

Promoting Urban Agriculture Through Local Ordinances

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Fall 2020

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Abstract

The rise of urban agriculture presents significant questions of regulation across levels of government, requiring localities, states, and federal agencies to adapt existing agricultural and land use policies to support urban farming. Concrete policies outlining zoning regulations, water usage, protection from nuisance complaints, commercial options, and further regulations not only provide stability to existing urban agriculture organizations but also incentivize increased investment in developing new projects and advancing longstanding projects. Particularly in deindustrialized communities and other environmental justice areas, urban agriculture offers an addition to local food systems and broader social benefits, such as education and crime reduction, both of which are relevant to climate justice goals. This report focuses on the logistics of supporting urban agriculture and a brief survey of potential societal benefits; further research is critical to connecting the promotion of urban agriculture to climate justice initiatives. Relying on case studies of local ordinances, state policies, and federal funding sources, best practices can be developed for communities looking to expand urban agriculture.

Introduction

Given the necessity of climate change adaptation and mitigation strategies that target social and economic justice along with environmental concerns, research is necessary to connect broader policy goals to local implementation opportunities. The Vision for Equitable Climate Action (VACA) acknowledges the “moral obligation” created by climate change to create effective policy solutions guided by improving equity for economically disadvantaged areas and communities of color [24]. For agriculture, related actions include securing the right to food and protecting livelihoods [24]. Legislative initiatives, including the Senate’s THRIVE agenda, have proposed a response to climate change that integrates racial and economic justice, and includes support for “local and regional food systems” and “sustainable, domestic production of healthy,

nutritious food” [20]. These proposals represent an effort by organizations and legislators to implement climate-related policies across the agricultural sector with equity in mind.

Urban agriculture specifically presents an opportunity to translate such broad objectives like agricultural reform or citywide adaptations into local, manageable solutions that can be implemented quickly. Urban agriculture can take many forms, including private gardens, community gardens, institutional gardens, demonstration gardens, edible landscapes, guerrilla gardens, hobby bee or animal keeping, market farms, urban or peri urban farms, or any combination of the above [10]. Additionally, each of these broader categories can include a variety of growing techniques, such as in-soil container, hydroponic, aquaponic, rooftop and interior, and vertical and horizontal gardens [10]. Existing research highlights the importance of urban agriculture from a cultural and social perspective. Specifically, urban agriculture has been linked to improved mental and physical health [4] and reduced crime [7]. Additionally, urban agriculture has increasingly been investigated as an opportunity for cities to become more self-reliant, potentially reducing the need to import food [8] or improving overall food security [21].

Given the importance of urban agriculture to addressing social inequities, this report provides policymakers, city residents, and advocates with a survey of urban agriculture policies. Rather than specific legislation, the report describes examples of successful local ordinances. The purpose of this work is to provide those interested in promoting urban agriculture with the contextual knowledge necessary to introduce urban agriculture-promoting policies to their cities and to improve upon existing policies and regulations.

Methods

Through a case study approach, I attempted to examine how legal regulations have contributed to or hindered the growth of urban agriculture. I analyzed local and state policies, particularly city ordinances, to determine best practices for policy makers and communities seeking to enhance urban agriculture. To select cities, I first consulted existing reports of urban gardens, found through searching “(“urban agriculture” OR “community gardens” OR “rooftop gardens” OR “CSA” OR “Community Supported Agriculture”) AND (“case study” OR ordinance OR law OR policy OR government)” on Google Scholar. From these reports, I connected the farmers or organizations (such as a school garden or rehabilitative gardening program) to the cities in which their farms were located and selected those cities that had urban

agriculture ordinances. After collecting an initial list, I searched “‘city name’ AND ‘urban agriculture ordinance’” for major U.S. cities in states that were not yet represented in existing reports, such as New Orleans and Austin. Only cities with a codified urban agriculture ordinance were selected so comparisons could be accurately made between what was legally permissible in each city. This report draws heavily from each city’s urban agriculture ordinance. Each city was entered into an Excel chart and each regulation coded into a separate column; I then grouped similar regulations into zoning, water usage, permit, commercial, animal, beekeeping, compost, and infrastructure regulations (Appendix 1). The report also surveys relevant state (Appendix 2) and federal legislation (Appendices 3 and 4) that implicates urban agriculture and draws upon the text of these legislative actions. State legislation was collected from the National Conference of State Legislatures database and federal legislation was collected from Congressional Research Service reports created in relation to the 2018 farm bill.

Findings

After reading and categorizing the urban agriculture ordinances of 20 cities, I divided the policy areas targeted into zoning laws, water usage, nuisance laws, and additional regulations, which included support for commercial agriculture, permitting processes, and brownfield restoration. These broader categorizations were chosen to group the regulations that target similar areas of interest together (i.e., beekeeping, animal regulations, and compost are all related to nuisances associated with urban agriculture). Various resources are also included in the below findings that are outside the scope of my research but may be useful to policymakers or urban agriculture advocates, such as in-depth legal documents and guides on specific agricultural practices. The following describes example ordinances in each of the four areas.

Zoning Laws

The first concern of urban gardeners is that of land use: determining what land is available within the city for agricultural uses. Cities are zoned with particular land uses in mind, often divided between residential, industrial, commercial, and other functions. Zoning impacts not only the legality of new farms, but also their costs, as water and electricity rates often vary by zoning designation [17]. Additionally, clarity in zoning can mitigate future conflicts between landowners, urban farmers, and neighbors, as well as foster local food production [22].

Rangarajan and Riordan find that farms with long-term land tenure agreements are more likely to install permanent infrastructure, such as a water system or greenhouse [17]. Land tenure also impacts individual farmers' crop selection process; if land is only available until the city finds the next highest and best use, farmers may limit their investment to fast-growing seasonal crops or be unable to dedicate the time and resources necessary to engage in organic production [10].

