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# Urban Agriculture Extension in Florida: Barriers, Needs, and Opportunities

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*Much of the United States is urbanizing, increasing the importance of developing Extension programs geared toward urban audiences. There has been an increasing interest in urban agriculture (UA) in recent years as an outgrowth of the “local food” movement. The COVID-19 pandemic increased awareness of the importance of food system resilience, in which urban agriculture can play a role. Developing programs specifically targeted to urban farming clientele can bolster Cooperative Extension’s role in supporting urban populations. An important first step to developing these programs is to understand Extension educators’ perceptions, beliefs, and knowledge about UA and the key barriers and opportunities to develop new programs that serve UA clientele. In this qualitative study, researchers conducted 17 semi-structured interviews of Extension educators who conduct UA programming. These educators see UA as a key opportunity for Extension to reach new audiences and increase agricultural awareness in urban areas. The most salient barrier faced to develop or deliver UA programming is a lack of time and resources—both human and financial. This study highlights key barriers and opportunities to develop new Extension programs to support UA and to increase Extension’s visibility in and impact on urban communities.*

*Keywords:* urban agriculture, local food production, food access, capacity building, urban Extension

## **Introduction**

Much of the United States is urbanizing, increasing the importance of developing Extension programs geared toward urban audiences. This is particularly true in rapidly urbanizing Florida, where 66% of counties are currently classified as urban by the U.S. Department of Agriculture, and virtually the entire state is classified as being in an urban metropolitan or micropolitan statistical area by the U.S. Census Bureau (U.S. Census Bureau, 2020; USDA ERS, 2021). Interest in providing Extension programs to urban residents due to increasing urbanization can be traced back to the 1940s, and more than a half-century ago, researchers and Extension faculty recognized that defining goals and methods is the key to optimizing Extension’s contribution to urban areas (Brown, 1965a, 1965b). A key observation from these articles was the presumed

divide between rural and urban programming, with the assumption that the former focused on agriculture and the latter on home economics or food and nutrition programs (Paulson, 1973; Yep, 1981).

Urban agriculture (UA) presents a challenge to this perceived divide in Extension programming. While the history of UA in the United States traces back to the 19<sup>th</sup> century, there has been an increasing interest in UA in recent years as an outgrowth of the local food movement. In addition, food supply chain disruptions and increases in food insecurity associated with the COVID-19 pandemic have increased awareness of the importance of food system resilience, in which UA may be able to play a role.

Contrary to the assumption that agricultural Extension programs focus on rural audiences, UA-focused agricultural Extension programs necessarily target urban clientele. Since many UA operations are concerned not merely with food production but also with supporting food access and food security, UA operations also need Extension programs that address food and nutrition (Reynolds, 2011). Hence, UA operations could benefit from educational programs from a number of traditional Extension program areas that are normally addressed individually. UA Extension programming is unique in that the goals and needs of clientele include both agriculture and food and nutrition, creating difficulties in fitting UA content areas within the traditional Extension specialties (Reynolds, 2011). This suggests that using a systems-thinking approach—in which Extension programming does not merely address topics in isolation but instead considers more than one topic and how those topics interact with each other—may be a key to developing effective UA programs that meet the needs of both urban farmers and their communities.

Like many states, Extension in Florida has a long history of serving rural agricultural producers but has seen limited success in developing Extension programming specifically geared toward urban food producers. Ensuring the continued relevance of Cooperative Extension in the US will require Extension to develop programs specifically targeted to the unique barriers, opportunities, and needs of serving urban farming clientele. An important first step to developing those targeted programs is understanding Extension educators' perceptions, beliefs, and knowledge about urban agriculture and the key barriers and opportunities in developing new programs to serve UA clientele.

### **Review of Literature**

While the need for urban Extension has been long recognized, there has been relatively limited peer-reviewed literature on Extension's role in supporting UA, with some of the limited research appearing in white papers or reports. A large proportion of the small number of peer-reviewed research studies was conducted in California (Diekmann et al., 2017; Reynolds, 2011; Surls et al., 2015).

## **Defining Urban Agriculture**

The difficulty with defining UA—or even with defining the term *urban*—is a key barrier to developing Extension programming to support UA. Indeed, the problem of “the nebulous meaning of ‘urban’” was raised in 1973 as one difficulty with characterizing or quantifying urban Extension activities (Paulson, 1973). There is no standard definition of UA. It can be defined broadly as food production (public or private, commercial, or nonprofit) for sale or consumption within urban or peri-urban areas (Hodgson et al., 2011). Thus, UA includes home gardens, community gardens, commercial or nonprofit urban farms, and market gardens, as well as associated food processing, distribution, and sales. A lack of a standard definition of UA creates confusion about what activities are included under the umbrella of the term “urban agriculture” and may create barriers both internally within Extension and externally with Extension identifying and connecting with UA clientele, which will be discussed below.

## **Quantity and Types of UA Activities**

UA is on the rise in the US, with many different UA activities occurring in communities (Oberholtzer et al., 2014; Rangarajan & Riordan, 2019). The most prevalent of these are community gardens, market gardens, community-supported agriculture (CSA), greenhouse/controlled environment production, urban farms/farming on vacant lots, aquaculture, hydroponics, aquaponics, and other innovative types of production (Hendrickson & Porth, 2012; Oberholtzer et al., 2014; Rangarajan & Riordan, 2019).

## **UA Extension Program Offerings**

As vast as the definition of UA, so too are the types of programs that Extension educators currently offer for UA or would like to offer. These programs include production assistance, food safety, land access, market gardening, urban livestock husbandry, marketing, business management, agricultural awareness (for nonfarmers), labor, processing, value-adding, and soil quality (Diekmann et al., 2016; Reynolds, 2011; Surls et al., 2015). Since UA operations often seek to achieve goals beyond mere food production and profitability, such as increasing food security and food access, community resource development, and fostering food justice, UA operations may need Extension support on different topics than traditional Extension education offerings for agricultural producers; these additional program topics include community resource development, social justice, volunteer programs, and community food systems network coordination (Diekmann et al., 2017).

