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Original Research

Urban agriculture: long-term strategy or impossible dream?

Lessons from Prospect Farm in Brooklyn, New York

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A B S T R A C T

Keywords:

Urban agriculture
Land use policy
Community development
Food safety
Climate change

Proponents of urban agriculture have identified its potential to improve health and the environment but in New York City and other densely developed and populated urban areas, it faces huge challenges because of the shortage of space, cost of land, and the lack of contemporary local food production. However, large portions of the city and metropolitan region do have open land and a history of agricultural production in the not-too-distant past. Local food movements and concerns about food security have sparked a growing interest in urban farming. Policies in other sectors to address diet-related illnesses, environmental quality and climate change may also provide opportunities to expand urban farming. Nevertheless, for any major advances in urban agriculture, significant changes in local and regional land use policies are needed. These do not appear to be forthcoming any time soon unless food movements amplify their voices in local and national food policy. Based on his experiences as founder of a small farm in Brooklyn, New York and his engagement with local food movements, the author analyzes obstacles and opportunities for expanding urban agriculture in New York.

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Introduction

The urbanization of the world's population started in late nineteenth century Europe with the expansion of industrial capitalism. In the twentieth century, cities grew into metropolitan regions, large urban agglomerations with complex economies and structures, on every continent in the world in both rich and poor nations.¹ Throughout this process, urban

expansion consumed farmland, agriculture increasingly became industrialized, limited to rural areas, and subject to control by financial capital. Small-scale and subsistence farming declined around the world. By the end of the 21st century, if current trends continue, the entire human population could be urban, turning rural areas into even more isolated reserves for agriculture, mining, and tourism. The urban-rural divide will reach its logical conclusion: food production will be isolated from human habitat and there will be

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<http://dx.doi.org/10.1016/j.puhe.2014.12.008>

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very little direct engagement of people with land that produces the means for their subsistence.²

What if, however, urban agricultural production were to expand? There are many possible detours on the way to a completely urbanized world and exclusive rural farming. Climate change and sea level rise could stimulate interest in alternative approaches to human settlement. Severe climate events and the pollution of land and water by factory farms may render more rural land unusable. Instability in global commodities markets may produce recurrent food shortages such as those occurring since 2008,³ which increase the importance of local food production. And the growth of diet-related conditions such as diabetes and obesity could produce greater interest in the production of healthy foods in cities.⁴

Proponents of urban agriculture in North America have cited a variety of benefits. These include improving access to healthy food, promoting social cohesion, creating opportunities for physical activity, improving urban economic well-being and revitalizing low-income communities. Several recent reviews suggest that while the evidence documenting the population health impact of urban agriculture is still sparse, its multiplicity of benefits and the magnitude of threats to the alternative of industrial agriculture make it likely that it will continue to attract policy maker and food movement interest.^{4–8} To inform the needed dialogue on urban agriculture policy among the public health, food, land use, zoning, environmental planning and economic development sectors, both intersectoral analyses and ‘thick’ descriptions of local practice are needed.

Urban agriculture in the United States and the case of New York City

In metropolitan areas throughout North America, long characterized by sprawling residential suburbs and more densely developed city centres, there is a growing interest in urban agriculture. Some cities, such as Portland, Oregon and Vancouver, British Columbia, support local farming that provides a growing supply of fresh produce to residents. Some older industrial cities with large amounts of vacant land, such as Detroit, have a few vibrant local growing projects and many ambitious plans for large-scale production on the vacant land resulting from decades of housing abandonment.⁹ Many cities have had active associations of community gardeners, some of whom produce food for local consumption. The Growing Power project, which began in Milwaukee, Wisconsin, has become a prominent model for expanding production beyond the scale of the typical community garden.^{10–12}

