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Institutionalizing Urban Agriculture: Process, Progress, and Innovation

By Brian Barth

Urban agriculture has grown from a grassroots movement, consisting of local farmers and gardeners, to become a new institution in forward-thinking communities around the globe. Scores of cities in the U.S. have amended their zoning codes to better regulate and accommodate this emerging trend and city-led initiatives to promote urban food production are increasingly common.

This is a movement still in its adolescence, but the degree of growth in the last 10 years warrants a look back to examine the progress to date and an attempt to distill the common approaches and pitfalls that will help guide the future conversation between cities and farms.

In 2011, PAS Report Number 563, *Urban Agriculture: Growing Healthy, Sustainable Places*, compiled the existing body of planning research and practice pertaining to urban agriculture into a single, thorough volume, including an analysis of what had been accomplished and thoughts on what further work was needed. Since then, the number of municipalities actively encouraging urban agriculture and the scope of their efforts has expanded considerably. This *PAS Memo* builds on that foundation and serves to update planners on the current status of this important area of specialization, while offering further insight into the best practices that have emerged to support urban food production and the broader social, economic, and environmental goals associated with it.

In particular, this *PAS Memo* looks at the use of comprehensive urban agriculture zoning ordinances, the need to coordinate food system policy across multiple municipal departments and public agencies, public engagement strategies, and data collection methods to better measure and quantify the successes of the movement. After a brief review of the big-picture goals of urban agriculture, the following sections fill in some of the details needed for it to take its place as a new urban institution.

Why Urban Agriculture?

Even though the very notion of urban agriculture can seem like a contradiction, there are several commonly agreed-upon rationales for cities to produce more of the food they consume. To understand agriculture as a nascent urban institution and guide its future growth, it is important for planners to unpack these rationales and consider how they apply in the unique context of the communities they serve. Like any planning matter, the process and the outcomes will be driven by the unique needs and desires of each community.

The motives of the urban agriculture movement and the benefits associated with it fall into three broad categories. These have been well defined elsewhere, but are briefly described here to give a context for the discussion that follows.

Public Health Attributes

The health value of fresh versus processed food is well documented by nutritionists and public health advocates. However, in many disinvested urban neighborhoods, there is little access to fresh food for those who want it. In these "food deserts" full-service grocers have disappeared, leaving corner stores and "quickie" marts as the primary source of food. Making more fresh food available by creating incentives for urban farms and farmer's markets is not a silver bullet — other social and economic

barriers also need to be addressed — but it has certainly sparked meaningful conversation on the subject within the communities where this has been attempted.

An Economic Development Tool

As with the benefits of urban agriculture to public health, there is room for debate on the question of urban agriculture as an economic development tool. Unfortunately there is a dearth of conclusive data on this point, but the idea has merit based on the anecdotal evidence thus far. New urban farms are unlikely to have the direct economic impacts of opening a large manufacturing center, for example, but there are other, less tangible economic benefits. At a minimum, urban agriculture fosters a healthy sense of place, which is of great importance in blighted areas where small farms and gardens can make productive use of vacant land, even if it is only a temporary use. There is no doubt that they stimulate the growth of the local and organic food sectors and provide "green collar" jobs — the question is to what degree in comparison with the public investment in the industry.

Enhancing Urban Greenspace

Parks and other open spaces have made well-quantified contributions to public health and real estate values in urban areas; where they are accessible to the public, farms and gardens have the potential to do the same. A key difference is the degree of engagement that these productive landscapes foster in the surrounding community. Every city has its cherished parks, yet a tiny community garden can galvanize neighborhood pride in a similar way without the need for procuring a large tract of land and spending large sums of taxpayer money to develop it. Gardening is a recreational activity that fits neatly within the broad purposes of parkland, and a network of productive landscapes on publicly accessible land is like a municipal library system for outdoor education and community enrichment.



Randall's Island Farm is a one-acre urban farm on a 480-acre island between Harlem and the South Bronx that serves as one of the primary park spaces for the residents of New York City. Photo courtesy Randall's Island Park Alliance.

