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# GROWING FOOD IN THE CITY: TWO APPROACHES TO EXPLORING SCALING UP URBAN AGRICULTURE IN DETROIT

By

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# ABSTRACT

GROWING FOOD IN THE CITY: TWO APPROACHES TO EXPLORING SCALING UP URBAN AGRICULTURE IN DETROIT

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Increased interest in the sustainability of urban landscapes, the rise of community gardens as a response to degraded neighborhood conditions and marginalized communities, and dissatisfaction with the conventional food system have all contributed to an increase in the number of urban farms and gardens across many US cities in recent decades. As urban agriculture (UA) practices become more widespread and gain support from a broader range of actor groups, it will be important to understand the impacts of transitioning from UA at the neighborhood scale to UA at the city scale. This research explores the dimensions and possibilities of expanded levels of urban food production in Detroit, MI through two distinct methodological approaches. Drawing on focus groups with residents and interviews, both with UA practitioners and those professionally engaged with UA, chapter two reveals the vision for, the dimensions of and the potential for scaling up urban agriculture in Detroit. Chapter three draws on secondary data analysis and an inventory of publicly-owned vacant parcels in Detroit to estimate the extent of the possible contribution to the food supply from urban food production. Research results show, first, broad support for UA in Detroit but different expectations for the role and the extent of farms and gardens and, secondly, an apparent potential to supply a substantial portion of current fresh fruit and vegetable consumption on less than the cataloged acreage of vacant land if high-productivity biointensive yields are assumed.

The following pages are dedicated to all the Detroiters who love their city

and to the urban gardeners everywhere

who plant seeds with hope for greener cities and better tomorrows.

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## INTRODUCTION

With populations urbanizing, energy use concerns mounting and cities depending on food produced in ever more distant hinterlands, it has become increasingly necessary to address the question of how cities can sustainably meet the food demands of their citizens. Barely on the heels of the turn of the millennium, we perhaps now more than ever before have motive to challenge the predominant conception that defines cities in opposition to agricultural landscapes (Pothukuchi & Kaufman, 1999). In the face of predictions that by 2030 eighty-two percent of the population in developed nations will live in urban areas (United Nations, 2004), it becomes clear that "sustainable development is unthinkable without sustainable urbanization" (Smit & Nasr, 1992, p. 152).

In America's de-industrialized urban cores lies an opportunity to create a new vision of development. In these places there is an occasion to not only build a template for sustainable urban landscapes, but to envision a post-industrial city with the capacity to move towards agricultural self-provisioning. Research on urban agriculture (UA) can help define this capacity. Furthermore, there are two principal reasons why urban agriculture deserves greater scholarly attention. First, the academic literature, popular press articles and a growing number of UA-focused non-profit organizations all testify to the immense increase in urban agriculture interest in recent years. As further testament to the growing significance of the movement, in October of 2008 *MetroAg: the Alliance for Urban Agriculture* was established to link UA practitioners, advocates and scholars across the US and Canada (Reynolds, 2008). In light of this growth, research can play a

role in bringing to conceptual maturity the meaning, impact and role of urban farm and garden spaces and activities. Secondly, as the need to design urban spaces sustainably and the question of long-term viability of industrial agriculture come to the fore, research can help define the possibilities and the limitations in bringing food cultivation to our cities.

There is no better place than Detroit, arguably the epitome of urban decay, to explore this new vision of possibility. How could expanded UA fit into the landscape of the city? Could putting unutilized or underutilized public land to productive use through urban agriculture enable Detroit to be self-sufficient in food resources? Underlying this research is the hypothesis that if Detroit made use of the vacant public land through urban agriculture it could meet a substantial portion of the residents' dietary needs. In exploring this possibility, research is presented that assesses stakeholder perceptions of this vision and estimates the amount of land needed to meet the maximum amount of resident fruit and vegetable consumption seasonally possible. In setting the stage for this research, this chapter outlines the forms, dimensions and definitions of urban agriculture. This leads to a definition of *city-scale urban agriculture* that shapes the nature of this work. A general overview of the literature on urban agriculture is then presented, highlighting two sub-themes – the integration of UA with the cityscape and UA as a means of food provisioning – with particular relevance to the research goals. Finally, the research questions, research methods and the site of the research are introduced.