To promote long-standing urban agriculture projects, cities across the United States have adopted Urban Agriculture Ordinances (UAOs). These local ordinances frequently target zoning regulations, placing boundaries on farming on both public and private lands [22]. Such UAOs tackle zoning in two ways: building upon the city's existing zoning or creating a new district specifically for urban agricultural uses. While both present their own costs and benefits, making a conclusion as to which is preferable is highly context dependent. It is imperative that cities seeking to promote urban agriculture make adaptations to zoning laws to facilitate secure urban farming activities.

One common approach to is to broaden the allowable uses of pre-existing zoning districts within a city to encompass specific agricultural activities. Often, this is communicated as a chart or list of existing zoning designations, followed by the types and sizes of agricultural activities permitted (see Appendix 6 for an example, found in Boston Act 89). Of the twenty cities surveyed, all but two choose to expand their current zoning designations (Appendix1). When writing an ordinance, it is important to clarify the permitted, conditional, and accessory uses relevant to urban agriculture [22]. Permitted or principal land uses are the primary use of land within a zoning district and are permitted as-of-right; while accessory uses are also permitted as-of-right, they are incidental or subordinate to the main use [15]. Conditional uses require an application and decisions from municipal governments, depending on the city's exact processes [15]. As represented in Appendix 1, less common but related uses are often designated as accessory uses, with specific restrictions on the percentage of land or number of structures related to that use allowed per farm. For example, beekeeping and composting are often considered accessory uses, preventing large-scale apiaries or composting centers from dominating land parcels. The varying permissibility of specific activities often depends on their size and intensity [10], allowing the city's planning department to respond to the broad diversity of urban agriculture needs. However, this variability can present challenges for the local governing body: in their review of the process establishing an UAO in Florida communities,

Spencer et al. found that all three cities struggled with structuring categories of urban agriculture uses, along with developing definitions for each use [22]. Relying on pre-existing zoning also allows the city to preserve specific features. For example, Boston, a city with considerable historical significance, requires an additional review of urban agriculture occurring in pre-designated Historic Districts [3]. The eighteen cities in A1 following pre-existing zoning districts to allow urban agriculture to incorporate variations, but are broadly similar.

Another less common approach is to create an entirely new zoning district specifically for agricultural uses within that city. This designation can be accompanied with the above expansion of existing zoning districts, as was done in Cincinnati, OH; Cleveland, OH; and Madison, WI, or without such expansion, as was done in Kansas City, MO and Chattanooga, TN (Appendix 1). Cleveland's urban garden zoning district, for example, permits community and market gardens, allowing the city to reserve land for garden use [10]. The rezoning process involves public notice and hearings, potentially delaying the introduction of urban agriculture [10] but may provide additional security to farmers in these districts. Other UAOs within this category are broader: Chattanooga's Urban Agricultural Zone allows for "dairying, grazing... poultry and livestock, horticulture, viticulture, floriculture, forest and woods" (Chattanooga Code of Ordinances §28.38.453), among other traditional uses. In order to achieve this designation, the parcel of land must be at least five acres, limiting the opportunities available for smaller urban gardens, as Chattanooga does not otherwise allow for urban agriculture. Creating specific land use designations for urban agriculture can help to foster the long-term relationship between local officials and farmers necessary for successful widespread urban agriculture [22]. However, creating one urban agriculture land-use category risks oversimplifying the diversity of scale, intensity, and purpose found in urban farming activities [10]. The hybrid approach of both creating an independent zoning district and allowing urban agriculture in pre-existing districts may remedy these risks and provide greater flexibility based on farmer needs.

When drafting an UAO, it is critical for city governments to work with the farmers to best facilitate urban agricultural development. Both zoning mechanisms offer relative advantages and disadvantages that present themselves in different communities, requiring in-depth planning before one is selected over another. Once an easily comprehensible and widely accessible policy is agreed upon, zoning for urban agriculture can increase civic participation of vacant property owners, improve neighborhood character, and reduce "squatter" farms [17]. UAOs are also

critical in shifting municipal government outlooks by transforming agriculture from an “interim” use of land to a planned portion of the city [10]. Proactive municipal policies are therefore necessary to promote and protect urban agriculture.

Water Usage

Urban farms require water, typically much more than the average apartment building or corporate headquarters found in a city. However, many cities still rely on the underlying zoning to determine water rates, leading farmers to pay expensive residential water rates and fees [17]. Additionally, cities often do not make exceptions for sewage and stormwater fees, although urban farms do not contribute to these flows and can even benefit city sewers and water treatment facilities by reducing stormwater runoff [17]. Urban agriculture ordinances often do not address municipal services, including water, leading to expenses for farmers. Given the relatively small number of cities that have adopted regulations specific to water usage for urban agriculture, this section will present a series of case studies describing innovative techniques for facilitating less expensive or arduous water access.

San Francisco, CA

San Francisco faces balancing the desire to promote urban agriculture, a water-intensive process, with frequent droughts across the state. In 2010, the city passed a Water Efficient Irrigation Ordinance that outlined specific regulations to conserve water and prevent runoff and that applies across the city to all projects of 500 square feet or more (San Francisco Code of Ordinances §63.1-8). Less intensive projects, such as a landscape with designated low water use plants, follow Tier 1 requirements through a self-certification process (§63.6.1). More intensive or larger projects must comply with Tier 2 requirements, including a city-approved application process and submission of water use and construction documents (§63.6.1). Although the city has developed a guide to 150 plants that are considered low water use, the document only includes shrubs, perennials, ferns, grasses, annuals, succulents, palms, and vines—not food-producing agriculture [19]. Many urban farmers will therefore have to comply with detailed requirements; however, through that compliance, they will likely reduce their water use and eventual costs.

San Francisco’s Public Utilities Commission also provides grants for urban farmers to more affordably access water. For example, the Community Garden Irrigation Meter Grant

Program can provide a one-time waiver of up to \$12,000 towards installing a new irrigation water service and meter [18]. Additionally, the Backflow Prevention Device Rebate offers up to \$1,300 towards a required backflow prevention device [23]. Through these grant programs, farmers can secure local funding for the most expensive initial costs associated with water use.

