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What is urban agriculture?[1]

Alicia Papanek, Catherine G. Campbell, and Hannah Wooten[2]

Introduction

With increasing urbanization across Florida and the United States, innovative forms of urban food production have followed. Urban agriculture has long been practiced by residents, farmers, and gardeners as a way to produce local food, support community and economic development, foster public health, and provide food and agricultural education to urban residents (Hodgson et al., 2011). Urban agriculture provides social, economic, health, and environmental benefits within urban areas and is considered a valuable part of urban food systems (Papanek et al., 2023).

This publication is intended for urban residents, students, community members, Extension agents, and local government officials who are interested in developing, supporting, or becoming involved in urban agriculture. It discusses the definition of urban agriculture, common characteristics, the types of food produced, commonly used production methods, and the purposes of various types of operations. Additional resources to support urban farming and gardening techniques for novice and experienced growers are listed at the end of this document.

Defining Urban Agriculture

There is no standard definition of urban agriculture. Definitions depend on geographic region or field of practice. Urban agriculture is a general term that refers to the production, processing, distribution, and sale of food within urban, suburban, and peri-urban (i.e., on the perimeter of urban areas) areas for commercial, non-commercial, hobby, educational, or nonprofit purposes. The definition of the term "urban agriculture" includes activities beyond food production; for that reason, it could be understood to be equivalent to the term "urban food systems." To learn more about the food system, consult the UF/IFAS "What is the food system?" infographic here.

Examples of urban agriculture activities include:

- Food-producing gardens (home, community, school, institutional, market, or rooftop)
- Bee, poultry, aquaculture, and animal keeping
- Edible landscaping
- Urban farms, including indoor and rooftop farming
- Innovative food-production methods, such as vertical farming, hydroponics, and aquaponics
- Farmers' markets, community-supported agriculture (CSA), or mobile produce trucks (Campbell & Rampold, 2021)

Table 1 lists definitions of the types of urban agriculture.

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2. Alicia Papanek, PhD student, Department of Family, Youth and Community Sciences, and graduate research assistant, Community Food Systems lab; Catherine G. Campbell, assistant professor, Department of Family, Youth and Community Sciences; and Hannah Wooten, Extension agent, commercial horticulture, UF/IFAS Extension Orange County; UF/IFAS Extension, Gainesville, FL 32611.

Table 1. Types of urban agriculture.