## WHAT IS URBAN AGRICULTURE?

Food cultivation in cities is as old as cities themselves (Jacobs, 1969), but urban agriculture as it is presently practiced can take a number of forms. A land inventory of

spaces suitable for urban food cultivation in Portland, OR offers a helpful typology of four principal forms (Balmer et al., 2005). These authors distinguish between 1) community gardens; 2) small-scale growing operations, such as food bank gardening, market gardening and farm stands; 3) large-scale growing operations, such as Community Supported Agriculture operations, urban farms, and urban orchards; and 4) growing on impervious surfaces or poor soil, such as vertical gardening, indoor production of mushrooms, aquaculture, container gardening and hydroponics. Backyard gardens are also often included as a component of UA (Brown & Carter, 2003). Furthermore, community gardens themselves can range in form and purpose significantly, including leisure gardens, child and school gardens, entrepreneurial gardens, crime diversion gardens, healing and therapy gardens, neighborhood pocket parks, ecological restoration gardens and demonstration gardens (Ferris, Norman, & Sempik, 2001). While raising livestock and fish can be a part of UA, these activities are far more prevalent abroad than they are in the US (Brown & Jameton, 2000).

Urban agriculture is of course distinct from rural agriculture in that it takes place within an urban area. In some cases the term peri-urban agriculture is applied to agriculture outside of the urban boundary. In other cases the geographical boundaries to which the descriptor of UA is applied are either indistinct or quite generous. However, it is when applied to agriculture within the core urban boundary that "urban agriculture" has the greatest conceptual utility. Beyond its location, UA is also unique in its form and character. While rural farming has undergone increased capitalization since WWII, urban cultivation is generally characterized by low-capital, small-scale, intensive production. Many urban agriculture projects employ innovative techniques to conserve or recycle

resources and to maximize space, such as vermiculture composting and rooftop gardening. In short, by performing distinct functions and operating under distinct characteristics, UA is complementary to, rather than a substitute for, rural food cultivation (Mougeot, 2000).

Comparing urban agriculture in the global South to that of the global North reveals parallels but also several general distinctions. Research on urban agriculture in developing countries has highlighted the ways in which these food cultivation practices contribute to the household economy, whether by providing marketable goods or enabling a measure of income fungibility (Mougeot, 2005; Moustier & Danso, 2006; Nugent, 2000), and supplement household nutrition (Altieri et al., 1999; Maxwell, Levin, & Csete, 1998; Moskow, 1999). Indeed, urban agriculture is thought to provide an important means of subsistence for impoverished urban dwellers and for this reason is often practiced illegally in the large metropolises of developing countries (Ellis & Sumberg, 1998).

In contrast, scholars looking at urban agriculture in countries of the global North have highlighted the ancillary social and environmental benefits of food growing, particularly in the form of community gardens. For example, research on community gardens in the UK found that food production is many times not the main goal driving garden formation (Holland, 2004). Furthermore, for some, practicing urban agriculture may also be a way to opt out of the mainstream agrifood system (Abbott, 2009). Urban farming and gardening as for-profit activity in the United States is a more recent sub-movement, often referred to as entrepreneurial urban agriculture. But even these forms of gardening and farming typically have underlying social motivations (Kaufman &

Bailkey, 2000). Entrepreneurial community gardens, in particular, often generate only modest income and are driven by a mission to productively employ youth or resource-challenged adults in ways that create opportunities for better quality jobs, finding first jobs, securing housing, breaking the cycle of recidivism, or pursuing higher education (Feenstra, McGrew, & Campbell, 1999). These projects also aim to build bridges between these marginalized populations and the surrounding community (Feenstra et al., 1999).

Yet, as dissimilar as the urban agriculture movement of the first and third world may appear, Irvine, Johnson & Peters (1999, p. 38) argue that cities across the globe share the common realities of "a vast and growing disparity between rich and poor urban dwellers and a deepening environmental crisis," conditions which have heightened advocacy for community gardens. Furthermore, as cities in the first world expand onto farmland, the concentrated demand and reduced means of production spur the development of commercial export farming in the third world, displacing subsistence farmers and leading to increased urbanization in the global south (Irvine et al., 1999). Thus at the same time that advocates in North America are using urban agriculture as a means to redevelop a connection to food production for city dwellers, formerly rural farmers are undertaking their own forms of urban agriculture in the wake of their displaced livelihood. From this perspective, the urban agriculture movements of developed and developing countries are linked through the structures of the global agrifood system.