Even in densely developed cities like New York, small-scale projects in urban agriculture have emerged, including community gardens, school gardens, and green roofs.^{13,14} However, there are serious hurdles to any growth in urban agriculture in New York City, the densely developed core of the New York metropolitan region with a population of 8.3 million accounting for 36% of the metropolitan area's population on only two percent of the land.¹⁵ This very high density is obvious on the island of Manhattan, a terrain of concrete and asphalt with very little available open space which houses

only seven percent of the population on only 0.1% of the land.¹⁵ Branded as ‘The Real Estate Capital of the World,’ the availability of abundant investment capital has historically driven the high price of land in the city, making less intensive uses such as agriculture infeasible. However, much more land is available in the four other boroughs that make up the City of New York and there is even more in the sprawling suburbs of the tri-state metropolitan region. In sum, the most likely place for growing food is in the sprawling, lower density suburbs where there is more open land and it costs less.

By focusing here on the urban core the significant intersectoral obstacles to urban agriculture in the United States and some possibilities for change could be best demonstrated. New York may be the extreme test case: if it can be done in New York it can surely be done in densely populated cities around North America and the world. This study draws on my experiences creating a demonstration farm project in Brooklyn, my engagement in local food policy debates and movements and my prior studies of land use and development in New York City.^{1,2,16}

New York City's agricultural past and present

The prospect of urban agriculture in New York City appears less daunting if people realize that throughout most of the city's history agriculture and open space were more prevalent than commercial and residential land uses. In 1898, when the City of New York was created, only lower Manhattan below Canal Street (now the financial district) was intensively urbanized. Much of upper Manhattan was farms and estates, and most of the other boroughs thrived on agriculture. The 1898 consolidation, immediately followed by the opening of the city's first subway lines, spurred a huge wave of real estate development that rapidly subdivided and consumed the remaining farmland. While the consolidation created an opportunity for government to preserve farmland through comprehensive regional planning, real estate interests promoted growth and dominated land use policy.¹⁶

The process of farmland conversion was more drawn out than most people realize. Even as older farms went out of business, new examples of urban farming replaced them. There are currently some 700 community gardens (not all of them produce food), thousands of backyard gardens, a growing number of school gardens, two large commercial green roofs, and a dozen or more small farms.^{13,14}

The principal deterrent to agricultural production is the high cost of land, and the closer one gets to Manhattan's core the higher the price. While calls for vertical farming are provocative,¹⁷ extremely high rents in high-rise areas are unlikely to support anything but the highest value produce serving small markets. Yet few realize that even in Manhattan 20% of land is in back yards, and the proportion is higher in the other boroughs. This doesn't include the potential for growing food in city parks, which account for around 14% of land; reclaiming portions of the city's streets and sidewalks, which account for around 25% of all land; and expanding the growing of small plants and herbs in window boxes.¹⁸ All of these could expand access to local food and contribute to the reduction of the city's carbon footprint.

Issues facing urban agriculture in New York City

The most serious problem facing urban agriculture in New York City is the high price of land, a consequence in part of its scarcity and in part of policy. The principle of ‘highest and best use’ of land (that is, the most profitable use) dominates planning, zoning and tax policies. Commercial and residential zones, which predominate, are taxed at very high rates and there are no areas reserved for agriculture.^{19,20} Commercial agriculture in the city could never compete with factory farms in rural areas where land is cheaper, farm machinery and chemical fertilizers can be widely used, and public subsidies and private financing are abundant. This is consistent with the comprehensive analysis by Kaufman and Bailkey¹⁹ that concluded commercial agriculture faced major obstacles in North American cities. Without a significant change in land use policy, urban farms will at best fill market niches with very high value products not widely available elsewhere. Rooftop farming has potential²¹ but is limited by the number of flat roofs capable of supporting a garden. Water costs in the city are high and rising, the waste water system is already unable to handle runoff during peak rainfalls, and agricultural runoff could be a serious problem for surface water quality and public health if urban farmers were to use chemical fertilizers and pesticides. The soil in the city may need major remediation before safely growing food; alternatively, importing soil for raised beds is an expensive proposition.²²