## **Perceived Barriers to Providing UA Extension Programs**

The lack of a standard definition of UA may create a barrier to developing UA Extension programs because it is unclear which educators are responsible for UA. Given that UA can refer to community gardens, urban farms, farms on the perimeter of urban areas (peri-urban farms),

and other activities, Extension educators may not know whose responsibility it is to work on UA. For example, is it the responsibility of educators working on commercial horticulture, the master gardener program, community resource development, or all of them? In addition, in states that are urbanizing or urbanized, some Extension educators indicated that virtually all of the farms they work with are urban-influenced or simply commercial farms at the rural-urban interface (Reynolds, 2011). Thus, the lack of a clear definition yields a situation where Extension educators either do not know who should be responsible for UA, or conversely, they don't feel like there is a clear delineation between the work they have been doing for years, such as providing support for urban-influenced commercial farms and providing Extension support for UA.

Another barrier to UA Extension programs is that Extension has had difficulty connecting with UA clientele for reasons that parallel the difficulty with knowing whose responsibility UA is. Namely, Extension educators do not identify their audiences by being UA producers, per se, but instead by being commercial producers, home gardeners, or hobby farmers (Reynolds, 2011). Essentially, Extension educators identify their clientele by their activity rather than their location. For this reason, they tend to connect with farms that fit within traditionally defined Extension program areas rather than operations—like many UA operations—which do not fit squarely in the definition of commercial, nonprofit, home gardening, and so on (Reynolds, 2011).

Relatedly, Extension educators tend to focus on serving clientele they have served before and on providing the kinds of programs supported by their stakeholder groups. An upshot of this fact is that Extension educators may focus more on traditional producers and stakeholder groups and may be insulated from UA producers or their stakeholder groups (Diekmann et al., 2016; Rangarajan & Riordan, 2019; Reynolds, 2011; Surls et al., 2015). Some Extension educators see their obligation as best serving the mission of their university, which requires that they provide programs to the farms that have the greatest impact, and UA operations have a relatively small impact on communities and food access (Surls et al., 2015). This issue is confounded by elected officials, such as City or County Commissioners, because of a lack of agricultural knowledge and their traditional conceptualization of agriculture, which leads to policies that may negatively affect Extension's engagement with UA audiences (Hendrickson & Porth, 2012).

Finally, Extension educators who want to support UA in an integrative and systematic fashion must combat the highly compartmentalized nature of Extension. If one educator attempts to serve the UA audience themselves, it can create the perception of a fragmented program because of the diversity of educational concepts and topics requested by UA clientele (Diekmann et al., 2017). This fragmentation highlights an example of the barrier created by the limited financial and human resources that Extension dedicates to UA—a frequently cited issue with UA Extension programming because there are simply not enough Extension educators or resources to support UA Extension programs (Diekmann et al., 2017; Hendrickson & Porth, 2012; Oberholtzer et al., 2014). Dedicating additional funding and staffing resources to develop UA

programs and Extension educators to deliver them were identified as high priorities for Extension to effectively serve UA producers (Oberholtzer et al., 2014). Thus, because UA programs often span the food system, developing effective, cross-food system programs requires support and guidance from Extension administration to achieve the necessary integration (Diekmann et al., 2017).

### **Needs and Opportunities for UA Extension**

Extension has a variety of opportunities in UA programming, which include both expanding current program offerings to UA clientele in addition to developing new programs specifically targeted to the unique needs of UA operations (Diekmann et al., 2017; Surls et al., 2015). Given the unique needs of UA operations, Extension educators see that there are some types of education that may be new opportunities, such as urban food policy, nutrition, food access, and training on community facilitation (Diekmann et al., 2016). Similarly, there are new audiences that have been frequently identified for UA programming, such as local government officials and policymakers, to increase agricultural awareness and facilitate the adoption of local land-use policies and regulations to make urban environments more conducive to UA operations (Campbell et al., 2021; Hendrickson & Porth, 2012; Rangarajan & Riordan, 2019). Finally, increasing funding specifically targeted for UA programs has been identified as an important need and opportunity to support UA programs (Oberholtzer et al., 2014; Rangarajan & Riordan, 2019).

### **Methods**

Based on the review of the literature and the research team's prior research on urban agriculture in Florida, we developed an interview schedule to learn about University of Florida, Institute of Food and Agricultural Science (UF/IFAS) Extension educators' perceptions of and attitudes towards urban agriculture, as well as what they perceive to be their primary needs, barriers, and opportunities to developing and implementing effective Extension programs to serve urban farmers in their communities.

### **Recruitment**

The target audience for the interviews was UF/IFAS Extension educators who focus on urban agriculture in their programming. The research team used purposive sampling coupled with snowball sampling, beginning with recommendations from district Extension directors. The interviewers asked each Extension educator interviewed for the names of other Extension educators who they know who conduct programs on UA. The research team sought representation from each of the state's Extension districts, from educators who have worked in Extension for different lengths of time, and from different Extension focus areas (e.g., commercial horticulture, family and consumer sciences, or sustainability). The research team stopped recruiting interview subjects when all the Extension educators who were recommended

had already been recommended or interviewed. Seventeen interviews were conducted in July and August 2020 via the Zoom teleconferencing application. All the research conducted on this project (the reviews from the expert panel, the cognitive interviews, and the semi-structured interviews of the target audience) was approved by the University of Florida Institutional Review Board (IRB#202000516).

### **Interview Guide**

The research team developed a semi-structured interview protocol to assess the current status of UA in Florida, the types of UA Extension programs educators offer, and the primary barriers to and opportunities for UA Extension. The research team also sought to gain insights into what these educators would do with additional financial resources to support UA. The interview protocol is provided in Table 1.

