to urban food production, including Urban Indoor and Emerging Agriculture Grant, Urban and Community Forestry Challenge Cost Share Grant, Farmers Market Promotion Program Grant, Sustainable Agriculture Research Education Program, From Learning to Leading: Cultivating the Next Generation of Diverse Food and Agriculture Professionals, Outreach and Assistance for Socially Disadvantaged Farmers and Ranchers and Veteran Farmers and Ranchers, among others.

Community- and Individual-Level Food Production

Community- and individual-level production refers to people growing for personal, family, or community consumption, and/or programs prioritizing educational or civic goals over commercial profit. Community- and individual-level production may include backyard and community gardening, non-commercial educational programming on production and processing, and any nonprofit project focusing on social well-being. Examples of Extension community- and individual-level offerings include Master Gardener certification, youth programming on food production, soil testing, community gardens, and other novel programs, and Extension collaboration with nonprofit and governmental stakeholders to develop projects based on local values and goals.

Urban Extension programs across the country have adapted cornerstone programs to the urban context. For instance, the Master Gardener program is a staple in many communities and has been successfully administered in urban environments (personal communications, June-July 2022). Similarly, the 4-H program has been adapted to urban youth environments. While 4-H is regularly considered a career training program, it broadly supports individual youth and community capacities around leadership, civics, and STEM (Horton, Krieger & Halasa 2013; Cutz et al. 2015; Behnke et al. 2021). Diverse urban populations are served through 4-H and

other youth-centered adaptations. Indeed, Fields (2017) asserts that urban 4-H can help youth build social capital and contribute to social justice.

Cutz et al. (2015) discuss an "at-risk" teen urban 4-H gardening project in Bridgeport and Windham, Connecticut, involving gardening, technology, and workforce readiness. The project focused on whether integrating science literacy and technology into 4-H programs supports urban teens' knowledge gains and workforce readiness. The authors concluded that this combination results in knowledge gains among youth participants and suggest this combination could work well in urban and other settings. Similarly, Zendejdel et al. (2018) suggest that hands-on learning in Extension programming could work particularly well with minoritized students. Webster and Smith (2018) describe other strategies for engaging Black male youth in Extension programming, including integrating rites of passage into 4-H programs, centering Black male identity and perspectives, offering mentoring and family-wide opportunities, and integrating non-agricultural activities and training into existing programs.

Behnke et al. (2021) reported a research evaluation of the North Carolina Juntos 4-H program involving youth coaching, after-school meetings and activities, a summer program, and other family-friendly events. The goals of this program were not only to increase youth engagement with 4-H but also to improve grades and attendance, increase graduation rates, strengthen family engagement, and build up the school community. Results confirmed that 4-H programming targeted to Latino youth shows potential for increasing these markers, suggesting Extension programming with youth and Latino families might support educational attainment, a priority of many Latino families (Behnke et al. 2021). In an analysis of a New Jersey Latinx-focused program, Bovitz et al. (2018) recommend that traditional or pre-existing Extension models be utilized but adapted through ongoing reflection with the community, as certain practices or norms might not work well across different communities.

Extension has also experimented with applied extension education for youth and adults. For instance, Horton, Krieger, and Halasa (2013) reported on the ChickQuest program in Akron, Ohio, which combined STEM and agricultural education. Extension assisted science teachers with a live chicken hatching lab, and the program was most effective when agents offered a pre-lab workshop and assisted in setup, implementation, and take down. Hardison-Moody et al. (2018) described an adult Extension nutrition education program that integrated farmers' market visits into the curriculum, finding that visiting with local vendors increased participants' intention to return to the farmer's market, use local ingredients, and ask vendors questions about their products. These findings suggest that access, acceptability, and familiarity are just as important to farmer's market use as availability, meaning programs that link participants with real-life experiences might facilitate ongoing use. These authors also suggest the development of locally- and culturally-relevant recipe cards featuring local ingredients and collaboration with the health department to make nutrition resources available on their websites.

Gregory, Leslie, and Drinkwater (2016) offer core guidelines gleaned from a community food production project in New York City, including offering programming and other resources in multiple languages, understanding gardening as a supplement to vegetable needs in food-

insecure households, and attention to the unique barriers of food production in urban areas, including specific local pests and water challenges. Researchers also found that workshops, print materials, and talking with other gardeners were the primary sources of information for urban gardeners.

In addition to cornerstone programming, Extension has successfully tested other individual-level opportunities related to beekeeping, composting, and garden rental (personal communications, June-July 2022). Extension staff continue to employ innovative outreach strategies and tools for reaching urban populations with educational programming on food production (Hardison-Moody et al. 2018; Narine, Alie, and Hill 2021). Lastly, soil testing services, a longstanding Extension offering, are uniquely valuable to urban farmers where lead and other contaminants may be present (Kim et al. 2014; Diekmann et al. 2017). Pest management (Liere et al. 2020).