While there are scores of planning initiatives across the country using urban agriculture-based programs to address these big-picture issues, their efficacy remains to be seen. As the movement continues in a growth phase, there are countless opportunities for planners to examine existing programs, consider the likely challenges, and discern optimal approaches for facilitating the goals of their own community. The time is ripe to substantiate the claims of urban agriculture as a broad-based participatory planning model and link its objectives with quantifiable results.

Challenges and Best Practices

Planners are faced with the task of coordinating the integration of productive landscapes in urban areas in a way that mitigates potential conflicts with aesthetic values, environmental functions, economic vitality, and social cohesion. The following sections outline some of the challenges that have arisen in the process and offer examples of the best practices that have recently evolved in response.

Planning the Details of Urban Food Systems

While it is safe to say that most municipalities have officially endorsed the ideals of urban agriculture, many are still in the throes of fleshing out the details of how to both encourage and regulate it. For example, [Atlanta](#) set a goal in 2010 to bring local food within 10 minutes of 75 percent of all residents by 2020 as part of its citywide sustainability plan, but has since had to come to terms with a number of existing [policy barriers](#) that stand in the way. Urban agriculture was not addressed in Atlanta's existing zoning ordinance, meaning that growers couldn't apply for a business license because their operations were not covered under the list of permitted uses for any zoning district. In response, a [zoning amendment](#) (which passed this summer) was developed in collaboration with several local stakeholder groups. It provides a clear framework for both "urban gardens" and "market gardens," stipulating where each is permitted outright or with a special use permit and what rules these operations will be governed by.

This pattern has played out in scores of other cities across the country. Just as the details of other components of green infrastructure have been fleshed out in recent decades — via tree canopy ordinances and stormwater management regulations, for example — the norms of urban agriculture are slowly becoming established, though much is still up for debate. Conventional planning tools of geospatial analysis, zoning regulations, design standards, and fiscal incentives are as applicable to urban agriculture as they are to any other land use, but they require a detailed understanding of the needs of urban farmers and the physical, economic, social, and environmental dimensions of urban farms to apply them successfully.



Greensgrow Farm in the Kensington neighborhood of Philadelphia has evolved to host a CSA, farmstead, plant nursery, and community kitchen while creating jobs, improving local food access, and reclaiming once-abandoned land. Photo by David Barrie (CC BY 2.0).

In working out the intricate arrangements between chicken coops, vegetable plots, greenhouses, residences, business, and schools — which are increasingly sharing the same block — planners need a working knowledge of the habits of chickens, the practices of vegetable cultivation, and the design of

greenhouses in order to orchestrate harmony among them and preserve the best interest of all parties involved. The following list is by no means exhaustive, but provides a sampling of the questions planners are faced with as urban agriculture becomes a status quo land use and the way that various communities have chosen to respond.

How many and what types of livestock to allow? There is an astonishing range of policies concerning urban livestock, though the general trend is toward greater tolerance and flexibility. At the same time, there is an increasing trend toward regulating how livestock are kept — e.g., dimensions for chicken coops, flyway barriers for beehives, requirements for odor abatement — and many municipalities have implemented permitting programs to ensure compliance. In some communities, livestock of any type are still banned, while others have flung the door wide open. [Seattle](#) is one of the most lenient, allowing eight chickens on any size lot (with a provision for additional birds at a rate of one per 1,000 square feet on lots greater than 10,000 square feet) and even welcoming full-size farm animals (goats, sheep, cows, and horses) on lots above 20,000 square feet. Only with swine does the city draw the line, allowing only miniature potbelly pigs that are kept as pets. [Austin, Texas](#), also expanded the type and quantity of livestock allowed under its newly adopted [urban agriculture zoning ordinance](#) and addressed the difficult question of on-site chicken slaughter: chickens may be slaughtered for personal consumption in any zone, but slaughter for commercial purposes is allowed only outside of residential areas and is restricted to 10 birds per week per acre of land.