## Definitions and Dimensions of Urban Agriculture

Having worked through the basic forms and characteristics, it is now appropriate to move towards more precisely defining UA. In a review of definitions of UA, Quon

(1999) finds that the types of activities included and the boundaries specified vary considerably but offers the definition provided by Smit et al. as one that has been adopted by numerous other authors:

> An industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock (Smit, Ratta, & Nasr, 1996, p. 3).

Similarly recognizing the input-output cycle between UA practices and the urban ecosystem and then extending it further to include not just products but resources and services as a contribution of UA back to the city, Mougeot (2000, p. 10) revises the Smit et al. (1996) definition as follows:

> UA is an industry located within (intraurban) or on the fringe (periurban) of a town, a city or a metropolis, which grows or raises, processes and distributes a diversity of food and non-food products, (re-)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area.

This latter definition opens the door to considering the multiple ways in which UA affects and is affected by the socio-cultural, socio-political and ecological dynamics of the city.

At any scale, urban agriculture involves various dimensions by virtue of its multiple benefit categories, the diverse motivations of its participants and the numerous ways in which its practice integrates with the urban ecosystem. Yet there are distinct differences between what at one end of a continuum would be scattered neighborhood gardens maintained by individual actors and at the opposite end would be city government agencies, planners, developers and community-based groups working

together in an integrated approach to support and expand urban food cultivation in order to realize the full potential of its multiple benefits.

The further UA moves towards the latter end of this continuum, whether in practice or in rhetoric, the more important it becomes to ask questions regarding what is desired by residents, what is possible to achieve and what policy and infrastructure supports are needed. In other words, we need to look at how the relevant questions change if we shift from thinking about UA as serving "a niche function in terms of time (transitory), space (interstitial) as well as [operating under] specific social (e.g. women and low income groups) and economic (e.g. financial crisis, food shortage) conditions" (de Zeeuw, Guendel, & Waibel, 2000, p. 161) to thinking about UA as a municipal- and community-level investment in creating an urban landscape that challenges an agrifood system in which the urban locale is merely a throughput of food, that furthers urban sustainability and that engenders a new relationship between hardscape and natural spaces. It is to this latter end of the continuum that the phrase *city-scale urban agriculture* is applied. For the purposes of this research, then, city-scale urban agriculture is defined as:

> a network of cultivation spaces and production activities in which food is produced by and for the local community and around which city government and administrative departments, the private sector, non-profit coalitions and neighborhood groups are involved in order to expand, support and integrate these activities into the life of the city.

Following the level of integration into the urban ecosystem indicated by this definition, it can be argued that there are at least six realms of urban living potentially impacted by urban agriculture – namely community, economy, environment, health, agrifood system and education. The influence on these realms occurs at the individual

and the neighborhood scale, as well as at the scale of the city. For example, in the realm of the food system, gardens can encourage participants to eat a greater number of fruits and vegetables and can increase the food security in a given neighborhood. At a larger scale, expanding urban food production necessitates considerations of how the food grown would be marketed and distributed beyond the growers themselves as well as considerations of opportunities for local food processing. Likewise, considerations of socio-cultural foodways in regards to food consumption and purchasing patterns also become relevant. Within the community realm, scaling up urban food production brings into play the gardener/farmer networks and their associated organizations, as well as the advocacy and participation of these groups in shaping the urban agriculture agenda.

Finally, policy measures and infrastructure developments necessary to support UA become increasingly necessary when moving along the continuum towards city-scale UA. These, however, tend to be more integrated in nature rather than specific to a particular realm. Policy measures can include zoning policies along with the larger planning and legal framework in which UA operates. Infrastructure can include season extension infrastructure; processing, marketing and distribution infrastructure; and urban composting facilities. Institutional processes for such components as farmer and gardener training or soil testing and remediation also become necessary at the city scale.

It is important to bear in mind that the influences of these various dimensions and the influence of UA operate in a cyclical relationship. That is, as much as UA impacts the aforementioned dimensions, all of these practices and policies also influence the nature of UA activities. Essentially, not only are resources, products and services from the city used by UA and supplied to the city by UA in a functionalist sense (Mougeot, 2000) (see

Figure 1-1), but the socio-cultural, political, economic and ecological realities of the city shape and are, to greater or lesser degrees, shaped by UA. This dimension of the city-scale UA concept, in particular, seems to hold promising new frontiers for researchers of urban agriculture. With this understanding of the basic elements of UA and the concept of UA at the city-scale in mind, a review of the UA literature is now presented, which will pave the way for introducing the research questions and methods.