Stockton, CA

Stockton, CA has taken a different approach, allowing urban farmers to connect their water service to neighboring lots. Specifically, the city's UAO provides an exception for community gardens to receive water service through a pipe or hose connection to a different lot or parcel (Stockton Municipal Code §13.04.015). The farmer must still install a backflow prevention device and water meter (§13.04.015), requiring farmers to pay for upfront costs related to water use. However, by allowing farmers to rely on neighboring water connections, they can reduce the cost of installing a main water line.

Atlanta, GA

In Atlanta and the broader Fulton County area, urban gardens are allowed to use an irrigation meter in addition to a traditional water meter. The city's municipal code requires that irrigation systems are designed to reduce runoff and water waste (Atlanta Code of Ordinances §154.74.3). This requirement is similar to San Francisco's Water Efficient Irrigation Ordinance, so Atlanta farmers are also likely to reduce water consumption through sustainable and city-approved irrigation techniques. To better address the specific water usage of urban agriculture, the city allows for irrigation meters, which exclude water used from typical sewer charges (§154.74.5). However, the city still requires urban farmers to acquire backflow preventers (§155.66), creating a significant additional charge. The combined impact of decreased water use through irrigation techniques, reduced fees from sewer charges, and increased initial costs for backflow preventers may allow farmers to save money, but Atlanta's programs are not as comprehensive as those in other cities.

Kansas City, MO

Kansas City has created new land uses specifically for urban agriculture, designating certain parcels as Urban Agriculture Zones (UAZ). This designation allows the city to apply certain incentives within only these districts, including a water incentive. Grower UAZ areas are actively engaged in growing produce, producing value added agricultural products, raising livestock, or aquaculture (Kansas City Code of Ordinances §74.201). Within these districts,

Kansas City applies incentives limited to that area to encourage urban agriculture in pre-determined regions. One such incentive is allowing the Director of Water Services to reduce the actual costs that a small business within a Grower UAZ would be expected to pay (§74.213). Such small businesses can include farm stands, CSAs, or other forms of selling agricultural products, as approved by the Missouri Department of Agriculture (§74.208). The city has established such a program, called KC Grow, which provides grants for urban gardens towards rainwater and stormwater catchment systems, municipal water tap line and hydrant installation, spigot meter and PVC connection, water pumping systems, and drip irrigation [13]. Grants can be up to \$100,000 and must follow a water audit, where the Kansas City Community Gardens team evaluates water use, plot size, and rainfall before advising the farmer on best water practices and technical equipment needed [13]. These grant programs have allowed gardeners and farmers to better access and afford necessary water infrastructure, as well as implement conservation strategies to reduce initial charges and long-term water use. However, the program will not cover actual water bills [13], leaving farmers to finance regular monthly water costs.

Cleveland, OH

Community gardens in Cleveland are able to apply for permits from the city's Division of Water, which has the power to reduce water rates in summer. The city's Summer Sprout Program allows gardens to purchase a permit for access to hydrants for irrigation through the summer growing season, defined as from May to October [5]. Extended permits are also available from March to November, or for an annual term [5]. Water consumption is limited to two metric cubic feet per two-acre garden per growing season and is charged at the water rate based on the zone in which the garden is found [5]. This provision offers both a reduced hydrant rate relative to non-agricultural users and allows growers to avoid some of the costlier initial fees associated with water, such as purchasing a backflow preventer. The city also offers a grant program, Gardening for Greenbacks; the grants of \$3,000-\$5,000 are used for hoop houses, raised bed construction, and irrigation equipment and rain barrels [6]. Cleveland has therefore made significant efforts to lower the cost of providing water for urban agriculture uses, from both an annual rate perspective and an infrastructure perspective.

Austin, TX

Austin does not provide any financial relief for water rates or infrastructure. Instead, the city requires that all urban farms follow pre-existing water conservation practices (Austin City

Code §25.2.863). Such requirements include prohibiting certain activities likely to waste water, such as operating a broken irrigation system, or following specific watering schedules during droughts (§6.4.12-13). However, in support of urban agriculture, drip irrigation and vegetable gardens are exempt from drought response regulations, allowing farmers to continue their typical watering schedule (§6.4.14). By applying most citywide water management strategies to urban agriculture, with the exception of the most restrictive ordinances that could negatively impact agricultural productivity, the city encourages farmers to use less water and therefore reduce their own monthly water costs.

Summary: Water Usage

Although the method by which cities provide support to farmers in managing water costs varies, the challenge of affording the large amounts of water necessary for farming provides an opportunity for cities to create innovative support systems for farmers. These strategies generally target the initial costs associated with connecting a new farm to the city's water infrastructure or the ongoing costs of water, by promoting reduced water usage or by reducing water rates for urban gardens. However, farmers themselves can also design innovative solutions to the rising cost of water by relying on capturing rainwater [14]. Such a strategy can also reduce utility bills, as on-site rainwater does not require the energy used in pumping and mechanically treating city water [14]. For a more in-depth explanation of the various strategies farmers can pursue to better capture rainwater, see "Planting Abundance: Alternative Water Sources for Urban Farms" in *Sowing Seeds in the City* [14].

Nuisance Laws

As farming in the city involves intensive land use and inherently impacts surrounding properties, farmers must be cognizant of the needs of the surrounding community. By designing the farm in such a way that it enhances the existing environment, farmers can avoid challenges via nuisance laws from neighbors. Although specific charges vary, nuisances are typically defined as when one uses their property in a way that "unreasonably interferes' with another's use or enjoyment of his own land" [2]. Since certain necessary farming activities produce noise or odor, it can be difficult to entirely reduce nuisances. However, legal challenges are time-consuming and can bankrupt developing farms, so it is in the best interest of the farmers to

follow all regulations to avoid such disputes. One mechanism cities have adopted to minimize farming-related nuisances is the regulation of compost, infrastructure, and animals.