Prior to conducting the interviews, the research team received feedback on the interview questions and protocol from an expert panel of social science researchers who focus on food and agriculture research. The research team revised the interview questions based on recommendations from the expert panel and then conducted three cognitive interviews with individuals in the target research population, Extension educators who conduct programming in urban agriculture. The research team conducted cognitive interviews to ensure the target population would understand the questions as the research team intended and would be able to provide the answers the research team was seeking. In the cognitive interviews, a member of the research team asked the interviewees to “think aloud” in explaining what they thought the question was asking and how they would answer it (Beatty & Willis, 2007). Following the cognitive interviews, the research team revised the interview questions to create the final interview schedule.

The interviewees were asked how they define *urban agriculture*. After they provided their own definition, they were provided with an operational definition that they were instructed to use as the basis for the remaining questions. The operational definition of UA with which they were provided was the following:

“The production, processing, distribution, and sale of food within urban and suburban areas for non-commercial, hobby, commercial, educational, or nonprofit purposes. Examples of these activities include food-producing gardens like community, backyard, institutional, market or rooftop, urban or market farms, and innovative food production methods such as hydroponics, aquaponics, and aquaculture.”

**Table 1. Semi-Structured Interview Questions**


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1.	How do you define “urban agriculture”?
2.	In your opinion, would you say that there are many, some, or few urban agriculture operations in your county?
3.	Which of the following types of urban agriculture activities are occurring in your county? <i>Community gardens, Market gardens, Urban farms, Farming on vacant lots, Aquaculture, Hydroponics, Aquaponics, Greenhouse/controlled environment production</i>
a.	Are there any other types of activities aside from those that were just mentioned? If so, what are they?
4.	In your opinion, are the <u>number</u> of urban agriculture operations in your county increasing, staying about the same, or decreasing?
5.	Thinking now about specific operations, would you say that those operations are growing, staying about the same, or shrinking? Please feel free to share your thoughts about more than one operation.
6.	Do you currently (or have you previously) offer urban agriculture programming as a part of your extension program? If so, please describe the programs you offer related to urban agriculture.
7.	Can you share with me why—either personally or professionally—you do [or don’t, depending on previous answer] conduct programming related to urban agriculture?
8.	Have you experienced barriers to providing Extension programs focused on urban agriculture from any of the following? <i>Elected officials, Producers, Extension administration, Other organizations, Financial resources</i>
a.	Are there any other types of barriers you have experienced? If so, what are they?
b.	Which of these barriers is the greatest barrier you have faced?
9.	Can you please share what you think the two biggest opportunities are for UF/IFAS Extension in working on urban agriculture in the future?
10.	If you had a grant to support your work on urban agriculture, for example, \$25,000 for 2 or 3 years, what would you do?

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### Data Analysis

Researchers used coding to analyze interview transcripts qualitatively using NVivo 12 Plus software. The coding method is a means for researchers to identify similarities, differences, and other patterns among participants and develop explanations for complex social phenomena (Hatch, 2002). Our analysis used a combination of inductive and deductive approaches (Northcutt & McCoy, 2004). Before we began coding, we developed a list of codes that corresponded with this study’s research questions and anticipated responses (deductive). We also paid close to attention to data-driven, or emergent codes, that we did not anticipate (inductive). We conducted two cycles of coding. During the first cycle of coding, we identified topics that participants discussed through descriptive or topical coding, which describes the coding with descriptive nouns, and we identified participant perspectives using in vivo coding, which applies the words participants use verbatim (Charmaz, 2014; Miles et al., 2014; Saldaña, 2015). Throughout the first cycle, we also employed eclectic coding, which combines descriptive and in vivo coding and is used to refine first-cycle coding decisions (Glaser & Strauss, 1967; Patton, 2015). In the second cycle, we conducted analytical pattern coding, which is used to develop meta-codes that identify similarly coded data by grouping them and generate major themes to identify more abstract and general concepts (Miles et al., 2014; Saldaña, 2015). A summary of



the key themes and codes can be found in each section of the results. An asterisk is used to indicate emergent (inductive) codes.

## Results

### Interviewee Characteristics

Interviewees were classified by primary program focus, defined as the program area in which they reported more than 50% of their effort in 2020. They were also classified by the length of time they had worked in Extension. See Table 2. Some of the Extension educators had one or more additional areas in which they conducted programs. For example, some of the horticulture educators also conducted programs in sustainable agriculture or community resource development. Because of the nature of Florida's reporting system, each of these educational programs must be reported separately, which inhibits integrated Extension programs seeking to address multiple audiences or outcomes. Additionally, and somewhat ironically, the Florida Extension system has two "food systems" sub-program areas—one in agriculture and one in family and consumer sciences—but the organizational structure and reporting system is designed so that the activities and reportable systems indicators are actually siloed, and not systems-oriented. Food systems work for agriculture educators is limited to farm and commercial producers as clientele with indicators that stop "at the farm gate." Family and consumer science food systems work is limited to individuals and households.

**Table 2. Interviewee Demographics (N = 17)**

Characteristic	<i>n</i>	%
Primary Program Area		
Commercial/Urban/Residential Horticulture	9	52.9%
Sustainable Agriculture/Small Farms	4	23.5%
Community Resources Development	2	11.8%
Family and Consumer Sciences	2	11.8%
Time Working in Extension		
Short (Less than 2 years)	1	5.8%
Medium (Between 2 and 10 years)	9	52.9%
Long (More than 10 years)	7	41.2%

### Definition of Urban Agriculture

When Extension educators were asked how they define UA, their responses focused on geographic location ( $n = 15$ ), primarily defining UA as food production in urban areas ( $n = 10$ ), as well as farming in the urban core ( $n = 5$ ), residential ( $n = 4$ ), and peri-urban areas ( $n = 4$ ). Six also included in their definition of UA farming in places not necessarily zoned for agriculture, including indoor spaces, vacant lots, warehouses, or rooftops.