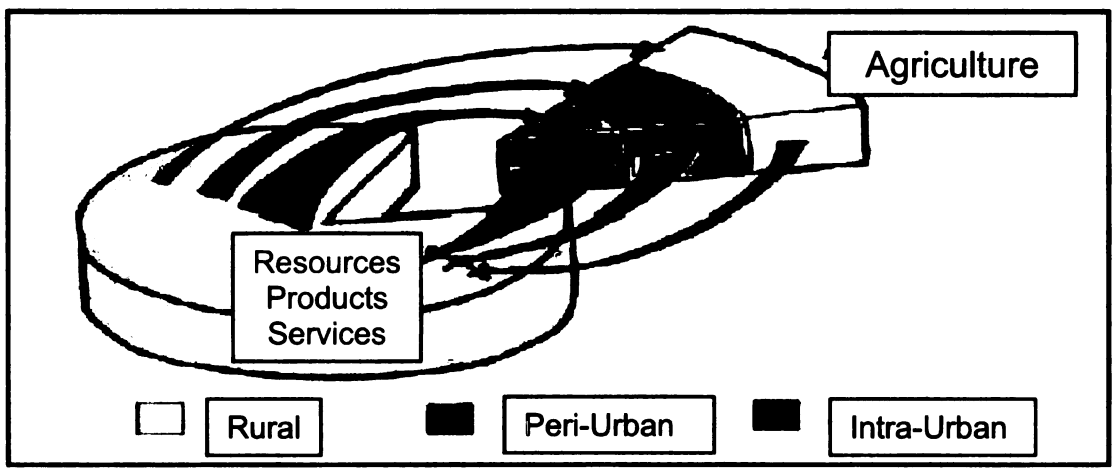


**Figure 1-1: The Integration of Urban Agriculture into the City.**
As this graphic illustrates, UA is more integrated into the city, in the sense of being dependent on and contributing to the urban environment, than peri-urban or rural agriculture. Adapted from (Mougeot, 2000)

## URBAN AGRICULTURE IN THE LITERATURE

### *History of Urban Agriculture Practice and Research*

Community gardens originated as a reaction to the widespread privatization of land accompanying industrialization in late eighteenth century England that drove enclosures of formerly common land in agricultural areas and development of open spaces in urban areas. The loss of the capacity for self-sufficiency and the advent of landlessness prompted parallel philanthropic and self-help efforts to establish community gardens (Warner, 1987). In the US, the prominence of backyard "victory" gardening

during both WWI and WWII, in which gardening contributed as much as 40% of the fresh fruits and vegetables consumed in the country, is often highlighted in historical sketches of UA (see for example Hanna & Oh, 2000; Patel, 1996; Saldivar-Tanaka & Krasny, 2004). Yet the emphasis on these episodic periods in which UA flourished may obscure the continuity of urban garden programs (Moore, 2006).

In the decades following WWII, the historical location of marginalized communities in environmentally degraded neighborhoods without access to urban green space, coupled with the disinvestment in urban cores by the white majority, confronted the civil rights, women's liberation, environmental and social justice movements of the 1970s to give rise to the current community garden movement (Hynes, 1996). More recently, urban agriculture as a social and environmental justice strategy is aligning with municipal interest in urban agriculture that recognizes the beneficial connections to public health, holistic urban planning, economic development and sustainable urbanization (Holland, 2004; Howe & Wheeler, 1999; Mendes, Balmer, Kaethler, & Rhoads, 2008; Schilling & Logan, 2008).

Within the last two decades, the scholarly literature on urban agriculture has grown considerably. While much of this literature documents UA in developing countries, there is an emerging literature from the industrialized nations that can be broadly divided into two main strains. The first tends to look at urban agriculture through a specific disciplinary lens in order to generate empirical evidence for particular dynamics or benefits. This includes research on health promoting dimensions (Alaimo, Packnett, Miles, & Kruger, 2008; Armstrong, 2000; Brown & Jameton, 2000), improved mental health and well-being (Kaplan, 1973; Waliczek, Mattson, & Zajicek, 1996),

contributions to youth development (Allen, Alaimo, Elam, & Perry, 2008; Hung, 2004), differential access to social capital (Glover, 2004), expressions of personal (Francis, 1990), cultural (Graham & Connell, 2006) and collective (Glover, 2003) identity, and the tensions surrounding the claim UA has to spaces and historical narratives of the city (Moore, 2006; Schmelzkopf, 1995, 2002).