Type	Description
Home Garden	Private food-producing gardens in residences, including houses, apartments, and condominiums. Home gardens can be in front or backyards, on balconies, or in courtyards. Grown by individuals or hired gardeners for personal consumption.
Community Garden	Small- to medium-sized community-based food-producing gardens that are managed collectively by a group. Found in urban, suburban, or peri-urban lots, public parks, or other publicly owned land. Foods and other plants, such as flowers, herbs, or mushrooms are grown for non-commercial purposes, including individual consumption or trade among garden members.
School Garden	Small- to medium-sized gardens in elementary, middle, high school, or university campuses. Typically grow fruits, vegetables, herbs, flowers, and other edible plants for non-commercial purposes to support education-based initiatives.
Edible Landscaping	The use of food-producing plants in residential, commercial, or mixed-use development for non-commercial ornamental purposes and/or individual consumption.
Rooftop Farm or Garden	Small- to medium-sized food-producing farms or gardens found on urban, peri-urban, or suburban rooftops of commercial buildings, houses, or apartment complexes that grow food for commercial or non-commercial purposes.
Institutional Farm or Garden	Food-producing gardens associated with schools, universities, hospitals, faith-based organizations, workplaces, or other institutionally-based public or private sites. Foods are produced for non-commercial purposes (including educational, therapeutic, or community services, or for donation to food pantries) or commercial purposes (i.e., to be sold on- or off-site through farmers markets, stores, or farm stands).
Market Farm or Garden	Small- to medium-sized food-producing farms or gardens on public or private property that produce foods for commercial purposes (i.e., to be sold to neighbors, through farmers markets, stores, farm stands, or CSAs).
Urban Farm	Comparatively larger-scale; intensive production of foods, flowers, compost, and other allowable products for commercial purposes (to be sold through farmers markets, food stores, farm stands, CSAs; to restaurants; or through wholesale market channels). Found in urban cores, in peri-urban areas on the outskirts of city centers, or as a part of suburban development.
Poultry and Animal Keeping	Raising chickens and/or other allowable animals, such as quail, pigeons, goats, sheep, or cows, for hobby or commercial purposes (e.g., to produce meat, eggs, or fertilizer). Developed as intensive operations or integrated with other types of urban, peri-urban, or suburban farms and gardens.
Beekeeping	The practice of keeping bees in urban, peri-urban, and suburban areas for non-commercial use (e.g., education-based initiatives) or commercial use (e.g., to produce honey or beeswax, and support pollination requirements of fruiting plants, such as tomatoes, cucumbers, watermelons, and fruit trees).
Aquaculture	Raising of fish, shellfish, aquatic plants, or other water-based organisms in lakes, ponds, reservoirs, coastal or marine waters, or controlled environments in urban, suburban, and peri-urban areas for non-commercial or commercial purposes.
Hydroponics	The practice of growing food in soilless media in indoor warehouses or shipping containers, or outdoors in urban, peri-urban, and suburban areas for non-commercial or commercial purposes.
Aquaponics	The combination of aquaculture and hydroponic practices to produce foods in indoor or outdoor urban, peri-urban, and suburban areas for non-commercial or commercial purposes.
Adapted from Hodgson et al. (2011).	

Characteristics of Urban Agriculture

Location, Size, and Scale

In addition to agriculture in dense urban areas, urban agriculture is generally understood to include suburban and peri-urban areas, which are on the perimeter of urban areas. Urban agriculture may be more simply thought of as agriculture that is not conventionally rural, in areas that are not typically zoned for agriculture, where residents might be more tightly concentrated, and where food production exists alongside other businesses.

The size of urban agriculture depends on available space within an urban landscape and the intended use of the farm or garden, but size is not a limiting factor of its characterization. Because urban agriculture includes edible gardening in private residences, the scale of urban agriculture ranges from as small as potted herbs on an apartment balcony to in-ground farms larger than 10 acres.

In 2019, the average farm size in Florida was 205 acres (FDACS, 2022), but the standard sizes for urban agriculture in Florida are significantly smaller, rarely exceeding 5 acres (Campbell et al., 2022). In dense urban areas, space limitations make small farms and gardens more feasible than large, multi-acre operations. Suburban and peri-urban areas have the benefit of larger parcels of undeveloped land—land which often includes agriculture as a principal or allowable use—and can accommodate larger farms that engage in diversified high-volume production or activities.

Increasing the size of urban agriculture operations can be difficult in highly urbanized areas. Additionally, because urban farms are in areas that are not traditionally zoned for agriculture, they may be subject to local zoning and land-use regulations that rural farms are not. However, as urban agriculture increases in popularity, innovations, policies, and community support have made scaling up and intensifying production more feasible (Halvey et al., 2020).

Production Methods, Foods Produced, and Other End Products

To integrate into urban landscapes where space and resources are limited, urban agriculture utilizes growing techniques similar to those used in rural agriculture as well as a number of technologically innovative production methods. Many common agricultural inputs, such as water, compost, manure, topsoil, fertilizers, growing media, mulch, and pest and weed control, may not be as readily available as they are in rural agricultural communities (Dobson et al., 2021). However, as demand increases, some farm and garden supplies are becoming more readily available in urban areas.

Agricultural techniques that are traditionally used in rural agriculture are also used in urban agriculture, including in-ground, raised-bed, and controlled-environment methods (e.g., protective structures such as hoop houses, high-tunnels, and greenhouses). To support ecological biodiversity and produce a variety of fruits and vegetables, urban farmers and gardeners tend to use organically-informed farming methods, limit pesticide and herbicide use, and prioritize soil health and remediation (Dobson et al., 2021).