**Table 3. Characteristics Extension Educators Used to Define UA**

<b>Characteristics Used to Define UA</b>	<b><i>n</i></b>	<b>%</b>
Production model/operation type	16	94.1%
Community garden	16	94.1%
Residential/hobby gardening or farming	10	58.8%
Commercial/High productivity production	8	47.1%
Defined by geographic location	15	88.2%
Defined by products/crops	14	82.4%
Sales and distribution channels*	8	47.1%
Size/scale of operation*	5	29.4%
Social and community connections*	4	23.5%

*Note.* Items marked with an asterisk (\*) were emergent themes in the data collection.

Almost all interviewees included production models or operation type ( $n = 16$ ) and products ( $n = 14$ ) as a part of their definition of UA, and there was a broad range in the specific details of those models and products that were mentioned. All but one interviewee mentioned that community gardens are part of their definition of UA. Ten responses encompassed some sort of residential gardening, farming, or hobbies, including edible landscaping, container gardening, rooftops, and beekeeping. Eight included commercial, large-scale, high-productivity models, including soilless production like hydroponics and aquaponics in their definition. Two explicitly mentioned that urban farms take whole systems approaches and grow a wide variety of crops. For example, an Extension educator explained that UA is “raising a lot of different vegetables, you know, and really kind of relying on ... rotation and ... the different seasons and less of just relying on one or two different crops, but a whole lot of crops.”

About half ( $n = 8$ ) of the Extension educators described sales and distribution channels as a part of their definition of UA. Four included direct-to-consumer sales as a part of the definition of UA, including farmers markets and U-pick models.

Some ( $n = 5$ ) interviewees thought that the small size of UA operations is a key part of what differentiates them from traditional farms. Four Extension educators mentioned social features as part of their definition of UA, including community pride, connection with growing food, and feeding underserved populations. One provided this perspective: “You gotta be able to feed your own people. And I see this, this whole idea of urban agriculture as a way to do that, or at least part of it.”

Overall, there was a high degree of similarity in the definitions of UA provided by Extension educators in the identification of location, size, and production system. In addition, Extension educators in Florida also were keenly aware of aspects of UA operations that differentiate them from their rural agriculture counterparts, namely the goals and motivations of UA operators and the social and community benefits of UA operations.

## UA Activities in Extension Educators' Regions

When the Extension educators were asked what activities were occurring in their counties or regions, all 17 had at least two forms of UA in their area, and one reported having all eight of the UA activities that were included in the interview question (see question 3 in Table 1).

For codes that were inductively identified, Extension educators reported several other types of urban food production, including home food production ( $n = 7$ ) and school farms or gardens ( $n = 3$ ). They also reported on sales and distribution channels ( $n = 11$ ), including aggregators, such as food hubs ( $n = 6$ ), and direct-to-consumer models like CSAs and farmers markets ( $n = 5$ ). Five of 17 mentioned that UA in their area targets and reaches low-income populations who have poor access to fresh foods. The full results are presented in Table 4.

**Table 4. Types of UA in Extension Educators' Counties or Regions**

Types of UA	<i>n</i>	%
Community gardens	15	88.2%
Hydroponics	14	82.4%
Greenhouse and controlled environment production	12	70.6%
Sales and distribution channels*	11	64.7%
Urban farms	10	58.8%
Aquaponics	10	58.8%
Farming on vacant lots	9	52.9%
Aquaculture	8	47.0%
Agritourism/workshops*	8	47.0%
Market gardens	8	47.0%
Home food production*	7	41.2%
School farms and gardens*	3	17.6%

*Note.* Items marked with an asterisk (\*) were emergent themes in the data collection.

Several Extension educators mentioned activities that generate additional farm income other than or in addition to crop sales. Extension educators said urban farmers used agritourism to attract visitors, sold cottage foods like jams and hot sauces to earn extra revenue, or offered education or programs to teach gardening and farming through in-person or virtual workshops and classes that garner interest in local foods ( $n = 8$ ). One educator described,

“one urban farmer told me ... that agritourism saved them, you know, that’s vital to their economic viability to have that connection with consumers, to have those additional streams of income and, you know, they’re offering ... classes, events, community building.”

Because UA farmers are a relatively new clientele for UF/IFAS Extension, this research sought to gain an understanding of the status of UA in terms of the number and scale of operations, as well as the trends in whether the number of farms or the scale of their operations was increasing,

decreasing, or staying the same. Overall, Extension educators perceived that the number of UA operations in their areas were increasing and that farms were growing in scale ( $n = 8$ ), diversifying their revenue streams ( $n = 5$ ), or increasing productivity ( $n = 5$ ). Despite seeing growth, they also described that some farms might not be interested in expansion: “The small-scale folks are ... always innovative and they’re always trying to change and do something new, but they’re not necessarily wanting to grow in scale.” For the summary of responses on the number and status of existing farms, see Table 5.

**Table 5. Number and Status of Existing Urban Farms**

<b>Status of Farms</b>	<b><i>n</i></b>	<b>%</b>
Current number of farms		
Few	4	23.5%
Some	6	35.3%
Many	6	35.3%
Change in number of farms		
Increasing	11	64.7%
Staying the same	5	29.4%
Status of existing farms		
Growing	11	64.7%
Staying the same	12	70.6%
Shrinking	4	23.5%

*Note.* Numbers in each group do not add up to 100% because some Extension educators did not answer the question because they felt they did not have adequate knowledge on the current number of farms or how the number was changing, or because they reported on the status of more than one individual farm.