Where and under what circumstances should the sale of produce be allowed? Whether or not produce may be sold on site is typically a major dividing line as urban agriculture plans and policies are mapped out. Often, the pattern is to prohibit sales in residential zones and allow them in commercial zones. Exact terminology varies, but a spectrum between private gardens, community gardens, and commercial growing operations is widely recognized. On-site sales are generally assumed in the latter category, but approaches for the first two vary widely. Where sales are allowed in residential areas, they are typically restricted to preserve neighborhood character. [St. Paul, Minnesota](#), for example, allows sales only three times per year. In [Somerville, Massachusetts](#), however, sales are permitted up to three times per week, but capped at 25 times per year. In almost every example, farmstands and signage are limited in size and must be stored out of sight when not in use.

How is the issue of contaminated soil addressed? The broader issue of [brownfields and urban agriculture](#) is complex and deserves greater discussion than there is space for here. Growing food in soils contaminated with heavy metals, lead in particular, has drawn the greatest scrutiny as these can be concentrated in plant tissues and transferred to people upon consumption. To date, there are no universally agreed on standards for the safe threshold of these substances in soils used for crops, but some cities have chosen to incorporate safety guidelines for contaminated soils in the process of urban agriculture planning. [Somerville](#) addresses the issue by requiring any commercial growing operation to have its soil tested for lead and for growers to display the results at the point of sale. The city does not legally restrict the sale of produce based on the test results, leaving consumers to make their own choices, but does recommend growing edible crops only in soils with 300 or fewer parts per million (ppm) of lead. [St. Paul](#) uses a more conservative standard of 100 ppm of lead and prohibits the sale of produce if contamination exceeds this level. In any case, growers can circumvent this challenge by importing clean topsoil and growing in raised beds with a barrier installed between the growing medium and the contaminated soil.

What are other potential hazards of increased agricultural production in urban areas and how can these be managed? As with agriculture in a rural context, degraded waterways resulting from soil erosion, agricultural chemicals, and animal wastes is a significant environmental concern. Compost piles and the storage of livestock feed can attract vermin, and swarming bees and escaped animals are safety risks that must be considered. When it comes to apiaries, some cities go so far as to stipulate that water must be provided for beehives at all times, based on the fact that thirsty bees are apt to take over a neighbor's pool or birdbath, leading to potential conflicts.

One general strategy is to require a site plan and/or management plan for urban farming operations as part of a permitting process. Pesticide use and soil disturbance are typically covered by existing state and local statutes, but some cities have created additional requirements for the special context of urban agriculture. For farms and gardens over 4,000 square feet, for example, Seattle requires an operations plan disclosing any intended application of agricultural chemicals, the area of land that will be disturbed, the type of farm equipment that will be used, and provisions for erosion and sediment control. These are reviewed on a case-by-case basis by the planning director before a permit is granted. In St. Paul, the recent urban agriculture zoning update carefully states that when an agricultural use has been

discontinued, the property must be restored to grass or other groundcover to control erosion, dust, and mud for both aesthetic and environmental reasons.



Lafayette Greens in downtown Detroit, a garden showcasing what agriculture can look like in an urban context. Photo Beth Hagenbuch/Ken Weikal Landscape Architecture.

One reasonable goal for the planning community in the near future is to develop something akin to a "model" urban agriculture code, such as those which already exist for many other branches of land use policy. This would provide a degree of uniformity in how cities regulate urban agriculture activities and reduce the burden of drafting amendments to existing codes, thus enabling a greater number of communities to reduce barriers and streamline the process of institutionalizing urban agriculture on the whole. Each community could then customize the code to suit local contexts and cultural attitudes in each subject area.

Coordinated Planning Process

Early efforts to update municipal policies in response to the growing public interest in food production were typically incremental in nature and were often a reaction to a problem, such as complaints about messy front-yard vegetable gardens and malodorous compost systems or residents protesting fines for keeping chickens. In trying to keep up with the demand for greater flexibility in using urban land to grow food, new ordinances often came about in a patchwork manner depending on the needs of the community — a provision for farmer's markets one year, a change in regulations on livestock the next. Since 2010, however, a number of the most progressive North American cities began to draft comprehensive urban agriculture zoning revisions to address the challenge of integrating agricultural land use in a holistic manner.