Every city surveyed in this report includes within their UAO some form of compost regulation. Some are more specific or stringent than others: Philadelphia only requires that any compost bins must be rodent-resistant and located “as far as practicable” from other buildings (Philadelphia Code §14.603.15), while Boston outlines maximum sizes of composting structures, setback distances, and lot coverages (Boston Municipal Code §89.9). Improper composting can lead to odors and pests, causing some cities to create compost standards [10]. Compost can also be a source of income for the city. San Francisco has had a composting program since 2004 that allows the city to accept, process, and sell food scraps, food-soiled paper, and yard waste to local garden-supply stores [10]. As existing city soils are unlikely to include the nutrients sufficient for effective farming, these compost regulations can help farmers access more sustaining soils without compromising the farm’s relationship to neighbors or the city’s character.

Additionally, every city surveyed regulates farm-related infrastructure. Many require specific signage or parking spaces (Appendix 1). Ordinances also include regulations on larger farm structures, such as greenhouses, hoop houses, and sheds, and are often articulated as design guidelines. For example, Minneapolis’s UAO includes a development standards section that requires urban farms to screen all equipment and supplies, prohibits overhead lighting, and sets a maximum on parked vehicles (Minneapolis Code of Ordinances §20.536.20). These regulations serve to create uniformity and avoid potential light-related complaints. Design guidelines vary by city and often require compliance through a permitting process, particularly for larger farms. Cities must also be cognizant of how existing regulations do not meet the needs of urban garden development and infrastructure. In New Orleans, urban gardens prior to 2015 were not able to have buildings, electricity, or lights depending on pre-existing zoning; reforms later exempted farm sheds from regulations on lots that are zoned for agriculture [17]. It is therefore necessary for cities to balance design guidelines that retain neighborhood character with the practical needs of farm buildings.

Finally, many cities regulate animal husbandry in urban farms, often based on the space available. For example, New Orleans allows animals depending on lot area and animal type, so long as animals do not cause any “adverse impact” on another property (see Appendix 7, New Orleans Comprehensive Zoning Ordinance §20.3.C.7). Stockton, CA allows for a wider variety

of animals depending on zoning district, setback from property lines, and minimum lot size (Stockton Municipal Code §16.80.060). For example, if a property owner in the residential estate or industrial general districts has at least one acre of land, they are able to keep horses, cows, bison, or similarly sized animals (§16.80.060). Many cities limit animal keeping to just hens or other small animals. Other cities and municipalities outright ban the keeping of animals, including Pasco County, Atlanta, Chicago, Battle Creek, Detroit, Cincinnati, and Philadelphia (Appendix 1). These regulations prevent nuisance suits from being introduced by prohibiting the animals most likely to become a noise- or odor-related nuisance.

However, city regulations cannot entirely prevent neighbors from claiming a nearby farm poses a nuisance, so additional protection in state legislation may be required. For example, Kansas City's UAO includes a note that no person should be prevented from filing a private nuisance action "against an offensive agricultural use" (Kansas City Code of Ordinances §88.312.02). Right to Farm laws, adopted nationwide, can protect farmers from nuisance laws by establishing standard agricultural operations that, should a farmer meet, will exempt them from nuisance suits [2]. These laws vary by state and can either strictly protect farming operations that existed before neighboring development or any farming operation, regardless of which property owner was first there [2]. Only the second regulation is applicable to urban agriculture, which usually is developed years after neighboring residential or commercial buildings. Given that Right to Farm laws were often first created to protect formerly agricultural communities from increasing suburbanization, state Supreme Courts such as those in Washington and Michigan have not extended these rights to urban agriculture [9]. Although an in-depth exploration of the legal context of Right to Farm legislation applied to urban agriculture is outside the scope of this report, it is important for farmers to understand their state's legislation. For a specific case study of how Right to Farm laws can be negotiated in various cities, see "A Case Study: Zoning and Urban Agriculture in Michigan" from *Sowing Seeds in the City* [16]. The National Agriculture Law Center provides a map of state Right to Farm laws to assist in this exploration.

Additional Regulations

Whereas the previous sections represent the most pressing concerns of local legislators and farmers in developing policy, many other areas relevant to the promotion of urban agriculture merit discussion. Three topics of specific concern are the regulation of commercial

activities, the design of a permitting process, and the enhancement of brownfields through urban farming. This section briefly surveys how cities have approached these topics.

Commercial Regulation

Commercial urban farms can range from small farm stands, to larger farmers' markets, to participation in a CSA, to fully operational businesses. The ability of a new farm to sell its products often depends on a variety of factors, many of which are tied to local economic and social needs. However, citywide regulations can affect multiple areas of concern related to sales. For example, in Cincinnati, in residential districts on-site sales require a submission of a management of business plan to the city (Cincinnati Code of Ordinances §1422.09). Additionally, sales are limited to 30 days a year, only allowed from 7:00 A.M. to 7:00 P.M., and farm stands are prohibited (§1422.09). Similarly, Somerville, MA requires that sales occur between May 1st and October 31st of each year, with a maximum of 25 sale days annually (Somerville Code of Ordinances §7.12.25). Other cities have fewer regulations, allowing for a range of commercial activities across zoning districts. In Detroit, on-site farm stands are allowed as an accessory use (Detroit Code of Ordinances §61.12.327), as well as farmers' markets on lots used as religious institutions, educational institutions, schools, outdoor recreation facilities, and neighborhood centers (§61.12.411). There are no regulations on specific sale seasons or times, offering farmers more flexibility in dictating their commercial schedules. All cities surveyed include some regulation on the sale of crops or agricultural products (Appendix 1), but each range in specificity and flexibility. Although each city must create regulations that mirror the existing small business landscape, farmers often benefit from UOAs that allow for diverse commercial opportunities.

