

Growing Food in the City: The Production Potential of Detroit's Vacant Land

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Urban Prairie, 14th Street



Common Weeds: Musk Thistle (with Renaissance Center)



Urban Agriculture, Pierce Street

Photos by Corine Vermeulen
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INTRODUCTION

More and more the idea is surfacing that food cultivation might play a major role in urban areas; and Detroit, in articles from *USA Today* to *Time* to *Harper's Magazine* [1-3], has been hailed as the vanguard of scaling up urban agriculture. Because of the high level of vacant land, Detroit is well-positioned to consider the possibility of becoming an agricultural city. Furthermore, Detroit has several well-established urban agriculture organizations and more than 800 gardens. More recently, proposals for urban farms occupying 1000 acres or more have emerged [4, 5]. But what is really at stake within the idea of "Grow-town"?

- Is it really conceivable for urban farms and gardens to contribute to the urban food supply in any significant way?
- Do Detroit residents really want widespread farms and gardens? If so, for what purpose?
- What do they think the benefits are and what are their reservations?
- What are the obstacles to making ideas like these a reality?
- What would it take to grow the urban agriculture movement in a way that makes sense for the community?

As a way to shed light on these questions, this report presents a summary of research on the possibilities and desirability of food cultivation on the publicly-owned vacant land in Detroit, which was conducted over the period of June – December 2008 [6, 7]. In the first part of our analysis, we quantified all of the vacant parcels that had no structure present and that were owned by the City of Detroit, Wayne County or the State of Michigan (excluding public parks). We then compared this quantity of land to the amount of land needed to supply Detroiters with as much of the fresh fruits and vegetables they eat each year as possible given the limitations of the growing season. In the second part of our analysis, we talked with Detroit residents about their perspective on expanding urban farms and gardens in the city through ten

interviews with urban agriculture leaders and others who are professionally affiliated with urban agriculture and through five focus groups with residents affiliated with urban agriculture organizations or other community groups.

The first section of this report develops the analysis of production capacity relative to the annual consumption of fruits and vegetables. The second section highlights the key themes that emerged in discussions with Detroit residents through the interviews and focus groups. Lastly, the conclusion brings these two pieces together to highlight several considerations relevant to the future of urban agriculture in Detroit.



Bee Hives in Detroit garden
Photo by Kathryn Colasanti

PUBLICLY-OWNED VACANT LAND AND ITS PRODUCTION POTENTIAL

Starting with a database of all the parcels within the city limits of Detroit purchased from the City of Detroit GIS Sales and Service Center (which originated within the Assessor's office), we looked at those that were designated as publicly owned, but not owned by the City of Detroit Recreation Department, and had no structure present. This resulted in a catalog of 44,085 vacant parcels with a total area of 4,848 acres (7.6 square miles). While the City's database of vacant properties has been reputed to contain substantial inaccuracies [8], we were able to cross-reference the vacant parcels in our catalog within the two subset areas in Figure 1 with 2005 aerial imagery [9] and subsequently found only 45 of 1,323 parcels (3.4% error rate) misclassified as vacant that appeared to have a home or other structure present.

Table 1 shows the total number and cumulative acreage of vacant parcels by ownership category. These figures are substantially lower than the consistently reported 30,000 – 40,000 vacant acres in the city [1, 4, 5, 10, 11]. Furthermore, this catalog of vacant land does not include land in and around parks, golf courses, cemeteries, schools, churches, hospitals, jails, utilities, right-of-way areas, or privately owned property, much of which could include garden space. In short, there are numerous reasons to believe that this catalog of vacant land is particularly conservative but it may come closer to representing the quantity of land more readily available for urban farms and gardens because these parcels are publicly-owned and are clear of any buildings.

Figure 1 shows the distribution of these parcels across the city as well as a subset of two neighborhoods that provide an example of a high vacancy and a low vacancy area. The low vacancy areas would lend themselves to small, interspersed garden spaces. With the high vacancy areas, however, it could be more feasible to incorporate multi-acre farms comprised of several contiguous lots.