Challenges to implementation of these programs include the need for a strong volunteer base, which has been complicated by COVID (Smith & Wiley 2021; personal communications, June-July 2022), scheduling and the balance of providing consistent programming without overburdening participants (personal communications, June-July 2022). Some programs respond to the needs and desires of specific groups, including veterans (personal communications, June-July 2022), food-insecure neighborhoods (Gregory, Leslie, and Drinkwater 2016), or seniors (personal communications, June-July 2022), attracting a committed source of volunteers necessary for program stability.

While engaging urban individuals and communities in food production education, training, and other programming involves unique challenges, the excitement around the benefits of such activities continues to grow. Urban food production programs, if implemented with community support and involvement, can strengthen interpersonal connections (Fox et al. 2015; Bowness & Wittman 2021), supplement nutrition needs (Gregory, Leslie, and Drinkwater 2016; Remley et al. 2021), and facilitate food sovereignty among marginalized populations (Colby and Kennedy 2017; personal communications, June-July 2022).

RECOMMENDATIONS

In this study, we have described the history and current standing of Extension's involvement in urban agriculture. Looking to the future, we close with priority recommendations for Extension's urban food production efforts. Recommendations are detailed under three action clusters: 1) Complicate the Rural/Urban Dichotomy, 2) Tackle Structural and Institutional Power Dynamics, and 3) Intensify Strategies for Community Resilience. These findings and recommendations are not issued for purposes of uncritical application but rather to inspire localized adaptation. Indeed, if one theme has proven constant, it is that the urban, like the rural, is heterogeneous and evolving, requiring dynamic approaches suited to the local.

I. Complicate the Rural/Urban Dichotomy

The assumed divide between the urban and rural rarely leads to productive discourse. Reliance on the rural/urban distinction eclipses local circumstances and needs, which could inhibit effective policy and public investment in food production (Campbell & Rampold 2021). Extension must be aware of other social-ecological dynamics operating within food systems, namely those existing between organic and conventional producers, full-time and part-time farmers, and profit-centered and social justice-centered models (Colby & Kennedy 2017; Diekmann et al. 2017; Carolan 2018).

Encourage Multisectoral and Transdisciplinary Collaboration

Collaboration between urban, suburban, and rural geographies is a critical piece in building resilient food systems, particularly in our increasingly polarized socio-political context (Roman-Alcalá, Graddy-Lovelace & Edelman 2021; Mettler & Brown 2022). Extension must be critical and creative in outreach, programming, and networking efforts, cognizant of shifting perspectives of what constitutes so-called “urban” agriculture (Dobbins et al. 2021). Part of this effort involves recognizing the great potential within Extension to develop urban/rural partnerships (Van Sandt & Carpenter 2022).

- There are several approaches Extension offices should consider for building urban/rural partnerships: offer venues for rural and urban growers to network and advertise together, aid in establishing supply chains for value-added products, institute farmer mentorship programs, offer peer-to-peer learning opportunities, leverage virtual spaces for communication over geographic distance (Parikh 2022), and encourage alternative avenues for land access and resource sharing via collaborative farming. These connections may serve shared economic goals as well as efforts to combat perceived and real socio-political divisions between rural and urban communities.
- Identify formal and informal leaders in local urban agricultural spaces, a.k.a. “gatekeepers,” (French & Morse 2015) and within Extension. Extension staff often are well-positioned to serve as connectors or coordinators rather than the primary provider of services. These inter- and extra-Extension networks are vital to connecting communities to appropriate resources, as well as working to avoid redundancy and competition between similar services.
- Transdisciplinarity is key in urban and local food production work (Fox et al. 2017). A whole foods system approach, considering production and business, but also health and community development, is key (Fox et al. 2015). For instance, agriculture staff may collaborate directly with family health staff on projects with shared goals.
- Within the urban sphere, we encourage Extension educators to collaborate with diverse stakeholders- including governmental organizations, nonprofits, neighborhood associations, religious groups, local businesses, and university administration. Constant communication with diverse stakeholders are key to Extension’s social, political, and

technical success in urban agricultural spaces (Fox et al. 2017; Campbell 2021; Campbell & Rampold 2021; personal communication, July 2022).