State and federal governments have taken particular interest in the sale of urban agricultural products. In New Jersey, AB 2859 provides for tax exemptions to incentivize urban agriculture (Appendix 2). Additionally, it allows any nonprofit organization to sell fresh fruits and vegetables both on- and off-site, as long as the revenue generated is used to support the nonprofit (N.J.S.A. § 48:35-21:12). This state regulation can help noncommercial farms, such as those supporting education or job training, to earn income regardless of city zoning requirements for commercial farms. In Texas, HB 2994 authorizes the Texas Agricultural Finance Authority to establish an urban farm microenterprise support program by providing loans of up to \$25,000 to

support innovation in urban agriculture businesses (Tex. Agriculture Code § 44.002). These loans can support emerging businesses that develop new processes and technology or forms of agriculture suited for urban settings, presenting newer farm operations with innovative revenue strategies.

The 2018 federal farm bill, building upon former proposed urban agriculture-related federal legislation (see Appendix 3), expanded support for urban agriculture by allowing urban, indoor, and emerging agricultural enterprises to apply for grants that assist in the development and commercial viability of farms [11]. For example, the Local Agricultural Marketing Program supports the development of farmers' markets, including capacity building and community development training and technical assistance [12]. The Federal-State Marketing Improvement Program supports research into product distribution, cooperative development, market barriers and opportunities, and product development [12]. In 2019, the University of Kentucky received a grant to study incentive programs to connect local food sources to restaurants [25]. Farms in Philadelphia, San Francisco, New Orleans, Detroit, Portland, Austin, New York, and Cleveland are taking advantage of opportunities to sell to local restaurants or grocery stores [17]; the expansion of these markets can increase revenue sources for larger urban farms. (For a full list of USDA grants applicable to urban agriculture, see Appendix 4).

Permitting Process

Many of the surveyed cities, particularly those that rely on pre-existing zoning, require permitting processes for farms in specific districts or above certain sizes. For example, in Atlanta, farmers are required to have a permit for an urban garden in zoned residential districts. The application for a Special Administrative Permit includes a project summary, landowner authorization, a site plan, proposed drawings or photographs, and photographs of the existing land [1]. These documents must include disclosure of chemical or pesticide use, sediment and erosion control plans, and noise- or odor-generating activities [1]. Permits must be renewed annually and cost \$30 each year [1]. The city's AgLanta website provides resources, including an example of all completed documents required, to help farmers begin this process.

Permit processes may also consider the farm's impact on the surrounding location. In Seattle, urban farms in residential zones over 4,000 square feet require an administrative conditional use permit (Seattle Municipal Code §23.42.051). The farmer must submit both a

management plan and a description of the farm's potential impacts and mitigation strategies, including possible effects on water quality, traffic, visual impacts, chemicals, or noise (§23.42.051). Permit applications are generally similar across cities, with most requiring data about the farm's activities and environmental and community impacts. While these permits do create additional requirements for new farmers, they also offer an opportunity for farmers to interact with the local government in the initial stages of development.

Brownfield Restoration

Restoring brownfields and other environmentally degraded spaces allows urban farmers to capitalize on less expensive land, but only when done to minimize health and environmental risks. Some cities are adopting policies to connect urban agriculture to these vacant properties. For example, a pilot program in Milwaukee has partnered with the US EPA to remediate a former paint factory and fund raised-bed construction [10]. This process occurs with community input, as only areas that local neighborhood organizations designate are even considered [10]. In Kansas City, MO, farmers and organizations can request support for necessary soil testing, training, and technical assistance, which is facilitated by the City Planning and Development Department [10]. In Philadelphia, the Mayor's Office of Sustainability encourages raised beds over cleanup to reduce costs for farmers but does not have a formal brownfields redevelopment strategy [10]. City initiatives have largely been funded by federal grants, as cleanups can be cost prohibitive. While cities can recommend strategies to promote food safety techniques, absent additional funding, many are unable to fully support farmers in redeveloping brownfields.

Summary

As the case studies illustrate, it is impractical to write a single UAO that would sufficiently meet the needs of each community. Likewise, endorsement of one form of UAO over another can only be made in the context of a specific city. However, the research reveals that while differences among specific legislation exist, the most foundational aspect of promoting urban agriculture is providing clear land use policies, given that every city surveyed includes detailed explanations of which uses are permitted in each zoning district. Without a fixed process for individuals and community organizations to earn and maintain the rights to grow products, it will be next to impossible for a city to truly promote a network of urban agricultural endeavors. While certain regulations, such as improved access to or a reduction in price of water, can attract

farmers, this report reveals that citywide recognition and support of land use rights are the dominant concerns of farmers [17]. The right to use land for urban agriculture without challenges from development or nuisance complaints, as well as sell agricultural products profitably, are key factors in a farmer's decision to invest capital and labor into a new farm.

Beyond the local scale, support for urban agriculture is necessary at various levels of government. While thirteen states have adopted urban agriculture-promoting legislation, more opportunities exist to further incentivize cities to adopt UAOs and individuals or organizations to begin farming in those cities. Federal financial support currently focuses heavily on market strategies and early research into urban agriculture and other innovative techniques; future legislation and funding allocation could therefore target expanded support and financial services for urban farmers, more widespread brownfield restoration opportunities, and the development of local food systems. A summary of local, state, and federal opportunities for supporting urban agriculture is listed in Appendix 5.

Recommendations

Policy recommendations listed in this research are synthesized from a wide variety of cities with varying characteristics and can therefore be applicable in a number of cities nationwide; still, the best arbiters of effective urban agriculture policy are the farmers themselves. Given that many of the UAOs surveyed have undergone revisions following community complaints, it is clear that cities seeking to promote urban agriculture must do so with the input and needs of local farmers in mind. The following recommendations represent starting points for local legislators and other interested parties to begin supporting urban agriculture in their communities:

- Formally support the zoning of urban agriculture as a primary/accessory use or in its own district, rather than an interim use
- Plan in tandem with the city's water utility services to improve access to lost-cost water for urban gardeners
- Develop regulations for compost, infrastructure, and animal keeping in an initial Urban Agriculture Ordinance to prevent future complaints or conflicts
- Allow for the sale of commercial agricultural products, either on- or off-site