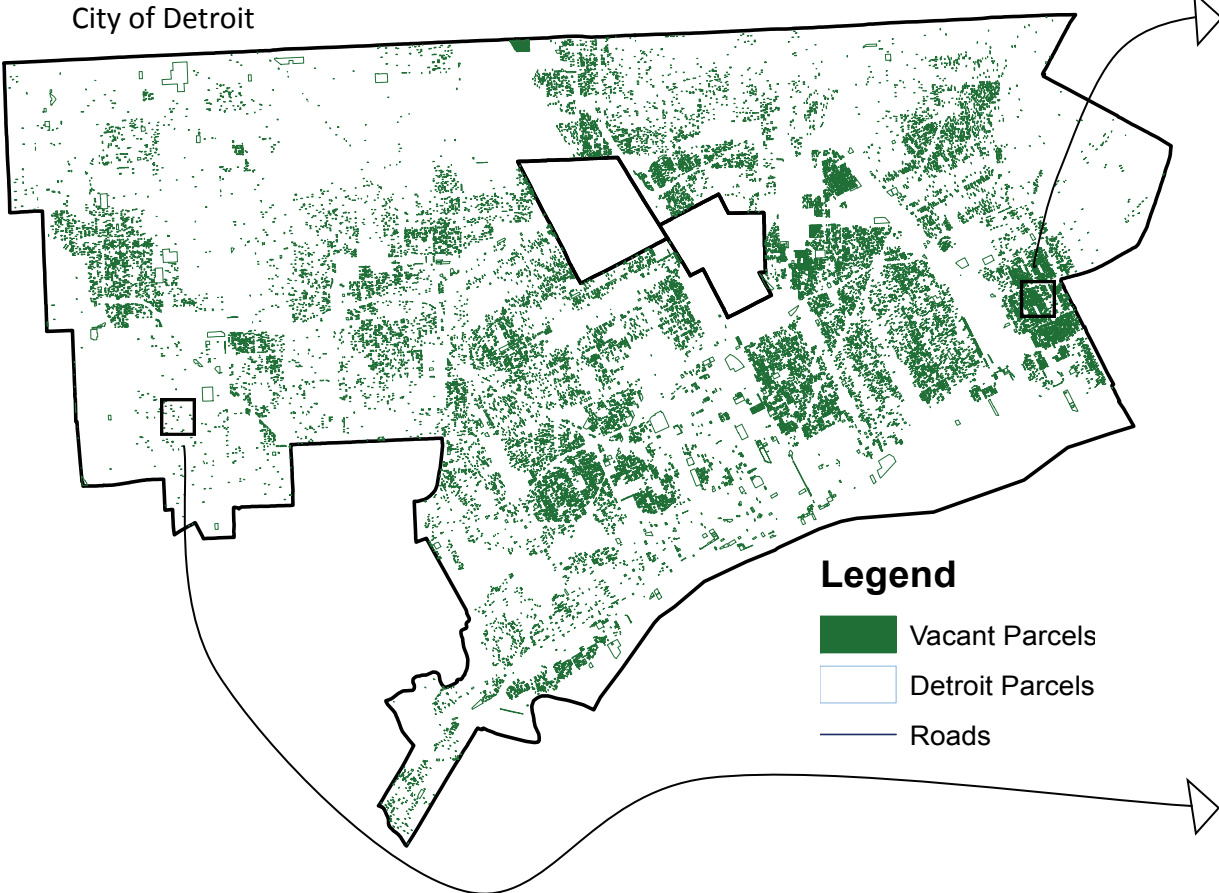
Table 1: Vacant Land by Ownership Category

Ownership	No. of Vacant Parcels	Acres
City of Detroit	31,123	3,589
Wayne County	6,135	563
State of Michigan	401	104
Wayne County Land Bank	551	55
State Land Bank	5,875	537
TOTAL	44,085	4,848

