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Social and Community Benefits and Limitations of Urban Agriculture[1]

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Introduction

Some people living in the United States struggle to eat the daily recommended servings of fruits and vegetables, and nearly 13% are food insecure, meaning they lack consistent resources to purchase food (Lee et al., 2022; USDA, 2021). The prevalence of food and nutrition insecurity in our urban communities requires multifaceted community-level strategies to promote healthy food access and fruit and vegetable consumption (USDA, 2021).

Urban agriculture produces healthy foods that contribute to food and nutrition security. It plays a role in the social and cultural fabric of communities, contributes to community economic development, and promotes environmental sustainability (Santo et al., 2016). Urban agriculture has been identified not only as a strategy that promotes cooking and eating foods that support overall health and well-being, but also as a good way to build relationships among neighbors (Ilieva et al., 2022). Urban agriculture provides numerous benefits and support to local communities. However, there are also limitations to developing or expanding operations and programs (Daftary-Steel et al., 2015; Santo et al., 2016).

This publication provides an overview of the benefits of urban food production, along with potential challenges that can limit the success of these operations. This document is for community residents, urban land developers, community organizations, Extension agents, local government officials, nonprofit organizations, and urban farmers. Readers can use this document to examine how urban agriculture projects and initiatives might best integrate into their communities, and to be aware of the common pitfalls associated with the development and maintenance of urban agriculture efforts.

A Brief Overview of Urban Agriculture

Urban agriculture is a general term that refers to the production, processing, distribution, and sale of food within urban, suburban, and peri-urban areas for commercial, noncommercial, hobby, educational, or nonprofit purposes. Examples of these activities include:

- Food-producing gardens (home, community, school, institutional, market, and 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, aquaponics
- Farmers' markets, community-supported agriculture (CSA), and mobile produce trucks (Campbell & Rampold, 2021)

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For more information about the types of urban agriculture, as well as where they are found and what products they commonly produce, see the Ask IFAS publication What Is Urban Agriculture.

Key Themes Associated with Urban Agriculture

Research literature focuses on four primary ways that urban agriculture impacts communities: 1) health and well-being; 2) environmental sustainability; 3) social and cultural; and 4) economic and community development (Santo et al., 2016). Research on these themes encompasses both the potential benefits and limitations of urban agriculture. While it is important to recognize limitations associated with urban agriculture impacts, ongoing research reveals that social, health, and environmental benefits can accrue when urban spaces are used for food production.

Health and Well-Being

Benefits

Urban agriculture can improve food and nutrition security by increasing the availability of fresh and healthful foods (Hodgson et al., 2011). Intensive production strategies for fruit and vegetable or egg production can support a consistent supply of fresh local foods for urban residents. Community, school, and home gardening especially promotes fruit and vegetable consumption for those who directly participate (Diekmann et al., 2020). Youth involved in gardening programs spend more time during the week being physically active (Rees-Punia et al., 2017), and they are more willing to try new foods that they personally produced (Diaz et al., 2018).

Participation in home and community gardens can support cost savings on groceries and can supplement access to otherwise unaffordable foods (Algert et al., 2016; Athearn et al., 2021; Beavers et al., 2020). During times of larger food supply chain disruptions, such as pandemics or hurricanes, urban agriculture production can serve as a dependable source of local or regional foods to help residents meet their nutritional needs.

In addition to nutritional benefits, urban agriculture activities also support physical and mental health, and well-being benefits. Gardening and farming activities promote physical activity, time spent outdoors, and cognitive stimulation through engaging with nature (Rees-Punia et al., 2017; Suto et al., 2021). The predictable routine and goal-oriented tasks of farming and gardening have been shown to support positive outcomes in drug and alcohol rehabilitation programs (Hodgson et al., 2011). Outdoor activities can have therapeutic effects on mental health by providing a relaxing, stress-reducing environment while also creating a meaningful sense of belonging (Koay & Dillon, 2020; Santo et al., 2016).