To overcome these obstacles, the city needs a comprehensive food policy and a food policy council, as a basis for reforms in land use and tax policies. While two New York City elected officials have proposed a broad food policy agenda^{23,24} and there have been some incremental reforms, government has not moved aggressively to tackle the issues. City government has supported two privately run green roof projects, farmers markets and community gardens, but it has not sought to use city-owned land for agriculture or provide incentives for farming on privately-owned land. Recent public interventions in the food system have been largely geared towards changing consumption patterns instead of increasing local food production. They fail to engage the city's hundreds of neighborhoods which, after all, are where the existing small-scale efforts in food production are embedded. Efforts to ‘scale-up’ local food production need to learn from these community-based practices. The only major initiative promoted by the city's planning department and economic development corporation is a program to incentivize the location of supermarkets in so-called ‘food deserts’.²⁵

To most New Yorkers today, agricultural production is a mere abstraction, divorced from land, place and community. This reinforces dependence on corporate, industrial food providers and limits interest in urban agriculture. Food is produced far from neighborhoods and to be found only in local supermarkets, bodegas, restaurants and fast food outlets. Some 1.2 million city residents rely on food stamps and soup kitchens that rely heavily on industrial food. According to data from a U.S. Department of Transportation study, the vast majority of New York City's food is imported by trucks, which are a major source of air pollution in the city.²⁶

In the following the author makes the case that the obstacles to urban agriculture can be overcome by focusing on land, people and community. While land is a critical element, people and community are key to solving the problems with land.

Land

In 2010 the author started Prospect Farm²⁷ on a patch of land in Brooklyn. Now in its fourth year, the farm has 20 members, a composting project, and ties with local restaurants and food movements. On 5000 square feet of land the author proposed ‘an alternative to the industrial food system.’ Whether this ambitious promise is fulfilled or not, there are big lessons to be learned from this and other tiny projects. Urban farmers have much to learn from traditional farms and villages, but as a practical matter they need to start where they are.

This demonstration project is supported by its members and community, but the main challenge to its long-term survival is the cost of land. It is privately owned (like most vacant land in the city) and located in a gentrifying neighborhood where land values have soared. The best way to keep the land from being converted to its ‘highest and best use’ is to have it transferred to a land trust or bought by a public entity. These options are being pursued but in the absence of a clear city policy it will depend largely on local initiative. Another option would be commercial agriculture, but this would only be possible on such a small plot of land if very high-value products were produced, abandoning the objective of producing affordable local food.

The city's land use, zoning and tax policies may not prohibit projects like this but they also do not support them. Urban planners have traditionally looked to comprehensive land use plans to propose future land uses. New York, however, is the only major city in the United States that has never had a comprehensive plan. Zoning is the major tool for controlling land use. Zoning, which regulates building floor area, setback, height and open space on private land, affects the shape of the built environment, but changing zoning by itself cannot change uses.²⁸ Thus, zoning proactively for agricultural use would have only limited value unless all the other elements were in place: favorable financing and subsidies, tax incentives, and an infrastructure that includes a distribution network and technical support.²⁹

The other major land issue has to do with soil quality. Most land in New York City is contaminated. One study of 54 community gardens in New York City found that 70% had at least one sample that exceeded recommended health values.³⁰ Soil tests typically show high concentrations of lead and other heavy metals, a product of nearly a century of leaded gasoline emissions, dumping of waste, and the many other effluents in the toxic urban environment. Vegetables grown in this soil may absorb heavy metals and pose health risks, particularly to children.³¹ This does not necessarily mean that the risks of urban farming outweigh benefits, though they suggest the importance of applying the precautionary principle. In the absence of research, it is impossible to know whether these health risks are any greater than those caused by contamination of industrial food grown outside cities on extensive farms that have for decades used large

doses of chemical fertilizers and pesticides. It is not known with certainty that pesticide residues on supermarket produce are any less risky to consumers. If growing fresh produce in the city encourages more people to switch from a diet heavy in added sugar, salt and additives to a diet of fresh produce, perhaps the benefits will outweigh the risks.³²