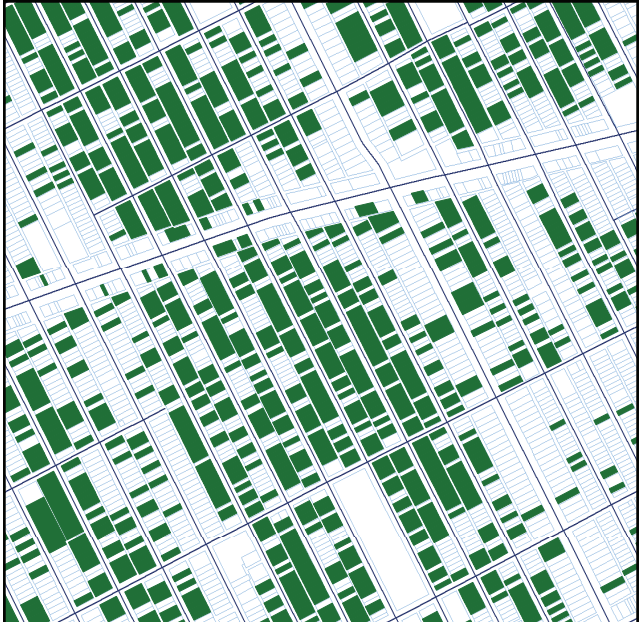
In order to look at how much food could be supplied from this vacant land in Detroit in comparison with the quantities of food consumed by Detroit residents each year, we utilized national average consumption data for fresh fruits and vegetables. (This is the only data available for individual types of fruits and vegetables.) Next, we looked at the portion of the year that each of these crops, excluding the tropical fruits, is seasonally available. In order to understand how season extension techniques and post-harvest management would impact this availability, we compared three scenarios: 1) using only field harvest 2) using field harvest and storage (keeping crops like potatoes, apples and carrots in a controlled temperature environment for later distribution) and 3) using field harvest, storage and season extension (increasing the length of the growing season through unheated hoop houses).

A hoop house, also called a high tunnel, is a passive-solar greenhouse constructed with double-layered plastic sheeting stretched over a metal framework. These structures, which are more affordable and

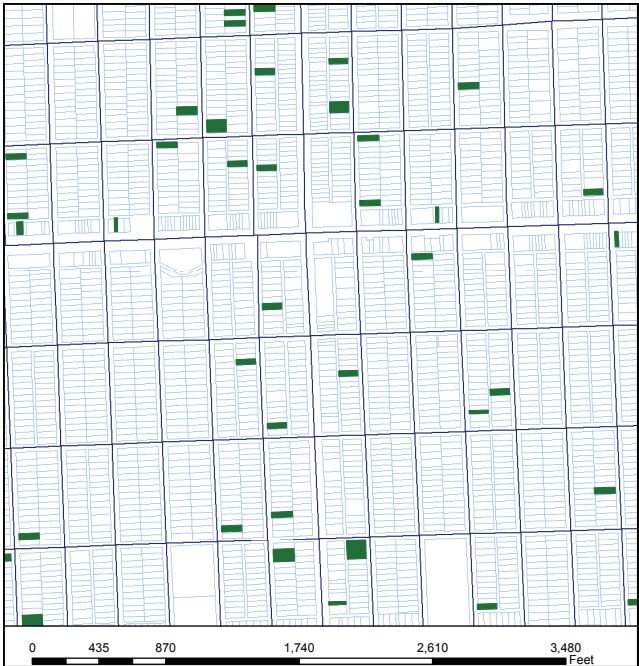
Figure 1: Distribution of Vacant Parcels Across Detroit. The two subsets show examples of high and low vacancy neighborhoods and the different degrees to which vacant parcels are contiguous.