Limitations

Without community buy-in and participation, food and nutrition security improvements associated with urban agriculture may be misaligned with community needs or fail to reach community members who are not actively or directly participating in urban agriculture activities (Poulsen, 2017). While urban agriculture can increase the availability of fresh fruits and vegetables, the typically higher cost for these products may make them unaffordable for some residents, or the products might not be appropriate for communities with culture-specific food preferences (Kato, 2013). The benefits of increased fruit and vegetable consumption may be limited to only those who participate in the gardening or farming activities, rather than the community at large (Alaimo et al., 2008).

Growing conditions can also create barriers to food production in urban agriculture. Urban soils can be of low quality, contain contaminants, and generally be difficult to grow edible plants in (Toor et al., 2018). In addition to making it difficult to grow food, the presence of soil contaminants and urban air pollution can also pose health risks to growers if precautions are not taken to reduce exposure (Santo et al., 2016).

Environmental Sustainability

Benefits

Urban agriculture increases plant, animal, and insect biodiversity and improves pollinator habitats that support fruit and vegetable production and soil health (Clucas et al., 2018). Planting tree crops and diverse plant species in urban areas naturally filters air and water, promotes carbon sequestration in soils, provides shade, and can help moderate high temperatures (Santo et al., 2016).

Urban agriculture also includes composting activities that range from small-scale piles that capture kitchen, garden, or farm scraps, to large-scale, municipality-run operations that collect green waste from urban residents. Capturing residential food scraps for local composting helps to reduce the municipal organic waste stream entering municipal landfills while producing nutrient-rich soil to support

plant growth and reduce the need for fertilizer applications (Brown et al., 2016).

Due to the convenient proximity to local consumers, urban agriculture projects might also support reduced greenhouse gas (GHG) emissions related to reduced food transportation, including air-freighted foods, although these impacts are likely negligible (Santo et al., 2016).

Limitations

The environmental limitations associated with urban agriculture exist for both in-ground soil production and high-tech operations such as hydroponics. In scenarios with low-quality urban soils, growers may lack the expertise to improve soil health, or they may struggle with implementing best management practices for irrigation, fertilizer, and pesticide use without adequate information or support (Beavers et al., 2021; Kaiser et al., 2015; Whittinghill & Sarr, 2021). In addition, urban growers display knowledge gaps on topics such as production systems, plant lighting, and root-zone environment. To address these knowledge gaps, growers rely on online sources, such as social media, that are frequent sources of misinformation (Solis-Toapanta et al., 2020). Lack of expertise in these areas could result in inappropriate resource inputs and make the system ecologically inefficient. Paradoxically, the water-, energy-, and resource-intensive systems associated with indoor hydroponic operations may actually increase GHG emissions, rather than mitigate them (Santo et al., 2016).

Social and Cultural

Benefits

The practice of farming, gardening, and preparing food encourages social interaction and cultural preservation. Community-based urban agriculture operations such as community gardens, market gardens, school gardens, and nonprofit urban farms promote social connections and community cohesion among participating residents (Ilieva et al., 2022). When gardens or farms are built and maintained by community residents, they can enhance neighborhood pride and strengthen a sense of place for residents (Alaimo et al., 2010; Firth et al., 2011).

Urban agriculture events, markets, and volunteer opportunities encourage a public exchange and a sense of community by engaging residents directly in intercultural and intergenerational interactions. Gardeners are likely to exchange growing tips, trade the foods they grow, and share meaningful food and cooking traditions (Firth et al., 2011; Poulsen et al., 2017). Community gardens have also been found to increase the perception of neighborhood safety and crime reduction (Poulsen et al., 2017).

Limitations

Potential issues in long-term sustainability of urban agriculture initiatives could result in inconsistent social and cultural benefits or create only short-term benefits. Without involvement from key community leaders, urban agriculture may not gain support from local community members, regardless of community food needs. When urban agriculture is developed by people who are not members of a community, the operation can be perceived as exclusionary (Alkon et al., 2019; Firth et al., 2011). Research has shown that urban agriculture contributes to gentrification, which is important to consider when seeking to develop or expand urban agriculture activities (Freedman et al., 2021; McClintock, 2013; McClintock, 2018; Weissman, 2015).