Hydroponics, aquaponics, and vertical farming are high-tech growing systems that are well suited to produce foods in indoor and outdoor environments (McCartney & Lefsrud, 2018). Hydroponics and aquaponics produce foods without the use of soil, and typically supplement plant nutrients with irrigated water solutions. Hydroponics, aquaponics, and vertical farms can defy traditional agricultural limitations presented by seasons and soil when grown in controlled environments. However, they require a slightly different set of resources to maintain, including supplemental lights, plumbing systems, and electricity (Sandoya et al., 2021). Intensive year-round production can increase economic benefit on valuable urban land due to its level of productivity per square foot of vertical space.

The types of foods produced through urban agriculture are as varied as foods produced rurally. However, due to urban agriculture's relatively small scale, urban agriculture tends not to produce high-volume commodity crops, such as corn, soy, wheat, or cotton. Urban agriculture is more likely to produce foods that are classified by the USDA as specialty crops, such as seasonal and regional fresh fruits and vegetables, leafy greens, microgreens, mushrooms, and flowers, as well as value-added products, poultry and animal keeping, aquaculture products, and compost.

Fruits and Vegetables

Fruits and vegetables are grown in all types of urban agriculture and are the most commonly cultivated urban agriculture product (Campbell et al., 2022). Fruits and vegetables grown outdoors follow microclimate and season, while indoor, climate-controlled growing can transcend seasonality. Urban growers in Florida produce a wide variety of crops, including root crops such as potatoes, sweet potatoes, carrots, and beets, leafy greens, lettuces, herbs, annual bushes and shrubs such as tomatoes, okra, and roselle, and perennial plants such as pineapple, guava, and lemongrass. Depending on the growing zone, Florida growers also raise citrus, avocado, banana, peach, loquat, persimmon, papaya, and mango trees.

Beekeeping

Many urban farmers and backyard gardeners keep bees for honey production and pollination. Honey produced from beekeeping is considered a cottage food (Ellis et al., 2021). In the state of Florida, beekeeping requires a permit. Backyard beekeepers can manage up to 40 colonies, while sideline and commercial beekeepers manage 41 to over 100 colonies (Bustamante et al., 2019). Bees require a diversity of pollen-producing plants to ensure colony nutrition and honey production (Ellis et al., 2020).

Poultry and Animal Keeping

Raising poultry, such as chickens, turkeys, quail, pigeons, and ducks, can integrate into urban food production systems for its direct outputs (e.g., eggs, meat), and its

ecological contribution to farm and garden systems (creating fertilizer or soil amendments). Poultry keeping is feasible for backyard gardens or at scale, is often recognized by urban agriculture ordinances, and integrates well into small production systems. Poultry keeping can produce meat and a consistent supply of eggs at the household level or for commercial production. Additionally, chickens and other birds can consume certain organic kitchen waste that creates manure, which is further composted and used to amend and fertilize soils (Hochmuth et al., 2021).

Raising livestock, such as cows, pigs, goats, and sheep, is typically not permitted in urban areas and is less desirable due to space constraints and odor concerns. Suburban and peri-urban farms, however, will occasionally keep a small stock of animals for systems management, dairy production, and cuts of meat.

Aquaculture

Aquaculture is the practice of growing organisms in water. Products differ based on locale. Its operations produce fish, shellfish, or aquatic plants in lakes, ponds, reservoirs, coastal or marine waters, or controlled environments in urban, suburban, and peri-urban areas (Brooks & Conkle, 2019). Florida aquaculture produces shrimp, lobster, and crab. Aquaculture operations breed, raise, and harvest fish such as tilapia (in aquaponic systems), grouper, and snapper. They also harvest alligators, oysters, and clams along both Florida coasts (FDACS, 2016). Aquaculture systems can exist on their own to produce food for consumption or integrate into aquaponic systems to produce aquatic organisms, leafy greens, and other cash crops. Aquaponic systems, which are similar to hydroponic systems, utilize the nutrient-dense fish waste from aquaculture production and water circulation systems to supply nutrients to crops (Tyson & Simonne, 2021).