Zip Code 48215



Zip Code 48228



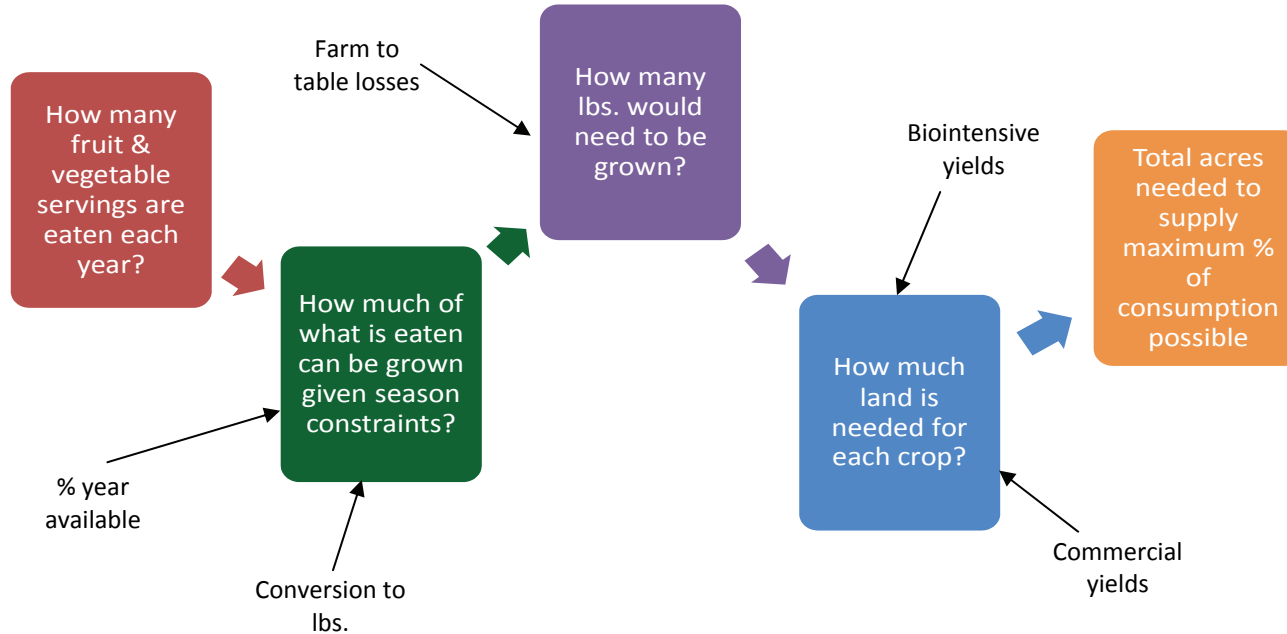
easier to construct than standard greenhouses, make possible year-round production of a number of crops and can greatly extend the growing season of other frost-sensitive fruiting crops.

After factoring in the losses that occur through the supply chain [12, 13] and applying a range of approximate yields for each crop, we were able to estimate the amount of land that would be necessary to supply as much of the fresh fruits and vegetables consumed in the city as seasonally possible (See Figure 2 for an overview of our methods). As a way to estimate both the upper and lower end of the amount of land needed, we used high productivity biointensive yields (small-scale, intensive growing methods of interspersed crops with experienced producers) [14], low productivity biointensive yields (small-scale, intensive growing methods of interspersed crops with beginning producers)

[14] and commercial yields (large-scale, more mechanized growing methods) [13, 15-18].

According to these calculations, putting between 263 acres (high productivity biointensive yields) and 1,660 acres (commercial equivalent yields) into production could supply 31% of all of the fresh vegetables and 17% of all the fresh, non-tropical fruit that Detroiters eat each year. Increasing the seasonal availability of crops through the use of storage and season extension where possible pushes the potential portions of the produce supplied to 76% of vegetables and 42% of fruit. But this would also require between 568 acres (biointensive) and 3,602 acres (commercial). The relationships between production scenario, acreage required and the percentage of annual consumption supplied are illustrated in Figure 3. As this figure shows, as storage and then season

Figure 2: Overview of Methods for Production Capacity Analysis



extension are included, the percentage of the fresh produce consumed in the city that would be possible to grow in the city increases significantly but a greater amount of land is also required.