The second strain of literature tends to be more advocacy-oriented in nature. Scholars in this area have often used case studies or relied on their personal experience to argue for the role UA can play in cities. Evaluations of particular garden programs often emphasize their beneficial impacts (Blair, Giesecke, & Sherman, 1991; Patel, 1994, 1996; Pothukuchi, 2004). Here we also see articles drawing links between UA and socio-ecological sustainable development (Ferris et al., 2001; Holland, 2004; Howe & Wheeler, 1999; Irvine et al., 1999; Smit & Nasr, 1992; Viljoen, 2005) or positing community gardens as a means of addressing poverty (Hanna & Oh, 2000; Patel, 1996), revitalizing vacant lots (Pottharst, 1995; Rosol, 2005; Schilling & Logan, 2008), encouraging cross-cultural interactions (Patel, 1994; Shinew, Glover, & Parry, 2004; Wakefield, Yeudall, Taron, Reynolds, & Skinner, 2007) and creating healthy, food secure communities (Connelly & Ross, 2007; Twiss et al., 2003; Wakefield et al., 2007).

Bridging the gap between these two divergent strains are a handful of scholars who take a broader perspective and look at the future of the UA movement in regards to the interests, motivations and strategies of its actors. Here we find research that: evaluates tools through which planners can support expanding UA (Mendes et al., 2008), positions UA within the discourse on community development, open space and civic agriculture (Saldivar-Tanaka & Krasny, 2004), demonstrates the class differences

underlying different forms of UA (Domene & Sauri, 2007) and explores the enthusiasm of UA practitioners and the skepticism of community development professionals in regards to for-profit UA in US cities (Kaufman & Bailkey, 2000). Taking the UA literature as a whole, however, makes clear that the field is far from a unifying framework for or consistent definition of UA.

In moving towards considering urban agriculture at the city scale, there are many questions that emerge. Two broad questions of interest for the purposes of this research are: How does urban agriculture fit into urban dwellers' images of their neighborhoods and their city? To what extent could urban agriculture supply the food needs of urban residents? These questions invoke two UA sub-literatures: urban agriculture and the cityscape and urban agriculture for food provision.

***Urban Agriculture and the Cityscape***

Since the Renaissance, utopian ideals rather than the natural processes of life in the city have determined the principles of urban form; as such, productive landscapes have largely been excluded from the modern city (Hough, 1984). Furthermore, as the visual connection to the countryside that characterized pre-industrial cities has been lost, so too has the explicit reminder of the city's dependence on food producing resources (Hough, 1984). More and more, both explicitly and implicitly, what is urban has come to be defined as non-agricultural (Pothukuchi & Kaufman, 1999). Yet, somewhat ironically, as cities have expanded onto agricultural land through suburbanization, they have often left land vacant in the city core, which then becomes available for urban agriculture (Hough, 1984; Warner, 1987). In many cases it is here, in the empty trash-strewn lots of

degraded inner-city neighborhoods, that the current community gardening movement first took root (Hynes, 1996).

Since the 1970s, community gardens and other forms of urban agriculture have continued to grow in number and become a larger part of life in many US cities. Government and public authorities have, however, generally denied gardens as a legitimate permanent use for land in the modern era (Hough, 1984; Moore, 2006), and many local governments have shown general disinterest in urban agriculture as an element of community or economic development (Kaufman & Bailkey, 2000). Yet the conception of a city without gardens, which opponents invoke to devalue their presence in urban areas, is ultimately an historical aberration from the long-standing inclusion of cultivated land that has characterized cities across time and cultures (Jacobs, 1969; Warner, 1987).

Up until the late 18th century in the Western world, town dwellers had always been gardeners (Warner, 1987) and the incorporation of garden plots within the cityscape is still the norm in many cities of the developing world (Mougeot, 2005). In the US, however, most community gardeners have had access to land for cultivation only at the whim of public institutions and the philanthropic community (Warner, 1987) and unstable land tenure continues to hinder the growing urban agriculture movement (Kaufman & Bailkey, 2000). In Detroit, where the population continues to decline and the list of vacant lots continues to grow, but yet where urban gardeners continue to expand their networks, there is a unique opportunity to challenge and explore the perception of what constitutes appropriate land use in a city and at what scale urban food production might be possible.