Value-Added Products

Value-added products can be an important output of some urban agriculture operations and can offer an additional source of revenue. Value-added products are created when a farm processes a product in order to make it more valuable. For example, fruit jams or pickles are produced by farms to increase the value of the raw produce and increase its shelf stability (Campbell et al., 2022). In certain circumstances, value-added foods are classified as "cottage foods." Cottage foods are foods produced in unlicensed kitchens that can be sold directly to consumers but are not permitted to be sold wholesale or on consignment. Value-added products and cottage foods commonly include baked goods, dried herbs, jams and preserves, honey, or vinegars, and can be produced by urban agriculture enterprises or external purveyors, utilizing urban agriculture-produced foods.

Compost

Importantly, compost and manure as organic fertilizers and soil amendments can also be produced through urban agriculture and are an important aspect of a local and sustainable food system. Compost is generated on either large industrial or smaller, human-powered scales to process materials into a nutrient-rich soil that can be used on-farm, donated, or sold to local growers. As mentioned above, when poultry are raised in urban environments, their waste can be captured and integrated into compost systems to make nutrient-rich fertilizers that support organic farming methods and promote environmental resource preservation and sustainability (Hochmuth et al., 2021).

Municipal food waste programs and nonprofit composting organizations can utilize urban agriculture sites to capture consumer or institutional organic food waste or farm material on a large, community scale, but farmers, home growers, and community gardeners also practice various composting methods on smaller scales to manage their individual green waste. Backyard or community composting systems collect kitchen scraps (e.g., onion tops, carrot tops, fruit peels, eggshells, or coffee grounds) or non-edible plant parts (e.g., tomato, squash, or pepper leaves, corn stalks, or spent flowers) and mix them with carbon-rich brown material (e.g., dried leaves, mulch, sawdust, or straw). The mixture breaks down with the assistance of water and oxygen-loving (aerobic) bacteria to produce nutrient-dense soils (Brown, 2020).

Aerobic composting—as opposed to anaerobic composting—is a common method that utilizes naturally-occurring oxygen-loving microorganisms to decompose materials and raise the temperature of the pile to, ideally, around 130 degrees Fahrenheit (Brown et al., 2016). Depending on available space, growers create piles or bins to house layers of waste and carbon-rich materials. These materials should be turned and watered, and protected from raccoons and other backyard pests. Medium- to large-scale composting systems will often use windrow systems, which are long piles that reach about three feet in height. Windrow processes can require a substantial amount of human strength to turn and maintain. However, they need very little infrastructure. These consistently produce quality compost in a timely manner due to their sheer size and ability to reach the high temperatures needed for quick decomposition.

Other types of composting methods include anaerobic composting. One example is bokashi composting, a Japanese fermentation process that uses microorganisms that thrive in the absence of oxygen to achieve material decomposition in sealed buckets or containers. Other organisms, such as red wriggler worms in vermicomposting systems, or black soldier fly larvae, are sometimes used to compost green materials at both individual and institutional scales.

Purposes of Types of Urban Agriculture Operations

Commercial Urban Agriculture

Commercial urban agriculture operations, such as urban or market farms and beekeeping operations, sell their products directly to consumers or through wholesale markets for profit. Commercial growers sell directly to consumers through farmers' markets, community supported agriculture programs (CSAs), farm stands, or mobile produce trucks. These types of operations are found in urban, peri-urban, and suburban areas and lots that are able to accommodate desired acreage. In some cases, growers may sell to wholesale markets that distribute products to food retail stores, restaurants, or institutions, such as schools or hospitals. To ensure profitability, commercial growers prefer to sell through market channels that predictably purchase consistent, high-value products at competitive prices. In addition to selling fresh fruits and vegetables, some commercial urban agriculture operations also take advantage of their proximity to urban consumers by hosting agritourism activities, such as classes, workshops, farm tours, and event space rentals. Agritourism is a good way for to increase revenue on small farms without requiring the adoption of new crops (Campbell et al., 2022). For more information about agritourism activities in Florida, see Henry and Stofer (2017).