### **UA Extension Programming**

Extension educators were asked if they currently or previously conducted UA programming and, if so, to describe the program types and audiences. In describing their programs, 16 of the 17 discussed their target audience and participants, who were primarily entrepreneurs ( $n = 6$ ) and hobbyists ( $n = 5$ ). Four referred to their audience as having diverse backgrounds and experience, which is supported by the fact that, collectively, the Extension educators named 24 different clientele they serve with little consensus on any one type. The key themes in UA Extension programming are presented in Table 6.

Extension educators were selected to be interviewed because they were known to be involved in UA, so they all described offering some form of UA programming. Thirteen deliver classes and workshops. Eleven described general production and systems-based classes in topics like fruit and vegetable growing, hydroponics, and commercial urban production. Five of them also described offering classes in specialized topics like mushroom cultivation, integrated pest management, beekeeping, composting, and cover cropping. Nine mentioned providing classes related to business development, including enterprise planning, marketing, certifications, and beginning farmer programs that attract both rural and urban farmers.

**Table 6. Type of UA Extension Programming Offered**

<b>Types of UA Programs</b>	<b><i>n</i></b>	<b>%</b>
Classes, courses, and workshops	13	76.5%
Production and farm systems	11	64.7%
Farm business development	9	52.9%
One-on-one support	10	58.8%
Navigating taxes, laws, and regulations*	7	41.2%
Market and distribution expansion*	3	17.6%
School gardens	2	11.8%
Addressing UA-specific needs	5	29.4%
Networking and public education events*	5	29.4%

*Note.* Items marked with an asterisk (\*) were emergent themes in the data collection.

Five of the 17 reported that their programs address a UA-specific need they identified, such as working with master gardeners, conducting UA program evaluations, creating UA asset maps, and collaborating with University of Florida researchers and an urban food working group.

Ten educators described working one-on-one to help producers navigate laws, tax codes, and regulations. Three discussed how they made themselves available to farmers who needed market channel assistance specific to their farms. One, for example, identified an opportunity to address the cultural needs of the community and increase business for a farmer in their area:

It's an Asian area, and they have a lot of Asian restaurants, and they have specialty crops that they're importing from Vietnam because they can't get it locally. He doesn't want to work with individual restaurant owners ... so, we were trying to put together a collective of Asian-owned restaurants that have similar crops so they can say—instead of 2 cases of bok choy a week, 20 cases—because you've got 15 restaurants that need all this bok choy.

Five Extension educators helped organize and facilitate educational or promotional events like farm tours, farmers market booths, or food festivals. They also mentioned that networking events for farmers and community partners that not only serve to connect stakeholders but also assist in completing UA needs assessments were becoming increasingly crucial strategies to support UA. One educator described a farmer networking event that served as a needs assessment:

We asked farmers to write down ... what's bugging you or what's not helping you, where you can't fall asleep at night because you're thinking about this and then we actually got the needs assessment done from that. And the whole point of that was to figure out topics, but we also figured out how they want to receive the information, and because they don't know each other, they want to have a farmer-to-farmer meetup at a microbrewery.

## Motivation for Conducting UA Programming

Because UA programming is not a program focus area in UF/IFAS Extension, no Extension educators are hired specifically to work on UA. For this reason, we sought to understand why these educators chose to develop Extension programs that include UA clientele. Their responses are summarized in Table 7.

**Table 7. Motivation for Conducting UA Programming**

Motivations	<i>n</i>	%
Fulfilling an unmet need in community/clientele	13	76.5%
Fulfilling need in Extension	9	52.9%
Personal passion*	8	47.1%
Giving back to community*	7	41.2%
Knack for creative problem solving*	7	41.2%
Supporting development/awareness of UA	4	23.5%
Rewarding work*	3	17.6%

*Note.* Items marked with an asterisk (\*) were emergent themes in the data collection.

Thirteen of 17 described being motivated by recognizing an unmet need in their community, nine of which specifically discussed the need in Extension, illustrated in the following quotations:

Well, I mean, from a professional side of things. There's a need. There's a want and a desire for the information when we look at the needs assessments.

First there is a community need for some of these skills, and then there was the realization of—okay, there is a demand for Extension programs to kind of target a new client or demand. ... I need to start working a little more and labeling as urban agriculture as any kind of production, not necessarily on large scale, [it] could be a small scale as well.

Some ( $n = 4$ ) felt that by offering UA programming, they brought awareness to help recruit new farmers and to educate community members and policymakers whose support is needed in integrating UA into areas that are increasingly urbanizing. One seasoned Extension educator described a program that

brings us a lot of support from county government and other organizations like Economic Development Council, which are quite powerful. They have a lot of political pull so that that earns us support, and I will say a level of credibility and prestige with those folks that you really, really need.

Eight described how their personal passions in food production, environmental conservation, and providing Extension education were daily motivators. One passion that was mentioned by almost half ( $n = 7$ ) of the interviewed educators was their knack for creative problem-solving in food

production methods and systems logistics. Seven were motivated by the feeling of giving back to the community, contributing to community development, empowerment, and resiliency. Three described how rewarding it was to help the individuals in their communities. One said,

I believe that a lot of times community gardens, while there is the benefit of people growing their own food, I believe that many of those also serve a much more important role in terms of community development. They bring the community together and build a pride in the community and it also has the ability to introduce folks, introduce residents, especially youth to where their food comes from making a much greater appreciation for, you know, for what it takes to get food to the table.

### Barriers to Delivering UA Extension Programming

Extension educators were presented with a list of potential barriers, which included elected officials, other producers, Extension administration, stakeholder organizations, and financial barriers. They were asked which of the listed barriers they had faced as well as what other barriers they faced. Interestingly, the two most prevalent barriers were emergent codes that we had not anticipated. The summary of the results is in Table 8 below.