Several conclusions can be drawn from these estimations. First, maximizing the growing season through post-harvest crop management and through season extension makes it possible to supply significant portions of the fresh fruits and vegetables consumed annually: roughly $\frac{3}{4}$ of vegetables and nearly $\frac{1}{2}$ of fruits.



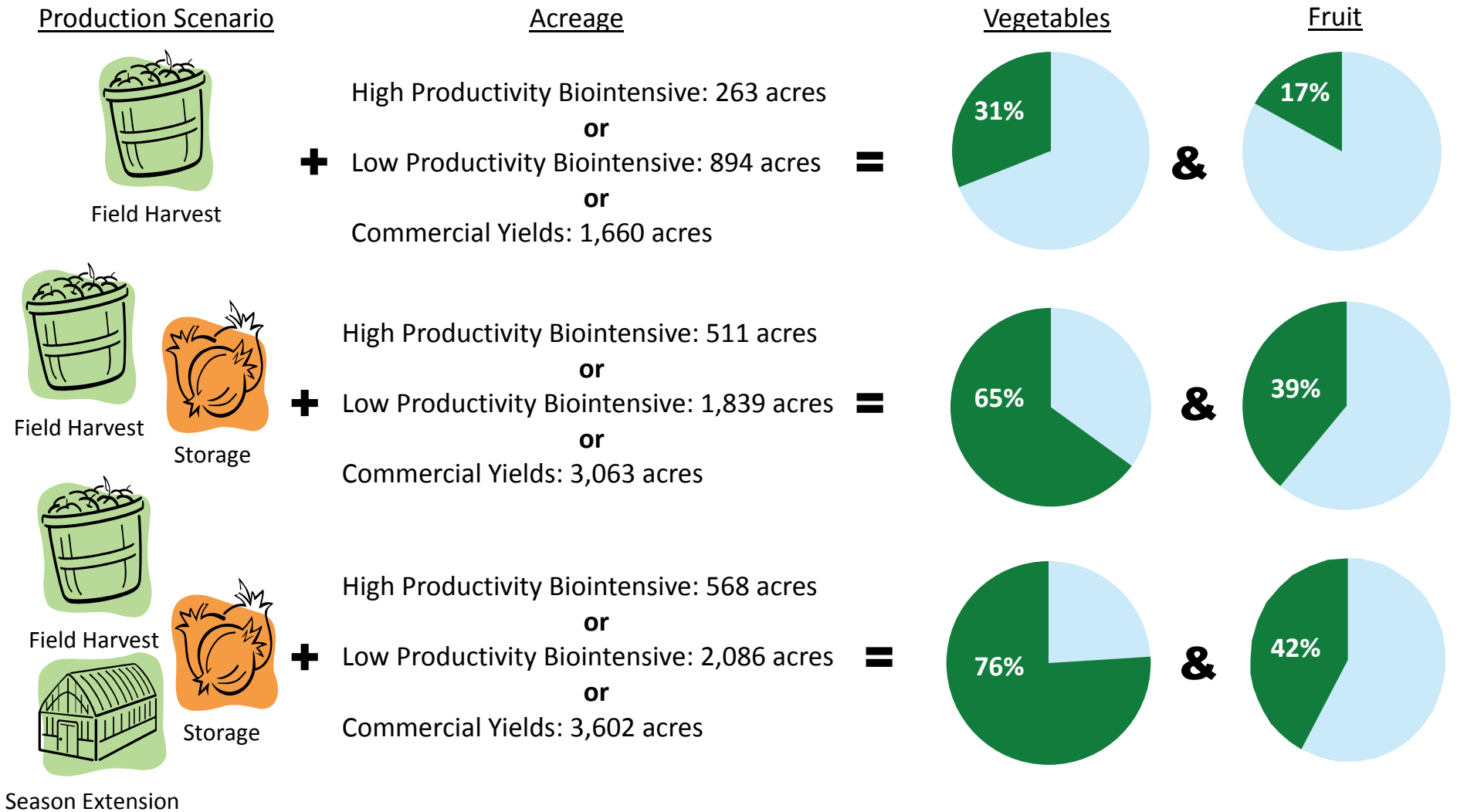
Photo by Marty Heller

Secondly, particularly if biointensive growing methods are assumed, the amount of acreage required to generate substantial contributions to the food supply is relatively small. Even the commercial equivalent yields translate to less than 200 square feet per person when including both post-harvest storage and season extension opportunities. Yield levels comparable to our biointensive estimates would necessitate less than half of the conservative estimate of potentially available vacant land we catalogued. It is also important to note, however, that if Detroiters increased the amounts of fruits and vegetables in their diet to the levels recommended by the USDA My Pyramid guidelines, approximately three times as many acres would be required to produce the same percentages of the food supply. This is true for each of the yield levels and with each of the production scenarios.

This analysis makes several key assumptions that likely significantly overestimate the quantity of land required to reach the previously discussed percentages: namely that only one crop would be grown on any given square foot of land through the duration of the growing season, that hoop houses would require additional acreage rather than extend the productivity of existing acreage and that hoop houses would only be used for crops with reliable early and late season market demand. On the other hand, if we included the canned, frozen or otherwise processed fruits and vegetables that Detroiters eat, rather than only those purchased fresh, the land base required to supply the same percentages would be approximately double. Lastly, this analysis assumes that people eat the same quantities of different fresh fruits and vegetables each month. But for any of the crops that people eat in greater amounts during the harvest months, a greater proportion could be locally supplied and a larger land base would be needed than this analysis recognizes.

Figure 3: Local Production Capacity.

- % of annual vegetable or fruit consumption that could be supplied through local production given seasonal constraints
- Remaining portion of total annual fresh vegetable and fresh non-tropical fruit consumption by Detroit residents



PERSPECTIVES ON URBAN AGRICULTURE EXPANSION