Two major choices for dealing with contaminated soil present themselves to urban farmers: remediate the soil or import healthy soil for use in raised beds. By far the prevalent choice has been to import soil. For example, in Red Hook (Brooklyn), Added Value³³ successfully developed an urban farm with imported soil on a huge sheet of asphalt in a city park. However, while raised beds might be more expedient and safer in the short run, they require buying or building frames, and trucking in soil – a disincentive to urban farmers that also adds energy and environmental costs. Research suggests that the risk to farmers from soil around raised beds could be significant,³⁴ and requires a strategy to address existing soil quality. There is also no systematic testing of imported soil, so the assumption of higher quality may be based only on marketing claims. More important, however, this model postpones indefinitely the prospect of healing the soil, improving the urban environment, and breaking with the industrial model of agricultural production. It continues to treat the soil, and land, as isolated from human activity, a physical space instrumental only to human dominance and control. It does nothing to change the relationship of alienation between people and the land, nor does it help us move towards a new eco-systemic model of human habitat and reproduction.^{35,36}

Soil remediation as a strategy by itself can be problematic. It can take years or decades to remediate soil using plants known to extract heavy metals and those plants must be disposed of elsewhere lest they continue to contaminate the site. The science of soil analysis and remediation is not readily available to most residents, nor easily interpreted in complex situations. Different plants absorb heavy metals in different proportions, and the health risks they pose to humans and animals that consume them are variable and often unclear, though the risks to children are not disputed. Urban farmers are going to give up if the standard becomes ‘pure’ soil, if there could be such a thing.

Prospect Farm decided to gradually heal the soil. New soil is created by using compost from local kitchen scraps and gradually blending it with existing soil. Follow-up soil tests have shown a satisfactory improvement over several years. However, there are justifiable concerns about the remaining heavy metals in the soil. A precautionary policy is still needed to control consumption, particularly among vulnerable populations, especially given the known dangers of lead and other heavy metal poisoning among children.

People: labor, work, race, class and gender

Land alone is not enough. Prospect Farm, like many community gardens and urban farms, was possible only because of the growing dissatisfaction among residents with industrial food and extensive community organizing. Individual urban farmers are motivated by many different things, including the

desire to exercise, volunteer, and socialize with neighbors. But people must want to farm.

However, the reproduction of age-old myths about the idyllic peasant and joys of farming, were often witnessed. Urban farming can either address or exacerbate deep divisions of class, race, gender and age that characterize both rural and urban life. Beyond romantic notions of bucolic bliss, creating a farm in a city of concrete and asphalt requires a lot of digging and lifting, especially when the plot of land is too small for machinery. Dreams of vertical farming and hydroponics notwithstanding, manual labor is an essential part of urban farming, but to what extent will the division of labor follow historic patterns of labor exploitation? Who will do the work, how much will they be paid, and will they be paid at all? Farm laborers in the United States today, including those producing organic produce, are among the poorest paid, have to put up with miserable working conditions, and are largely invisible to the rest of the world.^{37,38} Who is to say that urban farms, whether public or private, won't follow the same pattern? Will the small bunch of enthusiastic volunteer farmers give way to a new generation of underpaid peons? Can unpaid labor be regenerative without being exploitative?

When humans created the first cities, farming was the main line of work and women did most of it. Farming became a business, men took over and hired others, including women and children, to do the hardest work. Will the gendered division of labor and child exploitation be reproduced in urban agriculture? The most serious divisions in North American agriculture, however, have been along racial lines. Plantation agriculture and sharecropping in the Americas used and abused slaves and freed blacks under the harshest conditions. Today, immigrants from Latin America and the Caribbean work on industrial farms under continuing harsh conditions. In major U.S. cities, food workers have the lowest earnings. As a result many younger blacks and Latinos reject urban farming, consider manual labor a step backward and chose not to get involved. At the same time, many of the city's community and backyard gardeners are black and Latino women who are still ‘invisible’ to others.