Unlike the iterative approach, comprehensive changes require a detailed understanding of the numerous and varied implications of urban food production referenced in the previous section as a basis for designing policies that suit the needs and character of the community, but they have also demanded a high degree of internal communication among the numerous departments and public agencies involved. Planning and development, parks and recreation, and animal control services are directly implicated by urban agriculture, for example, and boards of health are always necessary players as they govern anything produced for human consumption. Housing authorities, economic development agencies, and offices of sustainability — which have become new municipal institutions themselves in recent years — also have roles to play.

In addition to the cities mentioned above, San Francisco; Portland, Oregon; Cleveland; Minneapolis; Oklahoma City; Kansas City, Missouri; Boston; and Madison, Wisconsin, are leading examples of cities

where urban agriculture has matured to the point of being codified in land-use law as comprehensive zoning amendments. These pioneering communities have developed coherent regulatory frameworks that embrace and promote urban agriculture while continuing to ensure public health, safety, and welfare.

Coordination with state-level urban agriculture initiatives and advocating for more supportive enabling legislation are also important strategies. In 2013, the California state legislature passed [a law](#) to enable local governments to establish urban agriculture incentive zones, an approach that may hold promise in other regions, as well. Under the California law, landowners receive a property tax reduction in exchange for committing the land to agricultural use for a five-year period. During this time, the property would be assessed based on the average real estate value of irrigated cropland in the state, which is approximately \$12,000 per acre.

The states of Washington and Minnesota have long-standing statutes preventing any local law that restricts the sale of fruit, vegetables, eggs, or other fresh produce directly by those that grow it, saying there is no need for any type of special license to do so, as long as it doesn't involve processed foods, meat, dairy, or other regulated products. This helps to explain the lenient political climate around urban agriculture in places like Seattle and the Minneapolis-St. Paul region and reflects the strength of local food systems in these states as a whole.

Out of concern that families struggling to put food on the table could be punished for growing their own, legislators in Georgia drafted a law, known as the [Right To Grow Act](#), to prevent any local jurisdiction from enacting laws that limit the right of individuals to raise food for personal consumption. The legislation was defeated in 2012, but it provides a precedent for the type of state-level legislation that can help smooth the process for urban agriculture's expansion at the local level and ensure that unjust social outcomes do not arise from well-intended nuisance laws.

Communication and Outreach

Public health, economic development, and urban greenery aside, urban agriculture owes its popularity to its power to bring people together over an exceedingly positive, wholesome, and simple activity — growing healthy food. Planners can harness this potential by encouraging urban agriculture as a part of community identity. It is important to emphasize in outreach campaigns that urban farms are intended to fill gaps in the urban fabric and enliven neighborhoods — not replacing conventional development, but complementing it.

However, planners are faced with two opposing challenges in this regard as urban agriculture expands. The first is to address concerns over the potential for negative outcomes associated with urban farms and gardens, such as the loss of aesthetic values and neighborhood character, loss of real estate values, nuisances (unpleasant sights, sounds, and smells) and general concerns that it doesn't always represent the "highest and best" use of land. The second has to do with communicating the intent of plans and policies designed to encourage urban food production and regulate the circumstances under which it occurs.

There are many examples of public engagement initiatives to this end, which often carry a marketing slant. [Sacramento](#) has officially rebranded itself as America's farm-to-fork capital, for example, a development that came several years after its [laws against front-yard food gardens](#) were reversed. Seattle declared 2010 as the "[Year of Urban Agriculture](#)," launching its new zoning code and food system plans with a barrage of festive events and community outreach. And Chicago has designated three of its most impoverished wards as [Green Healthy Neighborhoods](#), where a series of programs centered on local food production have been initiated in an effort to revitalize these South Side districts.