A crucial dimension of understanding the potential for expanding urban agriculture is considering the perspectives on the desirability and the role of urban farms and gardens among residents of the city. Many of the Detroiters participating in interviews (10 people) and focus groups (72 people) articulated visions of farms and gardens becoming a significant part of the city. In the words of one individual “I’ve had this vision for 20 years of turning Detroit into an agricultural powerhouse. Because, again, all these lots... it’s like, if we use them for something, you could provide employment, you can take black folks back into the days when we were an agricultural people. Land is capital! ...Detroit could be known worldwide for being an inner-city that grows food in the community then – boom! Big time.”

Another person said “I would love to see the city designate some area in the city, rezone them as... semi-agricultural zones where people can have maybe some chickens and some big gardens, commercial gardens where they could sell... now this time in history where we have all these empty lots, this would be a perfect time to raise these issues with the city council...”

At the same time, it was clear that different groups of people valued urban farms and gardens for different reasons. The Hmong community seemed most interested in growing food as a means of providing for their families and as a possible means of additional income. Those who were connected to urban agriculture organizations were more likely to emphasize the neighborhood ties that are often strengthened through community gardens. They were also more likely to think of urban farms and gardens as a way to move towards a system of food production, distribution and retail that prioritizes community ownership, local integration and environmental stewardship far more than the current system.



Photo by Marty Heller

Others, including a group of seniors and of youth, viewed urban farms and gardens as a way to access higher quality food outside of conventional market channels in the instances that people were interested in doing so. But they did not view urban agriculture fulfilling the role played by grocery stores and other food markets.

These different purposes – income generation potential, community development opportunities, local food system development, and alternative means of food access – can co-exist but because they could also come into conflict, there is a need to engage diverse communities in creating a vision for the form and the scale of urban agriculture in Detroit. For example, even simple infrastructure components, such as perimeter fencing, can be looked at very differently depending on

whether the intent of a garden space is to draw a community together or to provide a product to sell. Furthermore, the impact on neighborhood character and the way a garden space relates to the surrounding community can differ significantly according to both the scale and the type.