Community

Prospect Farm evolved as a cooperative rather than individual gardeners tending separate plots. In New York City this is the exception and not the rule. There is a powerful tension between individual and community purposes, and it has been prominent among community gardeners. This was evident in the struggle to preserve hundreds of community gardens in the 1990s.³⁹ In the midst of a real estate boom, Mayor Rudolph Giuliani attempted to sell off most of the city-owned community gardens to developers. Economically and ethnically diverse gardeners came together in coalitions to push back the effort, leading to the preservation of most gardens in community land trusts. At the same time, longstanding ethnic, gender and age differences weakened unity and the potential for growth. For example, in a neighborhood filled with community gardens, Manhattan's Lower East Side, intense gentrification pressures and historic divisions between squatters and housing advocates threatened the survival of many of these gardens. In addition, gardens that were once

bastions for the preservation of Puerto Rican culture became sculpted retreats for gentrifiers.⁴⁰ In neither case is food production necessarily a central element as it once was, for example, during World War II when Victory Gardens were widely used to support the war effort by supplementing scarce food supplies.⁴¹

Working cooperatively, as part of a community, is difficult and complicated. It provides opportunities for co-learning about food production, engagement with advocacy groups, and building consciousness about the need for wider changes in the food system and urban life. It can help movements grow beyond individual place-based communities and force the wider policy changes needed to expand urban agriculture.

Changing local policies: land, labor and community

If there is to be even a modest expansion of agriculture in New York City, there must be substantial changes in fiscal and land use policy. The city can heavily tax vacant land and provide tax credits for urban farming. It can promote growing food and composting in all schools, parks and community facilities. The city can shift its generous infrastructure subsidies and tax incentives from large-scale commercial and residential developers to urban farmers; the federal government can also shift its subsidies from factory farms to local, organic producers. This can all be justified by the public benefits of urban farming: energy savings from reduced transportation demand; the reduction of storm water runoff by encouraging rainwater harvesting, groundwater recharge and the replacement of hard surface with urban farms as part of the city's recently developed green infrastructure plans.⁴² Farms can also be composting projects that help reduce the city's enormous bill for exporting solid waste estimated at \$1.3 billion per year.⁴³ Finally, zoning changes should reduce areas for residential development and explicitly permit agriculture throughout most of the city.

In addition, professionals from public health, urban planning, community development and other sectors can play a role by breaking down the barriers that have come to separate these disciplines⁴⁴ and finding new ways to create and disseminate the evidence that can support new policy approaches.

These larger initiatives focused on land use policies have little chance of coming to pass unless the elements of people and community are part of the process. At the very heart of this historic challenge is nothing less than changing the relationship of people to land. While it requires changes in policy from the top down, it also requires continuing engagement from the bottom up, involving people and communities as subjects and not objects of change.

Conclusions

The scaling up of urban farming could come about because of two major crises facing the city: the epidemics of obesity and diabetes, accelerated by the rise of industrial agriculture and highly processed food, and sea level rise due to climate change. Just as Victory Gardens emerged in response to a crisis, urban farms could promote healthy local food

production. They can be a viable alternative land use in the sizeable flood-prone areas of the city, now some 30% of all land. They can help secure local food supply in the case of disasters such as the flooding from hurricanes and superstorms. Urban agriculture can help create a new agro-ecological approach to food production that is integrated with all aspects of human life, closes the production-consumption circle, helps build communities, and restores the commons. By narrowing the huge gap between food production and consumption slow food and slow cities can be created for everyone. A breakthrough for New York's urban farms will help break the huge skepticism barrier.

Author statements

Ethical approval

None required.

Funding

None declared.

Competing interests

None declared.

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