Refresh Marketing and Branding to Increase Accessibility and Relevance

Scholars have documented a mutual disconnect between Extension staff and urban growers (Harder & Wells 2017; Rangarajan & Riordan 2019; Dobbins et al. 2021). In some urban communities, Extension still presents a predominantly rural and conservative image which inhibits urban participation and engagement (Dobbins et al. 2021; personal communications, June-July 2022). Further, the culture of local Extension offices may lean toward conventional agricultural practices, dominated by agribusiness farming strategies related to row crops and large-scale livestock production. As a result, Extension's urban-focused staff commonly find themselves defending the validity and value of their work, as colleagues, rural stakeholders, university administration, government officials, and various funders question the legitimacy of urban agriculture as true 'farming' (personal communications, June-July 2022).

- Extension offices are still largely located in rural or suburban areas and are not accessible to urban farmers. Additionally, urban extension educators sometimes live far (over an hour) away from urban centers (Ruemenapp 2017; Dobbins et al. 2020; personal communications, June-July 2022). Thus, Extension offices should consider relocating or opening up satellite office space in easily accessible, urban-centric locations near public transportation.
- With this context in mind, Extension must also update the language surrounding urban and rural food production. Alternative descriptors such as "local," "agroecological," or "innovative" may be more relevant and attention-grabbing for marketing and knowledge dissemination purposes in certain social and spatial circumstances (Dobbins et al. 2020).
- We find that the majority of urban agriculture programs are less than five years old, and many are currently in their pilot year (personal communications, June-July 2022). While these programs are new, educators must remain open and adaptable to capitalize on their courses' growing popularity. That is, educators should allow programming to be reflexive and responsive to community needs and interests. Program evaluation and adaptation is key.
- Stock recommends the use of Instagram and other social media platforms, particularly in reaching women, young people, and other target communities (2020). Similarly, Gharis et al. (2014) urge greater Extension engagement on social media for greater reach.

Implement Data Collection and Program Evaluation at the Rural-Urban Interface

To navigate relationships between the urban and rural, Extension must pose research questions, collect data, and evaluate programming with the complex realities of this spatial

interface in mind. And although the urban and rural are porous categories, it is still useful to employ these markers to compare data. The USDA views agriculture as consisting of “even small plots of land - whether rural or urban - growing fruit, vegetables or some food animals...” (USDA 2022). However, the Census of Agriculture does not categorize data by rurality or urbanity (USDA 2017a; USDA 2017b; USDA 2017c). Some rural-urban differences may be deduced, however, since urban farmers are likely to be beginners, younger, and more racially and ethnically diverse than their rural counterparts (Pressman, Oberholtzer & Dimitri 2016; USDA 2017c; Whittinghill & 2021; Sanders et al. 2022). Still, urban evaluation and data collection are neglected in many Extension offices around the country.

- Extension offices should specifically track urban programming, allowing for descriptive data on what Extension is currently doing in urban areas.
- Comparative data analysis at the rural-urban interface is essential for mapping the growth of urban agriculture alongside the changing rural agricultural sphere, understanding demographic shifts taking place among the farming community, and translating historically rural programs to urban spaces (personal communications, June-July 2022). Rural-Urban Continuum (RUC) Codes may serve as a useful guide in comparing county-level data (USDA 2020).

II. Tackle Structural and Institutional Power Dynamics

Like any institution, Extension is shaped by societal and structural power dynamics. Any recommendations for strengthening Extension’s urban programming must be placed within the context of racial and economic inequity and explicitly aimed at facilitating just and collaborative community engagement.

Critically Evaluate Hiring Practices, Staff Retention, and Training

Extension staff across the country share challenges concerning hiring practices and retention (personal communications, June-July 2022). In particular, educators named high turnover, burnout, work overload, and low diversity as the most immediate obstacles they face in their respective offices (personal communications, June-July 2022). At the same time, many staff identified their peers in Extension and university faculty as their greatest resources for knowledge and guidance (personal communications, June-July 2022). We observed several postings online for urban-specific positions in Extension offices around the country; however, they are reportedly not being filled quickly enough or at all (personal communications, June-July 2022).

- Extension should offer positions specifically geared toward urban outreach and agriculture, volunteer information regarding salary and the duration of the position, and consider candidate experience beyond higher education.

- Root hiring practices in diversity, equity, and inclusion (DEI) to foster welcoming and supportive work environments. Racial and ethnic minorities, non-English speakers, and sexual and gender minorities are often clustered in urban centers (Parker et al. 2018). Employing a diverse staff is an early and essential step to effectively engaging with such diverse audiences.
- Mentorship, professional development, and open communication have all been shown to be effective strategies for staff retention (Besnilian, Goldenberg & Plunkett 2016; Friedman et al. 2021; Javier et al. 2021).
- All Extension staff should be required to complete DEI training. These pieces of training should increase cultural competence and humility and take care to not reinforce stereotypes. DEI training should support educators in their internal efforts as well as their community work.
- Due to the growing interest in urban agriculture, Extension offices should offer *internal* training and instruction in urban food production methods and technologies (Diekmann et al. 2017). Urban-oriented faculty and/or Extension staff should communicate, formally and informally, with their colleagues to bridge knowledge gaps and reinforce the validity of urban food production strategies.