- Create a permitting process tailored to the specific needs of the city (e.g., maintaining historical character of specific landmarks, meeting citywide sustainability goals)
- Seek out partnerships and funding from state and federal sources when possible and applicable (see Appendix 4 for a brief description of available federal funds)

Appendices

Appendix A1: City Urban Agriculture Ordinances

City	Based on pre-existing zoning	Creates new zoning designation	Modifies water usage laws	Requires permit	Allows for commercial sales	Allows animals ¹	Allows beekeeping	Regulates compost	Regulates infrastructure ²
San Francisco CA	X		X	X	X	X	X	X	X
Stockton CA	X		X	X	X	X	X	X	X
Pasco County FL	X			X	X			X	X
Atlanta GA	X		X	X	X			X	X
Chicago IL	X			X	X		X	X	X
New Orleans LA	X			X	X	X		X	X
Boston MA	X			X	X	X	X	X	X
Somerville MA	X			X	X	X	X		X
Battle Creek MI	X				X			X	X
Detroit MI	X			X	X			X	X
Minneapolis MN	X			X	X	X	X	X	X
Kansas City MO		X	X	X	X	X		X	X
Cincinnati OH	X	X			X			X	X
Cleveland OH	X	X	X	X	X	X	X	X	X
Philadelphia PA	X			X	X			X	X
Chattanooga TN		X		X	X	X		X	X
Austin TX	X		X	X	X	X			X
Seattle WA	X			X	X	X	X	X	X
Madison WI	X	X		X	X	X			X
Milwaukee WI	X			X	X	X	X	X	X

¹ “Animals” often refers to poultry fowl, but in some cities (notably, Stockton, CA and Kansas City, MO) animals can include cows, sheep, goats, and similarly sized farm animals. In most cities, however, hogs and pigs are expressly not allowed.

² “Infrastructure” refers to farm structures, such as sheds, coops, and greenhouses, as well as parking and signage.

Appendix A2: Relevant State Legislation³

State	Year	Bill	Description
California	2013	AB 551	Allows counties or cities to create Urban Agriculture Incentive Zones; offers tax exemptions for landowners of small-scale urban agriculture
District of Columbia	2015	B 158	Allocates funding for Urban Farming and Gardens Program, Urban Farming Land Leasing Initiative, and property tax abatement for urban agricultural uses
	2015	B 677	Creates Food Production and Urban Gardens Program that compiles list of vacant lots for use as urban gardens
Hawaii	2013	HB 560	Authorizes Hawaii housing finance and development corporations to provide incentives for housing projects that incorporate urban gardening
Kansas	2015	SB 280	Allows land devoted to agricultural use in housing sites to be appraised as agricultural usage
Louisiana	2015	HB 761	Allows political subdivisions to create Urban Agricultural Incentive Zones; allows for contracts for agricultural uses of vacant, unimproved, or blighted land
Maryland	2010	HB 1062	Authorizes Baltimore Mayor and City Council to grant a tax credit for urban agricultural property
Minnesota	2018	S 1317 *	Provides grants to cities with more than 10,000 residents to increase urban agriculture production capacity
Missouri	2019	HB 571 *	Authorizes a tax credit for individuals, partnerships, or corporations implementing urban agriculture in a food desert
	2016	HB 2006	Provides grant funding for community garden projects in a county with more than 950,000 residents; creates grants for innovative agriculture, including urban and suburban projects
	2013	HB 542	Established urban agriculture zones on blighted areas of land; provides for property tax incentives, reduced water sourcing costs, and reduced sales taxes on agricultural products
Nebraska	2016	LB 699	Allows municipalities to designate urban agriculture as a highest and best use for property conveyed by a land bank
New Jersey	2011	AB 2859	Authorizes sale and use of unneeded public property to nonprofits for urban gardening and farming; exempts nonprofits from property taxation and authorizes commercial activities on land
Oklahoma	2010	HB 2774	Creates Oklahoma Certified Healthy Community Advisory Committee; criteria for eligibility includes establishment of community gardens and support for farmers' markets
Texas	2011	HB 2994	Authorizes Texas Agricultural Finance Authority to establish urban farm microenterprise support program
Utah	2012	SB 112	Allows land in Salt Lake County to be assessed at lower property rates if land is used to grow crops for sale at a profit

³ An asterisk (*) refers to legislation that is relevant to the promotion of urban agriculture but was not passed.

Appendix A3: Relevant Federal Legislation

Bill or Act	Year	Description
Local and Regional Farmer and Market Support Act (H.R. 8096)	2020	Directs coronavirus pandemic aid to local and regional food economies, prioritizing BIPOC farmers and low-income communities
2018 Farm Bill (Agriculture Improvement Act of 2018, P.L. 115-334)	2018	<p>Expands existing agricultural programs to “urban, indoor, and other emerging agricultural production”</p> <p>Directs USDA to conduct a follow-up Census of Agriculture on community gardens and farms in urban areas and suburbs, rooftop farms, outdoor vertical production, high-tech vertical technology farms, green walls, indoor farms, greenhouses, and hydroponic and aquaponic facilities</p> <p>Expands support for urban farming through marketing and promotion, business assistance and agricultural research, rural and community development, nutrition and education, and farmland conservation</p> <p>Creates Office of Urban Agriculture and Innovative Production at USDA, Urban Agriculture and Innovative Production Advisory Committee, and Urban, Indoor, and Emerging Agricultural Production, Research, Education, and Extension Initiative</p>
Urban Agriculture Act of 2018 (S. 3005) *	2018	<p>Establishes Office of Urban Agriculture and Innovative Production and Urban Agriculture and Innovative Production Advisory Committee</p> <p>Authorizes \$5 million in annual funding</p> <p>Requires office to develop pilot programs that provide assistance towards increasing community compost, reducing food waste, and promoting healthy food consumption and good environmental practices</p> <p>Provides funds for soil testing and remediation assistance</p> <p>Establishes Urban, Indoor, and Emerging Agricultural Production, Research, Education, and Extension Initiative</p>
Healthy, Hunger-Free Kids Act of 2010 (P.L. 111-296)	2010	<p>Provides cash, commodity, and other assistance to support child nutrition, includes provisions supporting local food systems</p> <p>Authorized farm to school program, provides \$5 million annually for technical assistance and research</p>