Economic and Community Development

Benefits

Entrepreneurial urban agriculture activities may attract community development and capital investment that create business opportunities for food production, distribution, and retail sales. Commercial and non-commercial farms, gardens, and healthy food retail operations support neighborhood beautification, offer inputs for value-added or cottage food products, and when developed through community participation, can support increased property values (Santo et al., 2016).

There are various career and employment opportunities associated with urban agriculture. For example, urban agriculture can attract populations with an array of skill sets for employment. These varied skill sets can be put to practical use in seasonal farm jobs, food marketing and retail, nonprofit organizations, local government, public health nutrition, education, and commercial businesses. Cultivating, marketing, distributing, and selling foods in urban areas supports agricultural skill development for emerging generations of farmers and food purveyors, and also has the potential to catalyze interest in agricultural careers (Vitiello & Wolf-Powers, 2014). Participating and working in urban agriculture strengthens transferable workforce skills for both adults and youth in teamwork, leadership, interpersonal relationships, project planning, management, and customer service (Santo et al., 2016). Urban agriculture has also been shown to provide job training and employment opportunities for individuals who struggle with consistent employment (Hodgson et al., 2011).

Urban agriculture sites such as school gardens offer an outdoor living laboratory to support youth education in agriculture, culinary skills, nutrition, and biological and environmental science. Urban agriculture programs can contribute to youth development by offering children, adolescents, and young adults opportunities to make positive contributions to their community and the environment, access adult mentorship, and practice leadership and life skills (Ober Allen et al., 2008). By integrating gardens into elementary, middle, and/or high school curricula, students benefit by engaging in outdoor learning while also learning practical life skills (Diaz et al., 2018). School gardens provide teachers with an outdoor classroom to enhance indoor lessons, particularly those that emphasize STEM education. Additionally, farms and gardens that operate over the summer can provide education, activities, and apprenticeships for youth when they are not in school (Santo et al., 2016).

Limitations

Commercial, non-commercial, and community-based urban agriculture can be expensive, time intensive, and difficult to develop and maintain (Dimitri et al., 2016). To be successful, these operations require specific expertise, significant staff time, and funding for labor that may not be available, especially if capital is scarce (Campbell et al., 2022). Even with initial investment capital, commercial urban farms may experience difficulty generating enough profit revenue to provide a significant number of livable-wage jobs (Daftary-Steel et al., 2015). For high-tech commercial operations, such as hydroponics or aquaponics, long-term economic viability or profitability is not yet well understood (Krastanova et al., 2022; Love et al., 2015). For non-commercial urban agriculture operations that center their activities around a social mission, support from grants or fundraising may be their sole revenue source, which requires expertise in grant writing and community fundraising skills (Dimitri et al., 2016).

As described above, urban agriculture has the potential to create social tension if the project is developed without involvement from key community leaders. Initiatives led by residents who lack financial, social, or political capital may face greater challenges overcoming structural barriers to accessing land, funding, and political support (Whittinghill & Sarr, 2021). Meanwhile, the gentrification associated with urban agriculture development could displace some residents (Alkon et al., 2019). With increasing property values in urban areas, economic sustainability and access to land can be tenuous (Campbell et al., 2022).

Conclusion

Activities such as community gardening, urban farming, and indoor food production have increased in popularity in metropolitan regions and have been frequently highlighted for their benefits to urban communities. Urban agriculture activities benefit the social and cultural richness of neighborhoods while contributing to economic and community development, unique opportunities for youth, and job training for those who are interested. Urban agriculture increases the presence of healthy foods in urban environments but does not necessarily mean that those foods are accessible to the people who need them most. While urban agriculture offers a number of benefits to the environment, including increased biodiversity, pollinator habitats, and nutrient-rich soils through compost production, these operations require mindful resource management throughout the food production cycle to prevent undue stresses on urban services, natural areas, and human resources.

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