Engage Communities in Program Planning Process & Prioritize Youth and Young Farmers

Researchers broadly suggest that adaptation of pre-existing Extension programming for the urban individual- and community-level context should engage the local population directly in collaboratively defining shared terms, priorities, and expectations (Alkon et al. 2013; Dickman et al. 2017; Fox et al. 2017; Bovitz et al. 2018;). With this in mind, youth involvement specifically is key to improving recruitment for urban agricultural programming. The majority of urban growers are beginners and are less likely to come from a lineage of farmers (Pressman, Oberholtzer & Dimitri 2016). Therefore, internships, apprenticeships, and 4H programs are indispensable resources for burgeoning food producers (DeMarsh 2022).

- Urban community members bring their foodways, needs, and desires particular to their context to the table and should be central actors in programmatic decision-making and development. Community-based participatory research is one avenue in support of shared decision-making, as it involves the community in needs assessment and evaluation.
- Programmatic recruiting should be geared to a diversity of audiences, including youth.
- Involve elementary, middle, and high school students in urban food production. Extension educators have also seen success in engaging at-risk youth in community gardening and commercial food production (personal communications, July 2022).
- Offer internships and apprenticeships to urban college students and other young people looking for new career paths (personal communications, June-July 2022).

- Exercise “inclusive scholarship” by inviting youth and adult participants to collaborate on research and presentation of findings (Wilkinson and Carroll 2019), as well as participatory action activities with young farmers (DeMarsh 2022).

III. Intensify Strategies for Community Resilience

Urban horticulture has a lot to offer, in terms of improved environmental quality and health in cities - It not only increases ecosystem services in urban areas but can also increase F&V consumption, physical activity, social cohesion, and social capital among urban communities - These initiatives are particularly relevant in more deprived areas of cities in the Global North, especially in those where “food deserts” occur (Cruz-Piedrahita, Howe, and de Nazelle 2020).

Adapt to Changing Climates

Climate change is a present and growing threat to food production, social solidarity, and ecological well-being. It is negligent to do anything but center this reality in Extension programming.

- Extension must invest in horticultural research concerning food production in arid zones and regions where the climate is recognizably changing. Urban growers face unique environmental challenges, including soil, air, and water contamination, urban heat effects, and various pests. Research is needed to inform adaptable urban food production strategies given this context.
- Extension staff must incorporate climate adaptation and mitigation strategies into their workshops and training courses.

Consider the Context of the (Post-) COVID-19 Era

The Covid-19 pandemic forced Extension staff to adapt as their programming was disrupted and/or moved online. In times of crisis, it is common for communities to take interest in cultivating food in the name of self-sufficiency (Campbell 2021; Chenarides et al. 2021). Whether such interest persists post-pandemic is unclear, but Extension can maximize current food security discourse to support its programming.

- As the threat of Covid diminishes – or is integrated into our everyday realities – Extension staff must be supported in rebuilding community relationships lost or weakened during months of isolation.
- Virtual learning should continue to be utilized where it allows more community members to participate in training and earn certifications (personal communications, June-July 2022). We cannot assume, however, that all communities have reliable internet access.
- Extension should make a concerted effort to integrate disaster preparation and recovery into its programming, helping to strengthen our communities and supply chains against pandemics and other crises.

CONCLUSION

Extension's evolving role in urban food production will require intensive reflexivity and ongoing collaboration. Extension staff around the country have already made progress in engaging with both the social and horticultural sides of urban agriculture. But the great societal and ecological need for sustainable food production in dynamic urban geographies demands deeper, and more critical, involvement with these food systems. Successful urban food production must begin with an orientation toward justice – for people and the environment. Moving forward, we offer several recommendations for Extension staff to apply within their institutions and beyond. Specifically, we urge Extension to prioritize the following efforts: 1) complicate the rural/urban dichotomy, 2) tackle structural and institutional power dynamics, and 3) intensify strategies for community resilience.

APPENDIX

Participating Institutions:

Alabama A&M University
Auburn University
Cornell University
Iowa State University
Michigan State University
North Carolina State University
Oklahoma State University
Purdue University
University of Arizona
University of Arkansas
University of Delaware
University of Florida
University of Georgia
University of Illinois Urbana-Champaign
University of Kentucky
University of Minnesota
University of Missouri-Columbia
University of Missouri-Kansas City
University of Wisconsin-Madison

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