Non-Commercial Urban Agriculture

Non-commercial urban agriculture operations, such as home, school, community, or market gardens, increase access to seasonal foods, support community cohesion, and provide outdoor educational opportunities in environmental, food, and agricultural sciences (Al-Delaimy & Webb, 2017). The food-growing and organizational goals of non-commercial urban agriculture may require less physical space and can be well suited to city parks, vacant lots, available city property, rooftops, residences, faith-based organizations, or school campuses. Nonprofit and community-based urban agriculture organizations often include social missions aimed at improving food access, food and nutrition education, and healthy food consumption (Santo et al., 2016). Foods grown through non-commercial urban agriculture are produced for individual consumption, trade (e.g., community gardens), or donation to community centers, food pantries, or faith-based organizations.

The purpose of school and university gardens is to support education- or research-based initiatives in agriculture, food, and nutrition. These gardens are considered viable ways to improve nutrition-related behaviors among students (Diaz et al., 2018). Community gardens are prevalent across the United States. They tend to be spaces with basic growing infrastructure. Residents can congregate, exchange gardening tips, cooperatively purchase large quantities of materials, and collectively produce fruits, vegetables, mushrooms, or herbs (Lovell et al., 2014).

Non-commercial urban agriculture does not prioritize profitability as a primary goal. Nevertheless, operational expenses are still important considerations.

Hybrid Urban Agriculture

Hybrid versions of commercial and non-commercial urban agriculture also exist. These combine the production of for-sale food with nonprofit or non-commercial components (e.g., agricultural and nutrition classes and workshops, or food donations to local food pantries) (Hodgson et al., 2011).

Conclusion

As urbanization increases, alternative food and agriculture solutions that use the urban environment have emerged to produce fresh and local foods for urban consumers. Urban agriculture continues to evolve and grow as urban farmers and gardeners hone their practices and discover innovative ways to improve sustainability within the urban food system. It provides urban communities with social, environmental, health, and economic benefits, but can be limited by space, alternative land use, or a lack of capital. For additional UF/IFAS resources for urban agriculture, see Appendix 1. To learn more about the benefits and limitations of urban agriculture, consult Ask IFAS publication FCS3378, "Social and Community Benefits and Limitations of Urban Agriculture" (https://doi.org/10.32473/edis-fy1517-2023).

Appendix 1: UF/IFAS Informational Resources on Urban Agriculture

Products

VEGETABLES

- https://edis.ifas.ufl.edu/publication/HS405
- https://edis.ifas.ufl.edu/publication/HS1215
- https://edis.ifas.ufl.edu/entity/topic/vegetables
- https://edis.ifas.ufl.edu/entity/topic/commercial_vegetable_production
- https://edis.ifas.ufl.edu/entity/topic/vegetable_gardening
- https://edis.ifas.ufl.edu/entity/topic/vegetable_cultural_practices

FRUIT

- https://edis.ifas.ufl.edu/entity/topic/home_temperate_fruit
- https://edis.ifas.ufl.edu/entity/topic/fruitscapes

MUSHROOMS

- https://edis.ifas.ufl.edu/publication/MV095
- https://edis.ifas.ufl.edu/publication/SS662

LEAFY GREENS

- https://edis.ifas.ufl.edu/publication/HS1422
- https://edis.ifas.ufl.edu/publication/HS1279
- https://edis.ifas.ufl.edu/publication/HS1164

HERBS

- https://edis.ifas.ufl.edu/publication/VH020
- https://edis.ifas.ufl.edu/publication/AE408
- https://edis.ifas.ufl.edu/entity/topic/herbs