***Urban Agriculture for Food Provision***

While many dimensions of urban agriculture have been explored in the literature, relatively few studies have looked at the potential for urban agriculture as a food provisioning resource at the macro level. Research has shown that urban gardeners often donate to friends and family or those in need in their community, which enhances local food security (Bellows, Brown, & Smit, n.d.); but, research on the cumulative capacity of urban agriculture to meet food needs seems to be lacking. Nonetheless, there are a handful of studies documenting yields from urban agriculture, which provide a starting point to this inquiry. Due to intensive cultivation methods, yields from urban agriculture can be as much as 15 times higher than in rural agriculture (Petts, 2005).

An analysis of urban agriculture in Cuba noted that the potential yield, based on maximum productivity through their year-long growing season, was nearly 20 kg/m$^2$ and that 3m$^2$ per capita of land could supply 60kg, or half the UN recommended quantity, of vegetables for an individual (Altieri et al., 1999). Another study claims that in a temperate climate a 10x10m plot can produce most of a household's vegetable needs over a 130-day growing season (Sommers & Smit, 1994). At the national level, US Victory gardens produced 40% of the fresh vegetables consumed in 1944 (Hanna & Oh, 2000). Worldwide, the UNDP estimated that in the early 1990s one third of urban families were supplying approximately one third of all food consumed in cities (Mougeot, 2005). With many of these estimates, however, it is unclear how much of the food production is actually occurring within the core urban boundary.

The ability of urban agriculture to meet local consumption needs will depend in part on the nature of local consumption patterns. A study in New York compared the land base needed to support food intake in diets with varying meat and fat consumption levels,

demonstrating that diet composition can significantly impact the potential for local food provision (Peters, Wilkins, & Ficka, 2007). Because fruit and vegetable crops provide the highest yields and value per area cultivated (Viljoen, Bohn, & Howe, 2005), it is presumably most feasible for a city to meet its demand in this food category, which seems to be reflected in estimates of UA's contribution to food needs cited in the literature.

Yet again, however, the scope of the urban – suburban – rural landscape included in such estimates varies considerably or is simply unclear. Reportedly, Shanghai and Beijing are fully self-sufficient in vegetables (Howe, Bohn, & Viljoen, 2005) and several urban centers in Africa, including Brazzaville (Congo), Dar Es Salaam (Tanzania) and Accra (Ghana), produce 80% or more of their leafy vegetable needs (Mougeot, 2005). Estimates also suggest that some large Latin American cities are able to meet one third of vegetable demand through urban production (Mougeot, 1993). Urban food production also appears to supply significant quantities of animal products in some cities. Dar Es Salaam produces 60% of its milk, Addis Ababa (Ethiopia) nearly 80% of its milk, and Hanoi (Vietnam) 50% of its meat (Mougeot, 2005). In short, these estimates show that urban agriculture can potentially contribute to a city's food needs significantly. Yet the dearth of empirical studies and the generous boundary definitions leave unanswered the degree to which a city can self-provision its food resources.

There seem to be even fewer studies documenting the land base needed for food self-sufficiency in a given region. One study out of Kingston, Ontario found that urban agriculture could utilize 5,600 hectares in the inner-city to meet the fresh fruit and vegetable needs of 76% of city residents (Lam, 2007). Another study from Newark, NJ

looked at the cumulative potential of urban gardens in terms of the economic value of food produced and found that 1,900 gardens on 30 acres generated food crops worth over $915,000 (Patel, 1996). In other research, Peters et al. (2002) demonstrate that state level vegetable production can be compared with per capita consumption estimates on a crop by crop basis. While the intent of this study was not to measure the capacity for self-sufficiency, their approach would make these calculations possible.