**Table 8. Primary Barriers to UA Extension Programming**

Barriers	<i>n</i>	%
Lack of science-based information*	9	52.9%
Rural-urban interface tensions*	9	52.9%
Resistance from outside organizations/stakeholder groups	6	35.3%
Lack of knowledge in city/county planners leading to local policy issues	5	29.4%
Program logistics, e.g., attracting audiences, charging for programs	5	29.4%
Lack of staff to support UA programs	4	23.5%
Ineffective communication/collaboration (internally and externally)*	3	17.6%

*Note.* Items marked with an asterisk (\*) were emergent themes in the data collection.

One of the primary barriers identified was an emergent theme, namely, the lack of science-based information ( $n = 9$ ) they could use to assist UA farmers. They suggested that the lack of information is because UA producers use different production systems, such as hydroponics, that do not have sufficient informational resources to support Extension programming or that the very small scale of UA operations makes traditional production guidance inapplicable to urban contexts. One educator described the barrier as follows:

We have some agronomy [research] on companion planting, but as it relates to massive scale cropping systems. And we have forage specialists that look at ways that you can plant multiple species of grasses and legumes in a plot, but we don't have anything about how you can plant different species of plants in an urban garden.

When asked about other barriers from groups and organizations, six mentioned large industry stakeholder groups who are not yet on board with UA and are sometimes dismissive of small growers. Nine described tensions along the rural-urban interface, such as what they perceived to be value and identity disparities between groups and political tensions. “There may be there are some barriers to ... participating in ... food policy initiatives both locally and the state, you know, Extension agents have to be careful not to take sides or ... step on the wrong toes.”

Relatedly, Extension educators discussed barriers created by a lack of communication between different Extension program areas, university researchers and county educators, and the university and rural farm groups ( $n = 3$ ). One educator mentioned that a lack of systems thinking or communication between Extension program areas was a barrier to her having the knowledge and resources she needed to support her clientele. “We have people geared towards certain things and that’s all that they’re set to do. They don’t really have more of a broader thought when it comes to education.” A different Extension educator highlighted another issue related to communication by saying:

I honestly don’t think that the university approached it properly years ago—they did not prep and prompt the rural folks in those organizations to understand when we say we’re doing urban programming, we’ve always done it. We’re not leaving rural and agriculture. That’s our bread and butter; we’re not going anywhere.

Five educators described logistical barriers related to their programs, including identifying and attracting audiences. Of these, four described difficulties in determining how much money to charge participants for their programming. A related barrier is navigating situations where urban farms have education built into their profit model:

Now keep in mind, many of these growers are surviving because they are not just growing, but also providing their educational services to the community ... So then by us coming in and providing educational opportunities [that are] free ... they feel threatened, because you know we’re taking away their audience.

Others discussed barriers in supporting UA because of a lack of dedicated extension educators focused on UA and a lack of funding to hire them. One described this experience directly: “The biggest frustration is that I just don’t have the staffing.”

### **Extension Perceptions of Barriers Faced by UA Operations**

When asked if they faced any additional barriers, many educators had the tendency to describe barriers they perceived urban farmers experiencing. While Extension educators did not experience these barriers firsthand, the issues identified are common to the literature on barriers to UA, as discussed in the review of literature above, and are directly supported by additional quantitative and qualitative research on UA farmers that has been conducted in Florida



(Campbell, DeLong et al., 2022; Campbell, Ruiz-Menjivar et al., 2022). Because interviewees were not asked about barriers experienced by UA operations, all these codes were inductively identified in the data (see Table 9).

**Table 9. Barriers Faced by UA Operations**

<b>UA Operations' Barriers</b>	<b><i>n</i></b>	<b>%</b>
Farm/business management issues	15	88.2%
Lack of knowledge awareness in elected officials	9	52.9%
Zoning/regulations	8	47.1%
Social issues/racism	8	47.1%
Environmental issues	6	35.3%

Fifteen of 17 noted farm and business management issues, including financial concerns related to economic viability, sustainability, and land access. Six indicated that urban farmers encounter environmental issues related to heat, pests, and water quality. One educator identified a key problem is that producers do not have “the knowledge to be economically, environmentally and socially sustainable. And that looks different for every operation ... that economic piece and really knowing a range of potential yields that you might expect in an urban area.”

Nine mentioned barriers related to elected officials, including the fact that planners and policymakers did not have the knowledge they needed to adequately create or update the types of policies that better support UA. One Extension educator stated bluntly, “Elected officials, such as city and county commissioners: that barrier is knowledge and awareness.” Eight felt that urban zoning and land-use laws impact the growth and viability of UA because zoning, codes of ordinances, and land-use regulations often exclude or inhibit UA activities, putting additional bureaucratic burdens on farm operators. Three educators felt that local governments sometimes saw UA as a liability. One described,

There's a lot of education that needs to happen. I would say that most of the local officials, you know, in our county, we have really big agriculture and so they're very supportive of that, which is great. And I'm glad that they are. I would like to see them be more supportive of, maybe, the small and urban farmers.

Some perceived that social issues, such as racism, wealth disparity, education inequality, and aging were barriers to UA. One explained the issue as follows:

There are issues with racism that, I think, holds back a lot of the urban ag production. ... there are people that do try to oppress some segments of a more urban population that are trying to move ahead with agriculture. ... I hate it, but it's, you know, it's the truth.

## Needs and Opportunities in UA Extension

Extension educators were asked to share what they thought were the two biggest needs or opportunities for Extension in working on UA in the future (see Table 10).

**Table 10. Needs and Opportunities to Facilitate UA Extension Programming**

Needs and Opportunities	<i>n</i>	%
Supporting business development for UA*	12	70.1%
Developing new educational curricula	11	64.7%
Facilitating relationships*	8	47.1%
Reaching new audiences	7	41.2%
Hiring new, designated UA staff*	7	41.2%
Conducting UA-specific research*	5	29.4%
Raising awareness of UA/locally produced food	4	23.5%

*Note.* Items marked with an asterisk (\*) were emergent themes in the data collection.