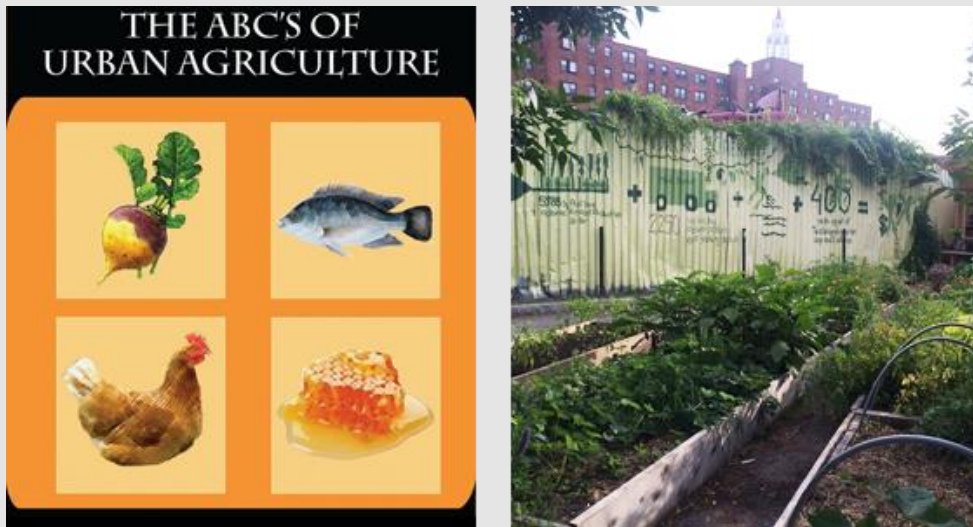
A rendering of an urban farm from Chicago's Green Healthy Neighborhood plan, as viewed from the recently completed ERA (Englewood Re-Making America) trail. Image courtesy City of Chicago/Camiros.

Zoning documents are largely geared toward the development community and are difficult to decipher for the average homeowner or aspiring urban farmer. For this reason, cities like [Seattle](#), [Oklahoma City](#), and [Boston](#) have all published brochures to explain their recently enacted zoning amendments in plain, everyday language.

Somerville's ABC's of Urban Agriculture

Somerville, Massachusetts, a small, densely populated city in the Boston metro area, provides a prime example of coupling a policy change with a strong outreach effort to foster greater public participation in, and maximize the benefits of, urban agriculture, while minimizing potential conflicts. In 2011, Somerville Mayor Joe Curtatone convened representatives from several city departments and local community groups to examine all [city ordinances](#) that pertained to urban agriculture as an extension of the [Shape Up Somerville](#) initiative, an ongoing series of programs aimed at reducing childhood obesity and improving public health in general.

The resulting body of urban agriculture rules, permits, and guidelines is a textbook example of a comprehensive, rather than incremental, approach to the issue. However, the city went far beyond distributing brochures to communicate the new rules and the vision they embodied, establishing a demonstration farm, educational campaigns, and a user-friendly guidebook — [The ABCs of Urban Agriculture](#) — to disseminate the information. The document tells prospective growers exactly which scenarios will require a permit (with forms provided at the back of the booklet), delivering all the relevant information in an intuitive, step-by-step manner, aided by explanatory graphics. Urban agriculture best practices and educational resources are included at every step, and the document is thoroughly cross-referenced to ensure that users connect the dots to every relevant piece of information.



Somerville's user-friendly guide to urban agriculture (left), and a glimpse of the South Street Farm, the city's urban agriculture demonstration site. Images courtesy City of Somerville.

Through this process, Somerville has demonstrated that having a positive city-led urban agriculture project with high PR value is what galvanizes multilateral support in the community — and among stakeholders inside of local government — to embrace the issue and transcend the challenges that inevitably arise.

Data Collection

As planning is largely an "upstream" activity — meaning its efforts take years, if not decades, to precipitate — it is important to implement monitoring strategies that gauge the progress of any planning initiative over time. Without this feedback, continuity is threatened and many well-intentioned plans never become fully realized. Urban agriculture is currently at a crossroads where much has been initiated and enough time has passed for the results to begin showing themselves. The job now is to measure the results and assimilate this data to steer the future course of the movement.

In general, the process of institutionalization supports data collection because there is typically a record of any "official" act. For example, cities that require permits for keeping livestock or selling produce will know how many of each animal is being kept and the number of commercial growing operations within city limits. Many projections can be made from this baseline data, including the potential economic impacts of urban farming and the potential threat to urban waterways resulting from runoff contaminated with animal wastes.