The historically unique situation of Cuba presents an opportunity to understand the capacity of urban agriculture for food self-sufficiency at not just the community level but also the national level. In one case study from Havana, gardeners acquired 60% of the household's (nearly six people on average) produce needs from their garden (Moskow, 1999). While analysts predicted that with the easing of the food crisis the urban gardens would begin to disappear, they have instead remained an important part of the urban landscape and have even been expanding (Altieri et al., 1999). In the US, increasing scarcity and political instability of oil reserves and predicted vulnerabilities of agriculture in light of global warming, both of which affect the price of food in the industrial supply chain, point to the possibility of a scenario in which this country could be forced to be more reliant on local and decentralized food production, just as Cuba was during their "Special Period." In this sense, then, not only is it relevant to explore the potential of Detroit to feed itself through local sources given the city's own social-economic context, it is a question that also could warrant national attention in a not so distant future.

## Research Questions

This research was informed by consideration of the underlying big-picture questions: How does UA fit into the urban ecosystem? Can it (or should it) become a

part of the daily rhythms of urban life? Can urban food cultivation become an essential part of urban culture? What would UA look like at the city scale? What is possible? Subsequent to developing an understanding of the literature and a concept of city-scale UA, two parallel research projects were designed that asked the following:

- What is the community perception of and vision for city-scale UA?
  - How does the socio-cultural and food system context hinder or encourage moving towards city-scale UA?
  - How does participation in UA affect or reshape the socio-cultural and food system context?
  - How do stakeholders perceive city-scale UA?
  - What infrastructure is in place and what needs to be in place to support city-scale UA?
  - How do obstacles to UA inform the infrastructure needed?
- What level of urban food cultivation is possible?
  - What is the quantity and distribution of vacant, publicly-owned land in Detroit?
  - What amount of land is needed to meet current and recommended levels of fruit and vegetable consumption to the greatest extent possible given seasonal limitations?

## Research Methods

The specific methodologies employed in this research will be described in more detail in chapter two (qualitative results) and chapter three (quantitative results). This section provides a general overview. In answering the above-stated research questions, four principal research methods were used. In regards to the first research question (What is the community perception of and vision for city-scale UA?), a combination of topical interviews (Rubin & Rubin, 2005), with stakeholders professionally engaged in or connected to urban agriculture, and exploratory focus groups (Krueger, 1994), with Detroit residents participating in urban agriculture to varying degrees, were used. Both of these qualitative research techniques were semi-structured in nature and consisted of open-ended questions designed to solicit depth. The interviews and focus groups were

conducted in partnership with a fellow graduate student who took the lead in arranging the majority of the interviews and focus groups as part of a conceptually related but distinct research project. The research questions for the present study were incorporated into the research protocol of this project. The author attended the majority of the interviews and focus groups, but only conducted two of the interviews, and served as an assistant with the facilitation of four of the five focus groups.

In answering the second research question (What level of urban food cultivation is possible?), both secondary data analysis and GIS mapping were used. Based on a GIS database of all parcels within the city of Detroit obtained from the City of Detroit GIS Sales and Service Center (City of Detroit, 2008), the number of vacant, publicly-owned parcels within city limits was determined. The total acreage of these vacant parcels, both by zip code and for the city as a whole, was then calculated. This allowed comparison of the land available with the land base necessary to achieve the maximum amount of fruit and vegetable consumption possible within seasonal limitations. An array of secondary data sources that provided current fruit and vegetable consumption by Detroiters (U.S. Census Bureau American Fact Finder, 2006; U.S. Department of Agriculture Economic Research Service, 2008; U.S. Department of Agriculture Food and Nutrition Service, 2008), recommended fruit and vegetable consumption by age and sex (U.S. Census Bureau American Fact Finder, 2006; U.S. Department of Agriculture Center for Nutrition Policy and Promotion, 2005), food chain losses (Kantor, 1998; Peters et al., 2002), seasonal availability under varying levels of post and extended season crop management (Conner, Knudson, Hamm, & Peterson, 2008; Michigan State University Extension,

2004)[1] and yield figures for both commercial (National Agricultural Statistics Service Michigan Field Office, 2006; Peters et al., 2002; Peters, Bills, Wilkins, & Smith, 2003; U.S. Department of Agriculture Economic Research Service, 2003; Zandstra & Price, 1988) and biointensive (Jeavons, 1995) production were used in order to determine a range of requisite land areas under various production scenarios. The inclusion of only publicly-owned, vacant land excludes backyard gardens from the assessment as well as any type of UA that would fall under Balmer et al.'s (2005) category four of impervious surfaces. This research assumes that the expansion of UA would involve a blend of Balmer et al.'s (2005) categories one through three: community gardens, small-scale and large-scale growing operations.