Twelve thought there were opportunities to assist in business development for new and existing urban farmers, including marketing and distribution, accessing grant opportunities, and providing new farmers with start-up strategies. Two also felt that Extension was positioned to assist with or provide information to support policy development in UA.

Developing new educational curricula was seen as an opportunity for Extension ( $n = 11$ ), particularly related to small-scale production on topics such as best management practices, local and regional produce, and animal processing. One educator highlighted the fact that programs could address some specific environmental impacts of UA.

Helping to choose the right crops, the right production methods that are more agreeable in an urban area ... if they're using pesticides, fertilizers, those types of things, to make sure they are reducing the environmental impact of those farms, because in an urban area [it] will be more readily noticeable if somebody is making some of those mistakes, and, possibly, it might even be closer to a watershed or neighborhood school.

Some also saw their expertise as being translatable to public, nonfarmer audiences to raise awareness of locally produced foods. "I think Extension has a really great opportunity with education ... is to educate our Florida residents on what actually grows here. How to purchase it, how to cook it, the nutrition component of it."

Some ( $n = 7$ ) discussed how UA gave Extension an opportunity to reach new audiences, target underserved audiences, and empower a new generation of farmers and consumers. Eight felt that Extension could facilitate relationships between farmers, community stakeholder groups, and local or state governments.

There is so much potential to reach more audiences, newer audiences out there that are not yet familiarized with the land grant university system and [urban agriculture] is a great way just to provide all this information to them in English as well as Spanish, so I think this just, it's—it's just like a, you know, a door towards the mission we have.

Another new audience that was identified was the tech-savvy farming population. For example:

This is a highly technical, scientific kind-of approach, where you're not going to be sweating in the sun 24/7. A lot of this stuff, once you get it set up and done, you can almost do a lot of it on your phone. There's a lot of approaches to it, there's a lot of opportunity to get excited about it. And at the end of the day, the \$125,000 loan that you would have to float to get started, it seems like a lot, but compared to traditional agriculture, that wouldn't even get you your tractor.

Seven thought that Extension could hire dedicated UA staff and utilize the existing Extension network to support emerging needs.

I think utilizing Extension [educators] to continue this work is really important. We have a lot of connection with the community and can get the word out from the university-level on what the focus and the goals are for urban ag. So, if we had sort of something really streamlined, from the top coming down, saying, here are the resources, here's the information.

Another Extension educator explained that they needed personnel to effectively support UA by saying that they need “boots on the ground actually doing some of the work ... having the employees. ... Just like with our community gardens program. It wouldn't be as successful as it is if I didn't have employees to work the gardens.”

One educator indicated that Extension had opportunities to help farmers utilize newly available grant funding for UA from the USDA, and another described an opportunity and need for UF/IFAS administration to devote additional funding. Five mentioned research opportunities, including measuring resilience and sustainability, alternative and small-scale production methods, community planning and development, and determining farmer values.

### **How Extension Educators Would Use UA Funding**

Since lack of funding was frequently noted in the research literature as a factor that hinders UA program development and having additional funds would help Extension take advantage of new opportunities, Extension educators were asked to describe what they would do with a \$25,000 grant. The full results are represented in Table 11. About half would use it towards supporting UA educational capacity, including building a demonstration garden and developing training programs with materials for farmers. They described their ideas:

My wish would be to literally get an agent that would help lead this with the staff to strengthen the urban food systems program, but also to provide a demonstration area with each of these food systems that we're trying to teach.

“Let's get them [urban farmers] in here and let's teach them the Extension way of making sure they're doing soil right, they're applying pesticides right, they're harvesting correctly ... following proper food safety, you know, like let's—we teach them how to market it, like, let's do that.”

Some discussed using the funds towards aspects of community development, focusing on existing producers and developing local markets, exemplified below. One educator discussed the benefit of focusing on policy development by saying,

I would put the money more into the legislation, the legislative side. Rather than funding producers. Because that \$25,000, if you have legislation that's because of it, that's more long-term impact than putting \$25,000 into a small farm locally. ... And maybe even look at like financial instruments, you know microloans, different ways of cost-sharing cooperatives, things like that, as part of the process, but definitely shifting legislation and policy and land use and zoning.

Another educator highlighted the benefits of using their county's community garden program as the foundation for building a farmers market to create opportunities for farms and food businesses. She explained,

I think at this point we would expand our community gardening into farmers markets—turn them into farmers market opportunities where not only we're selling what we're growing, but we can have these folks ... making these agricultural products and cottage industry products, value-added products bring them and sell them on site ... I think if we expand it into managing ... farmers markets, I think we could have a tremendous impact on urban agriculture side of things.

***Table 11. How Extension Educators Would Use UA funding***

<b>Uses for UA Funding</b>	<b><i>n</i></b>	<b><i>%</i></b>
Increasing Education Capacity	9	52.9%
Demonstration garden*	5	29.4%
Training programs for farmers*	4	17.6%
Community Development	7	41.2%
Supporting existing producers	4	23.5%
Developing local markets	3	17.6%
Supporting policy development	1	5.88%
Research	3	17.6%

To a lesser extent, they discussed using the funds to perform research or evaluations in farmers market trends, hydroponic water use, or UA yields, as described here: “Quantifying their yields and actually having someone paid to help them quantify their yields ... like, how much is actually coming off of one of these front yard gardens.”

### **Discussion**

Previous research highlighted the fact that there was no universal definition for UA and that the lack of a standard definition was a barrier to building staffing capacity (Reynolds, 2011). However, our research found a great degree of coherence in the definitions of UA provided by Extension educators. Virtually all of them provided definitions that addressed the same key features that distinguish UA from traditional, rural agriculture. Notably, UA operations’ location, size, types of production systems, and sales and distribution channels. Similarly, when asked what activities were occurring in their counties or regions, there was again great similarity and consistency. Virtually all the Extension educators identified community gardens and hydroponic operations in their local areas, and more than half identified greenhouse or controlled environment production, urban farms, aquaponics, and farming on vacant lots.