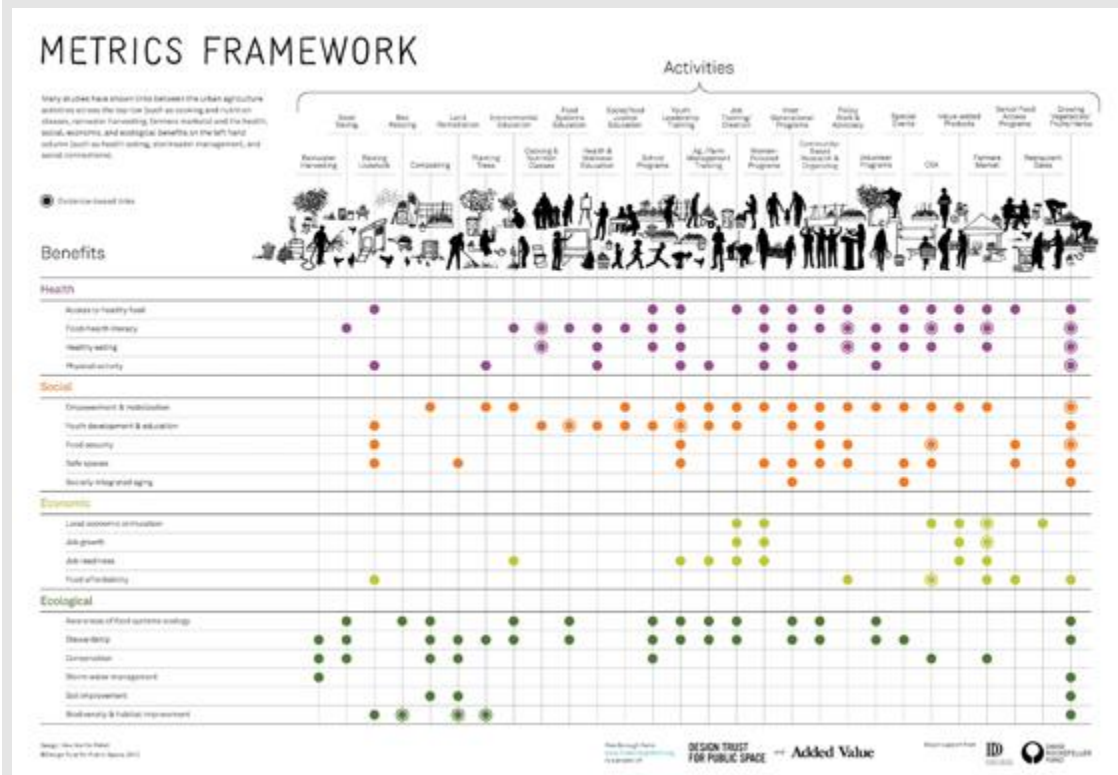
The Design Trust's Urban Agriculture Data Collection Toolkit

The [Design Trust for Public Space](#) in New York City has a pilot program under way to collect data on a wide range of metrics that together attempt to quantify the collective value and benefits of urban agriculture in the metro area. The toolkit is one of several related programs under the Design Trust's [Five Borough Farm](#) initiative, a multi-year project to arm the urban agriculture movement in New York with the tools needed to improve its ranking on the city's political agenda.

In collaboration with policy experts, data analysts, and public-relations specialists, the Design Trust convened a group of 25 growers last year to develop a [list of indicators](#) of urban agriculture's contribution to the social, economic, and environmental well-being of the city. Sixteen quantifiable indicators were selected and the practical methods for collecting the data were determined. The indicators go beyond production statistics, venturing to put numbers to less tangible effects, such as changes in a community's attitudes toward its neighborhood, as well as incidental impacts, like gallons of rainwater harvested and pounds of green waste diverted from city landfills.

After refining the indicators and collection methods in 2013, a website portal called [The Barn](#) was launched

this spring that allows growers to log their data throughout the growing season. The site is designed to produce charts, graphs, and other infographics that growers can use to track their progress. The idea is that the data will give greater validity to the movement overall and assist individual operations in procuring financial support and political endorsement.