Birdtown Community Garden, Cass Avenue
Photo by Corine Vermeulen

One theme that emerged is the idea that farms and gardens, particularly when they are larger than an individual residential lot or when they are present in large numbers, constitute a fundamental aesthetic change to the urban landscape. Not everyone was comfortable surrendering the traditional urban look and feel to a semi-rural landscape. Recognizing this, one of the interviewees stated “A lot of times what happens, the people that support urban agriculture or are into it look

at the people that don’t as ‘they just don’t get it.’ We have to not have that attitude. We have to figure out a way to embrace those folks and help them to be comfortable with it, but also respect that there are people who just want the urban feel in an urban area.”

Similarly, different views emerged regarding how permanent urban farms and gardens should be. For some, they are a valuable long-term land use for the social, entrepreneurial and health benefits they represent and as a path towards a more sustainable city. But for others, gardens simply represent a good way to use land until there is a stronger market for traditional forms of development. This divergence in perspective begs the question that some of the interviewees recognized as a potential obstacle to the growth of the urban agriculture movement in Detroit: is development defined, as one interviewee put it, “in terms of concrete and bricks” or “in terms of people and quality of life”? Several of these individuals felt that development must be conceived of more broadly than currently typical in order to recognize the social and ecological value of land uses like urban agriculture.

The question of urban agriculture as a permanent or a transitional land use also speaks to the need for a larger vision for the role of urban agriculture in the city. Numerous interviewees from outside the circle of urban agriculture activists and leaders felt that farm and garden spaces can serve a purpose in the city but that they should be established under the guidance of a larger plan for the use of vacant land in the city rather than put in haphazardly. As one person put it, “We don’t have a structure for this to fit in or a vision that it’s becoming a part of. What we need is a plan for how to implement urban agriculture in the city of Detroit, from the backyard garden to the urban farm and everything in between.”

On the individual level, people also garden for different reasons and value different things about the experience. The paucity of sources for healthy food in Detroit and its effect on health status has been

frequently chronicled [19-21] and was again reiterated by the participants in this project. The dissatisfaction with food retail in the city is a motivation to garden for many people. But some people also commented that the limited availability of fresh produce can encourage eating habits that suppress any desire to grow things like bok choy and rutabaga.

But at the same time, according to a number of the gardeners, when people do participate in growing food, especially youth, they are often more open to trying new fruits and vegetables. Several people attested to the ability of gardening to not only lead to changes in eating habits but to a deeper relationship with food altogether. And as both focus group participants and interviewees noted, urban agriculture is not just about food and nutritional health. Many people discussed things like the ability of gardens to bring people together, to teach job skills, to build a sense of personal responsibility and worth in youth and to provide a venue for hands-on education.

When thinking about opportunities for scaling up the level of food cultivation in Detroit, the question of who is interested in growing their own food becomes important. On this topic, the people interviewed for this project had clearly different perspectives. Some people saw the agrarian heritage of many Detroiters as an asset to the urban agriculture movement. Others, however, felt that the older generation was resistant to returning to the hard labor of hand-tended agriculture. One woman recounted her mother's response when she asked her to participate with her in a garden: I've "been there, done that. I'm not doing it anymore. The food market is right down the street." There was a similar spectrum of opinions regarding how open youth would be to gardening; they are both more impressionable and open to new things and further distanced from the real source of food. It is also important to realize, however, that not everyone has the capacity to spend time growing their own food on top of the many other demands on their time and energy.

But beyond the issue of who would be engaged in gardening, the research participants also made clear that a broader acceptance of urban agriculture would necessitate adjustments in how and where people shop and in how people conceive quality food. As one interviewee recognized, many people have come to associate high quality food with high-end retailers like Plum Market or Salvaggio's, rather than the tomatoes at Eastern Market that look just a little different. In other words, the market demand for produce grown in the city may only grow slowly and in tandem with the expansion of urban farms and gardens.