Appendix A4: Federal Funding Sources

Funding Source	Description	Amount	Federal Agency
Local Agricultural Marketing Program (LAMP)	Allocated to Farmer's Market Promotion Program, Local Food Marketing Promotion Program, and Value-Added Producer Grant	\$50 million annually	United States Department of Agriculture (USDA)
Specialty Crop Block Grant Program	Provides block grants to states for marketing and production, education, research, pest and plant health, food safety, and production supporting locally grown specialty crops, agritourism, school and community gardens, farm to school programs, and horticultural therapy	\$85 million annually	USDA
Community Food Products Competitive Grants	Funds projects that address basic food access for low-income individuals and families	\$5 million annually	USDA
Federal-State Marketing Improvement Program	For state colleges, universities, and departments of agriculture to support research addressing marketing and distribution of US products	\$1.2 million annually	USDA
Food Safety Outreach Program	Competitive grants to projects that implement food safety training, education, extension, outreach, and technical assistance for owners of small and medium-sized farms	\$8 million for FY2020	USDA
Agricultural Management Assistance	Funds voluntarily addressing issues of water management, water quality, erosion control, and other risk-mitigation projects	\$3.7 million in 2019	USDA
Farming Opportunities Training and Outreach	Funds Beginning Farmer and Rancher Development Grant Program and Outreach and Assistance to Socially	\$30 million in FY2020, increases gradually to	USDA

	Disadvantaged and Veteran Farmers and Ranchers	\$50 million in FY2023	
USDA Farm Loan Programs	Includes Farm Operating Loans, Farm Ownership Loans, Microloan Program, Beginning Farmer Loans, and Farm Credit System Loans	Specific ranges vary; generally \$1-2.8 billion	USDA
Urban Agriculture and Innovative Production Assistance	Funds general UAIP Grants and Community Compost and Food Waste Reduction Cooperative Agreements	\$25 million annually	USDA
Urban, Indoor, and Other Emerging Agricultural Production, Research, Education, and Extension Initiative	Support research, education, and extension activities that facilitate urban, indoor, and other emerging agricultural production; includes remediation of contaminated sites, integrated pest management practices, and identifying unique urban agricultural factors	\$10 million annually	USDA
Food and Agriculture Service Learning Program	Funds increasing food, garden, and nutrition education for school cafeterias and classrooms, complementing farm to school programs and school lunch/breakfast programs, advancing nutrition education, and increasing community engagement opportunities	\$1 million annually	USDA
Small Business Innovation Research Program	Funds innovations that contribute technological advances and address challenges in US agriculture or rural development	\$37 million annually	USDA
Sustainable Agriculture Research and Education	Funds projects that enhance low-input farming systems and competitive research grants	\$35 million annually	USDA
Farmers' Market Nutrition Programs	Administers benefits redeemable through the WIC Farmers' Market Nutrition Program and	\$39.1 million combined	USDA

	the Senior Farmers' Market Nutrition Program		
Micro-Grants for Food Security	Funds projects that increase quality and quantity of locally grown food through small-scale gardening in food-insecure communities	\$10 million annually	USDA
Community Development Block Grant	Supports certain food related activities that contribute to neighborhood revitalization, housing rehabilitation, and community and economic development efforts	\$145 billion	Department of Housing and Urban Development (HUD)

Appendix A5: Summary of Federal, State, and City Roles in Promoting Urban Agriculture

Division of Responsibilities		
Federal Government	US EPA	Financing brownfield redevelopment, providing grants to state and local governments
	USDA	Administering the provisions of the 2018 Farm Bill, disbursing grants/loans as specified in A4
	2018 Farm Bill	Designate funds for grants/loans applicable to urban agriculture, designate funds for research related to urban agriculture
State Governments	Agencies, state legislatures	Provide incentives for urban agriculture in cities, authorize statewide tax credits/exemptions; see A2
City Governments	Municipal elected officials	Write and pass Urban Agriculture Ordinances for their city, make revisions as necessary
	Planning/zoning departments	Approve permits, regulate zoning districts, hold hearings if necessary
	Utility departments	Offer utility rate incentives, provide utilities to farmers

Appendix A6: Sample Urban Agriculture Ordinance Use Regulations

USE REGULATIONS: URBAN FARM, ROOF LEVEL AND ROOFTOP GREENHOUSE				
Zoning	Open Air			Rooftop Greenhouse
	Small (less than 5,000 sf)	Medium (5,000 sf - 1 acre)	Large (greater than 1 acre)	Any Size
Residential (i.e., 1F, 2E, MFR)	Allowed	Conditional	Conditional Use	Conditional Use
Small-scale Commercial (i.e., L, LC, MFR/LS)	Allowed	Conditional Use	Conditional Use	Conditional Use
Large-scale Commercial (i.e., NS, B, CC, EDA)	Allowed	Allowed	Allowed	Allowed
Industrial (i.e., I, M, LI)	Allowed	Allowed	Allowed	Allowed
Institutional (i.e., IS, NI, CF)	Allowed	Allowed	Allowed	Allowed

From Boston Zoning Code § 89.5.1

Appendix A7: Sample Urban Agriculture Ordinance Livestock Use Regulations

TYPE OF LIVESTOCK	MINIMUM LOT AREA PER ANIMAL
Horse, mule, cow, or llama	43,560 square feet (1 acre)
Goat or sheep	14,520 square feet (1/3 acre)
Swine	4,356 square feet (1/10 acre)
Rabbit	50 square feet
Duck or other fowl (excluding chickens)	50 square feet
More than 6 chickens	50 square feet per chicken after first 6