The system of urban agriculture metrics devised by the Design Trust for Public Space in New York ([click to enlarge](#)). Image courtesy Design Trust for Public Space.

The next stage of the project, currently under development, is known as The Mill. While the information stored in The Barn is accessible only to those that upload it, The Mill will aggregate the data for each indicator and allow funding organizations, policymakers, and the general public to make custom queries in the database. Thought the information from each grower will be anonymous, the database will be geographically referenced and the software will produce instant map-based infographics based on search queries.

Action Steps for Planners

After understanding the relevance of urban agriculture to planning issues — and the path by which it has moved through the municipal agenda in the cities bold enough to pursue it — there are a number of points that rise to the surface as guideposts for planners to follow. It is hoped that these can serve as a protocol for planning professionals everywhere as they navigate the often complex relationship between cities and the historically rural activities of agriculture.

- *Engage stakeholders.* Encouraging broad-based coalitions to coordinate the development of urban agriculture is essential to its success. There is a need for interagency cooperation, consultation with regional planning bodies and lawmakers at the state level, and coordination among municipal departments, as well as public-private collaboration between local governments, developers, and community groups.
- *Conduct GIS analysis.* Geo-spatial technology is a valuable tool for structuring urban agriculture initiatives. By overlaying suitable parcels, relevant demographic data, food access, proximity to

complimentary infrastructure, etc., optimal locations for urban agriculture sites can be determined and strategies to leverage municipal investments and incentives can be devised.

- *Visualize optimal outcomes.* Development standards that encourage design excellence can be created through consultation with stakeholder groups. Seek to determine how urban agriculture should look, feel, and function at a minimum level that will prevent unintended outcomes, while simultaneously establishing a vision for its greatest potential.
- *Encourage a skilled workforce.* Farming in the city involves entrepreneurial, agricultural, land development, and landscape maintenance skills, but traditional training in these areas is generally insufficient. Vocational schools, "green corps" programs, and organizations that assist chronically unemployed individuals can all be enlisted to help.
- *Consider incentives and subsidies.* Property tax incentives and increased development rights are the two possible opportunities to encourage urban agriculture in targeted areas. Cities that use a points system to reward developers for sustainable design can incorporate urban agriculture into these incentives, as well.
- *Cultivate urban agricultural literacy.* School garden programs are well-established in many areas, but disseminating local food and gardening guides can help to educate adults. This also applies to planners and other professionals charged with stewarding the development of urban food systems.
- *Design a data collection system.* Beyond measuring food production, job creation, and direct economic benefits, consider tracking environmental benefits and other indirect social and environmental impacts.
- *Treat as a place-making asset.* Develop strategies to make urban agriculture a part of a community's "brand identity." This involves discerning the key aspects of a commonly held vision for the local food system and using these to create a marketing campaign that can encompass any program under the umbrella of local food.

Conclusion

In looking back at the zoning amendments, food system plans, and related initiatives that have come out in recent years, it is easy to feel that the work has been done, that food production has landed a permanent place in the concept of American urbanism. Yet for all the examples of cities leaping forward to enlist urban agriculture in the fight against food insecurity, degraded urban ecosystems, and blighted neighborhoods, there are just as many or more that still draw the line at front-yard vegetable gardens, chicken coops, bee hives, and the sale of produce. Their reactiveness to the idea is understandable in that food production activities in urban areas represent *potential* risks to public safety, the character of neighborhoods, and real estate values. However, this could be said of any number of activities that are already a part of urban life. The purpose of planning, and of zoning in particular, is to work out a system of land use where conflicts are minimized and the greater public good is maximized.

In this light, it is hard to imagine valid reasons to prohibit reasonable agricultural uses of urban land. The cities profiled in this article have assumed some risk in advancing the experiment of urban agriculture and are rich resources for those still finding their way. The evidence thus far shows that the best results come when a city embraces the concept, streamlines regulations across the spectrum of the urban food system, and says: We want urban agriculture to be here and be part of what makes our community prosper.



Urban agriculture can make productive use of underutilized urban space, such as this rooftop in New York City. Photo by Rob Stephenson.

About the Author

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