Heirloom Tomatoes
Photo by Cara Maple

Many of the participants who were not actively gardening or part of urban gardening organizations were fairly cynical regarding the interest or ability of the City to facilitate the establishment of gardens on vacant lots, not believing that the land tenure would be secure or that the City even knew who owned many of the vacant lots. Indeed, several leaders of urban agriculture organizations described undergoing lengthy waits before being able to lease land from the City. Those not associated with urban gardening organizations also feared problems of soil contamination and of garden security.

These issues speak to a need for greater involvement from the City. At the same time, however, participants in this project consistently felt that as the urban agriculture movement grows in Detroit, the grass-roots groups should maintain a lead role while the city should play an enabling role. Based on these focus groups and interviews, it seems that local government officials could play at least four key roles: 1) improve the process of vacant lot disposition and reuse, particularly for use by community groups; 2) help facilitate a community process of creating a vision for urban agriculture; 3) design policy and zoning requirements that allow urban farms and gardens to operate in the city but at the same time respect the desires of the broader urban community; and 4) approve a process to ensure the safety of food cultivation

on remediated soil and the safety of food grown in urban gardens utilizing lead containment techniques. With respect to the last role, soil contamination was one of the major concerns that surfaced among those not involved with gardening or not sure of agriculture's place in the city. While Detroit garden programs currently either ensure soil is free of contamination before beginning cultivation or bring in clean soil, as interest in farms and gardens widens, the push to cultivate on formerly industrial or otherwise potentially contaminated areas may intensify. If urban agriculture aims to reach more Detroiters either as gardeners or shoppers, greater assurances of how the risk of soil contamination can be minimized may be important.

On the non-profit side, interviewees generally agreed that the urban agriculture organizations were quite strong and quite well networked. However, the focus groups demonstrated that there are still many people who are not aware of resources to support garden participation. Some people were also concerned that their community was not adequately represented in the urban agriculture groups. To this end, Detroit's urban agriculture movement will benefit as the non-profit organizations are able to expand their capacity and as the movement is able to better reflect the racial and ethnic composition of the city.



Photo courtesy of
Denver Urban Gardens

CONCLUSION

What's apparent from the production capacity analysis is that even with a limited growing season, significant quantities of the fresh fruits and vegetables eaten by Detroiters could be grown locally. Secondly, investments in produce storage facilities and in hoop houses could significantly extend the productive capacity of urban farms and gardens and the potential to supply food locally. As the amount of food cultivated and as the use of storage and season extension increases, however, it will become increasingly necessary to confront possible means of distribution as well as the legally and socially acceptable land uses. To take one example, both the City and the community must decide if storage facilities and hoop houses could be considered acceptable as primary structures on vacant land used for agriculture.

From the perspective of Detroit residents, it will be important to discuss the importance of an "urban feel" to the city and what constitutes such an aesthetic. Coming to a collective understanding of the desired purpose or goal of urban farms and gardens will also be critical. Residents in this project largely indicated that in many cases urban agriculture is a means to something else rather than an end unto itself. This begs the essential question: a means to what? Furthermore, given the adjustments in eating and shopping habits, not to mention direct participation in food cultivation, that those interviewed recognized would come with utilizing urban agriculture as a significant basis of the urban food system, it will also be important to consider the pace of expanding farms and gardens and ways to integrate urban agriculture with the current and hoped-for food infrastructure in the city.

Further research on the possibilities of urban agriculture in Detroit could also help shed light on the appropriate scale of farms and gardens. It will be important to understand what models of urban agriculture both enable a viable economic enterprise, constitute a socially acceptable land use and enable a greater number of residents to

participate fully in the economic life of the city. Another task is to look at how significant the problem of contamination is and how it can be feasibly addressed at larger scales of cultivation. It may well be that a patient, longer-term perspective will be necessary in this regard. Lastly, more detailed mapping of the vacant parcels at sub-city scales, perhaps including both those publicly and privately owned, could facilitate community discussion of the role for urban agriculture on a community by community basis.

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Photo by
Cara Maple

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