From New Orleans Comprehensive Zoning Ordinance §20.3.C.7

References

- [1] “Application for a Special Administrative Permit.” *City of Atlanta Office of Planning*, 2015, <https://drive.google.com/file/d/17XgpOwW0NrS-EcqbX2WZHicoRzhSxQyw/view>.
- [2] Beidel, Jessica. *Pennsylvania’s Right-To-Farm Law: A Relief For Farmers Or An Unconstitutional Taking?* Dickinson School of Law of the Pennsylvania State University, 1 Nov. 2005, https://pennstatelaw.psu.edu/_file/aglaw/Right_to_Farm_Law_files/Beidel.pdf.
- [3] Boston Redevelopment Authority. *Article 89 Made Easy: Urban Agriculture Zoning For The City of Boston*. 2014, <http://www.pvpc.org/sites/default/files/doc-municipal-strategies-increase-food-access2594.pdf>.
- [4] Branas, Charles C., et al. “A Difference-in-Differences Analysis of Health, Safety, and Greening Vacant Urban Space.” *American Journal of Epidemiology*, July 2011, doi:10.1093.
- [5] “Community Garden Permits.” *Cleveland Water Department*, 10 June 2014, <http://www.clevelandwater.com/construction/permits/community-garden-permits>.
- [6] *Gardening for Greenbacks Program / City of Cleveland Economic Development*. <https://makeitincleveland.org/incentives/gardening-for-greenbacks-program>. Accessed 8 Nov. 2020.
- [7] Garvin, Eugenia, et al. “Greening Vacant Lots to Reduce Violent Crime: A Randomised Controlled Trial.” *Injury Prevention*, vol. 19, 2013, pp. 198–203, doi:10.1136.
- [8] Grewal, Sharanbir, and Parwinder Grewal. “Can Cities Become Self-Reliant in Food?” *Cities*, vol. 29, 2012, pp. 1–11, doi:10.1016/j.cities.2011.06.003.
- [9] Heckler, Susanne. “A Right to Farm in the City: Providing a Legal Framework for Legitimizing Urban Farming in American Cities.” *Valparaiso University Law Review*, vol. 47, no. 1, 2012, pp. 217–66.
- [10] Hodgson, Kimberley, et al. *Urban Agriculture: Growing Healthy, Sustainable Places*. American Planning Association, Jan. 2011, https://planning-org-uploaded-media.s3.amazonaws.com/publication/book_paperback/PAS-Report-563.pdf.
- [11] Johnson, Renée. *2018 Farm Bill Primer: Support for Urban Agriculture*. IF11210, Congressional Research Service, 16 May 2019, <https://crsreports.congress.gov/product/pdf/IF/IF11210>.
- [12] Johnson, Renée. *Local and Urban Food Systems: Selected Farm Bill and Other Programs*. R46538, Congressional Research Service, <https://crsreports.congress.gov/product/pdf/R/R46538>.
- [13] *KC Grow*. <https://www.tfaforms.com/rest/forms/view/419961>. Accessed 8 Nov. 2020.

- [14] Lancaster, Brad. "Planting Abundance: Alternative Water Sources for Urban Farms." *Sowing Seeds in the City*, Springer, Dordrecht, 2016, pp. 373–88, https://link-springer-com.proxy.library.cornell.edu/chapter/10.1007/978-94-017-7453-6_27.
- [15] Land Use Law Center. *Beginner's Guide to Land Use Law*. Pace University Law School, pp. 1–54, <https://law.pace.edu/sites/default/files/LULC/LandUsePrimer.pdf>.
- [16] Masson-Minock, Megan. "A Case Study: Zoning and Urban Agriculture in Michigan." *Sowing Seeds in the City*, edited by Sally Brown et al., Springer, Dordrecht, pp. 363–71, https://link-springer-com.proxy.library.cornell.edu/chapter/10.1007/978-94-017-7453-6_26.
- [17] Rangarajan, Anu, and Molly Riordan. *The Promise of Urban Agriculture: National Study of Commercial Farming in Urban Areas*. United States Department of Agriculture Agricultural Marketing Service, Aug. 2019, https://smallfarms.cornell.edu/wp-content/uploads/2019/12/Promise-of-Urban-Ag_Full_102919-1.pdf.
- [18] *San Francisco Public Utilities Commission: Urban Agriculture & Community Gardens*. <https://sfwater.org/index.aspx?page=469>. Accessed 8 Nov. 2020.
- [19] San Francisco Public Works. *Thrifty 150: Durable, Low Maintenance, Water Wise Plants Recommend by San Francisco Public Works*. 22 Oct. 2015, http://www.sfpublicworks.org/sites/default/files/THRIFTY%20ONE-FIFTY_FINAL_10_22_15.pdf.
- [20] Senate Legislative Council. *Recognizing the Duty of the Federal Government to Implement an Agenda to Transform, Heal, and Renew by Investing in a Vibrant Economy (THRIVE)*. 10 Sep. 2020. <https://www.markey.senate.gov/imo/media/doc/THRIVE%20resolution.pdf>.
- [21] Siegner, Alana, et al. "Does Urban Agriculture Improve Food Security? Examining the Nexus of Food Access and Distribution of Urban Produced Foods in the United States: A Systematic Review." *Sustainability*, vol. 10, 2018, doi:10.3390/su10092988.
- [22] Spencer, Candace A., et al. "How to Establish an Urban Agriculture Ordinance: HS1327." *EDIS*, vol. 2, Apr. 2019, doi: 10.32473/edis-hs1327-2019.
- [23] "Urban Agriculture and Community Gardens." *San Francisco Public Utilities Commission*. <https://sfwater.org/index.aspx?page=469>. Accessed 8 Nov. 2020.
- [24] U.S. Climate Action Network. *Vision for Equitable Climate Action*. 2020, <https://equitableclimateaction.org/wp-content/uploads/2020/05/Vision-for-Equitable-Climate-Action-May-2020-final-1.pdf>.

[25] USDA Agricultural Marketing Service. "Fiscal Year 2019: Description of Funded Projects." 2019. <https://www.ams.usda.gov/sites/default/files/media/2019FSMIPDescriptionOfFundedProjects.pdf>.