The types of programs that previous research identified as common to Extension educators addressing UA were broad, spanning the myriad activities falling under the large umbrella of the term UA. In our study, Extension educators in Florida provided traditional agricultural Extension programs such as production assistance, business development, food safety, and agricultural awareness. Previous research has suggested that to effectively serve UA producers, education programs need to be developed that address the multiple needs that are unique to UA operations, such as community resource development, social justice, and food systems network development. These unique needs were also identified in this study in Florida, as reflected in the programs offered by the family and consumer science and community resource development educators. We also identified programs to address common barriers identified in previous literature and within Florida, most importantly, educating local government officials about how land-use and zoning policies affect UA and how they can amend those policies to support community food production and food access in their communities.

Extension educators discussed the barriers to UA programming in tandem with what they see as opportunities for UA Extension in the future. For example, because many of them were new to providing UA Extension programs, they also highlighted UA as an opportunity to diversify the groups that their programs serve and to begin to work with audiences that Extension has traditionally had a difficult time reaching. Indeed, many Extension educators indicated that connecting with these new audiences and serving an unmet need in their communities was a primary motivation for conducting UA programs. Perceived tension across the rural-urban divide, on the part of agricultural producers on both sides of that divide, as well as from traditional farm stakeholder groups and local government, were identified as barriers to developing Extension programming specifically targeting UA producers. However, many of

them additionally noted that this tension provided them with an opportunity to target education towards local government officials to increase their knowledge of the potential benefits of UA and policies that can be implemented to support it.

One of the primary barriers to Extension's capacity to support UA that had been previously identified in the literature was the lack of clarity in who is responsible for UA programs, given that UA spans both commercial urban farms and non-commercial activities such as residential and community gardens. In the interviews, the Extension educators in Florida did not indicate that there was a problem identifying, programmatically, which educators were responsible for supporting UA. The most salient barrier identified in this study was simply the lack of staff time and funding for dedicated UA programs. Thus, in Florida, the issue is not so much who is responsible for conducting UA programming as who has the time and capacity to take on UA as an educational program area. For example, one interviewee was a commercial horticulture educator, but his UA Extension work focused on helping develop a community garden to foster food security—a project that would normally not fall under the purview of his work as the UF/IFAS Extension system is organized.

Because none of these educators had UA as their primary professional obligation, they all felt that it was difficult to adequately serve the UA clientele in addition to their other job duties. The lack of time and staff support was highlighted in their answers to the question of what they would do with a \$25,000 grant, with more than half of the respondents indicating that they would use those funds to build UA Extension education capacity.

In their answers to both the new opportunities and how they would use the \$25,000 grant, the Extension educators discussed programs, clientele, and research that falls outside of the traditional boundaries of Extension programs. For example, working specifically with underserved populations or increasing food access would not normally fall under the purview of a commercial horticulture educator, but because those goals align with the needs of UA producers, those types of topics were discussed as new opportunities. Building community capacity, from land-use policies to food systems development to community resilience, are all envisioned as new opportunities provided by UA. Research on production practices and sustainability specifically focused on very small-scale, urban production systems is needed to develop research-based Extension programs

### **Limitations**

This qualitative study provides a foundation for understanding the current UA Extension activities and capacity in Florida. Because it is a qualitative study, it does not provide a comprehensive picture of all the UA Extension activities occurring in Florida. Nor does it serve as a basis for making inferences about Extension's needs, barriers, and opportunities in other states, where the Extension system may have different organizational structures, resources, or limitations. While a referral sampling technique is beneficial for identifying research subjects in

a hard-to-identify population, it does limit the possibility of assessing potential sample bias, and it limits the comprehensiveness of the data collected. The limited number of family and consumer sciences educators in the study population may have contributed to the emphasis on commercial UA activities in the results; however, the limited family and consumer sciences representation in this sample reflects the primary program areas for educators in Florida who focus on UA. Similarly, while Florida has included “food systems” as a sub-focus for some Extension professionals, the organizational structure and reporting system makes it difficult for those professionals to offer robust systems-based programs. These data, particularly the emergent codes and themes from the interviews that the research team had not anticipated from the review of literature, could be used to develop a quantitative survey to assess the perceived needs, opportunities, and barriers of additional Extension educators in Florida as well as nationwide to yield more comprehensive results and support broader conclusions about how Extension can build capacity to support UA in the future.

### **Conclusion**

Extension has supported agricultural producers for more than a century. With the growing urbanization in the United States, UA provides an important opportunity to serve both the new urban farming clientele and well as connecting with urban audiences to support community resource development, food access, food security, and local policymaking. While previous research has identified the lack of definition—or, more precisely, the expansiveness of UA—as a barrier to developing effective UA education programs, we suggest that UA highlights the importance of systems thinking and applying a systems approach in developing effective Extension programs. UA serves as a prime example of the fact that the education Extension provides does not operate in a silo, but instead, to be effective requires an understanding of the connections had across the food system from producer to consumer. While individual educators may not have the capacity to address all sectors of the food system in their programs, Extension systems, via their network of educators with a variety of specialties, working together can address several issues. Thus, addressing UA and developing effective programs will likely require more collaborative programs across different specialties to support both UA producers and consumers. The practical implications of this research are useful for state specialists working to provide leadership and professional development for Extension educators whose programming efforts overlap in potential systems-based UA programs. This research highlights a need in Florida for professional development on how to implement integrative programs in the UA context and ways to evaluate and report on these programs so that the efforts of each collaborator are recognized.

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