VALUE-ADDED FOODS

- https://edis.ifas.ufl.edu/publication/FS425
- https://edis.ifas.ufl.edu/entity/topic/series_food_entrepreneurship_in_florida
- https://edis.ifas.ufl.edu/publication/IN868
- https://edis.ifas.ufl.edu/publication/IN1223

EGGS

- https://edis.ifas.ufl.edu/publication/AN239
- https://edis.ifas.ufl.edu/publication/PS029

HONEY

- https://edis.ifas.ufl.edu/publication/IN868
- https://edis.ifas.ufl.edu/publication/IN1223

COMPOST

- https://edis.ifas.ufl.edu/publication/EP323
- https://edis.ifas.ufl.edu/publication/SS506
- https://sfyl.ifas.ufl.edu/lawn-and-garden/vermicomposting/

Animal Keeping

POULTRY

- https://edis.ifas.ufl.edu/publication/AN239
- https://edis.ifas.ufl.edu/entity/topic/poultry
- https://edis.ifas.ufl.edu/entity/topic/backyard_flocks

BEES

- https://edis.ifas.ufl.edu/publication/AA264
- https://edis.ifas.ufl.edu/publication/IN872
- https://edis.ifas.ufl.edu/publication/IN1005
- https://edis.ifas.ufl.edu/entity/topic/beekeeping

AQUACULTURE

- https://edis.ifas.ufl.edu/publication/FA217
- https://edis.ifas.ufl.edu/publication/FA221

Production Methods

IN-GROUND

- https://edis.ifas.ufl.edu/publication/VH024
- https://edis.ifas.ufl.edu/publication/MG456
- https://edis.ifas.ufl.edu/publication/EP479
- https://edis.ifas.ufl.edu/entity/topic/urban_soils

RAISED BEDS

- https://edis.ifas.ufl.edu/publication/EP472

HOOP HOUSES AND HIGH-TUNNELS

- https://edis.ifas.ufl.edu/publication/HS1224

GREENHOUSES

- https://edis.ifas.ufl.edu/entity/topic/book_florida_greenhouse_vegetable_production_handbook
- https://edis.ifas.ufl.edu/entity/topic/greenhouse_production

- https://edis.ifas.ufl.edu/entity/topic/greenhouses
- https://edis.ifas.ufl.edu/publication/CV272

EDIBLE LANDSCAPING

- https://edis.ifas.ufl.edu/publication/EP146
- https://edis.ifas.ufl.edu/entity/topic/edible_landscapes

HYDROPONICS

- https://edis.ifas.ufl.edu/publication/HS405
- https://edis.ifas.ufl.edu/publication/HS1422
- https://edis.ifas.ufl.edu/publication/HS184
- https://edis.ifas.ufl.edu/entity/topic/hydroponic_gardening

AQUAPONICS

- https://edis.ifas.ufl.edu/publication/HS1252

VERTICAL FARMING

- https://edis.ifas.ufl.edu/publication/FR429

Market Channels

FARMERS MARKETS

- https://edis.ifas.ufl.edu/entity/topic/farmers_markets

COMMUNITY SUPPORTED AGRICULTURE (CSAS)

- https://sfyl.ifas.ufl.edu/agriculture/community-supported-agriculture/

AGRITOURISM

- https://edis.ifas.ufl.edu/publication/WC285

Non-Commercial Urban Agriculture

COMMUNITY GARDENS

- https://edis.ifas.ufl.edu/publication/EP124
- https://edis.ifas.ufl.edu/entity/topic/community_gardens

SCHOOL GARDENS

- https://edis.ifas.ufl.edu/publication/WC283
- https://edis.ifas.ufl.edu/entity/topic/school_gardens

Creating and Managing Nonprofit Organizations

- https://edis.ifas.ufl.edu/publication/FY1481
- https://edis.ifas.ufl.edu/publication/WC300

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