## RESEARCH SITE

Detroit, because of several historical and present-day circumstances, represents a comparatively unique opportunity to consider the potential for urban agriculture. The city has historically been a leader in urban agriculture and had the nation's first officially recognized community gardens initiative, begun during the economic depression of the late nineteenth century (Gopakumar & Hess, 2005). Today Detroit is once again leading the nation with its growing urban agriculture movement. Currently there are over 150 community gardens in Detroit's Garden Resource Program network.[2] Urban Farming also manages gardens in over 50 locations within Detroit.[3] In spite of this growing movement, the city of Detroit does not have any policies that acknowledge urban agriculture as a legal land use (Lachance, 2004). A better incorporation of urban agriculture into the

[1] Seasonal availability estimations also relied heavily on unpublished harvest and distribution data from the Michigan State Student Organic Farm 2004-2008 growing seasons.

[2] Retrieved 5/4/09 from www.detroitagriculture.org

[3] Retrieved 5/4/09 from www.urbanfarming.org

vision of city development is therefore crucial for the long-term stability of this movement, not only to legitimate existing gardens, but also to anticipate conflict over garden spaces in the face of future market pressures for development.

In addition to the groundwork laid by urban agriculture proponents, some of Detroit's more unfortunate circumstances position the city to benefit from the advantages found in urban agriculture. Through fifty years of population out-migration to the surrounding suburbs, the city has struggled to maintain the health of its culture, economy and urban infrastructure. Detroit has a high incidence of what have been called food deserts (areas with a dearth of full service food retailers), and less than 1/5 of food stores in three low-income zip codes in Detroit carry the food items necessary for the USDA's "healthy food basket"(Pothukuchi, 2003). Over half of Detroiters must travel twice as far to reach a full-service food retailer than to reach a convenience store (M. Gallagher, 2007). Detroit neighborhoods with high percentages of African-Americans typically experience even greater distances from supermarkets than their Caucasian counterparts (Zenk et al., 2005).

Additional research in Detroit has shown that shopping at supermarkets is correlated with increased fruit and vegetable consumption, indicating that the greater distance to supermarkets may negatively impact health outcomes (Zenk et al., 2006). Furthermore, unemployment rates in the city are far above national averages (Altman, 2009), increasing challenges to household food security. Examining the prevalence of health disparities in Detroit, Schulz et al. (2002) posit the physical environment, community infrastructure and social environment as intermediate causes of health

outcomes. This suggests that changes in the landscape, such as gardens and increased access to fresh food, could help mitigate racial disparities in health.

Unlike many cities with an interest in urban agriculture, Detroit has an abundance of vacant land. The abandoned property in Detroit has been estimated to make up approximately 1/3 of the total 139 square miles within the city boundaries, or 40,000 lots (Gopakumar & Hess, 2005). This is roughly equivalent to the size of San Francisco. Another 2001 estimation puts the number even higher, citing the city-owned property alone at 46,000 vacant parcels and 24,000 empty buildings (Kaufman & Bailkey, 2001). Potential policies that would enable and promote urban agriculture on this vacant property have been proposed in the city of Detroit (Lachance, 2004) but thus far have not been adopted. Demonstrating the potential impact of urban agriculture on these vacant lots could help build the case for supportive policy measures. In summary, Detroit's historical and present-day leadership in urban agriculture, its need for increased access to healthy food as part of a strategy to mitigate health disparities and its copious quantities of vacant land all confirm that Detroit is an appropriate setting in which to consider heightened integration of urban agriculture into the cityscape and an ideal place to ask the proposed research questions.

## CONCLUSION

This chapter sets the stage by exploring the dimensions and characteristics of urban agriculture, by reviewing the academic literature on urban agriculture and by introducing the research questions, methods and study site. The following two chapters present, first, the qualitative and, secondly, the quantitative research results. Each of these chapters is written with the expectation of submission and publication as a stand-alone

journal article and thus can be read as such, as well as within the larger context of the research goals outlined here. The fourth and final chapter summarizes the results presented in chapters two and three, suggests implications of these results and outlines crucial directions for future research.

While chapters two and three present research that asks very different questions, that utilizes very different methods and that draws on very different frameworks, they have in common a goal of shedding light on the concept of urban agriculture occurring across a city. Chapter two paints a picture of the interest in UA among Detroiters and, along the way, illuminates many of the intricacies involved with expanding urban production as experienced by individuals and communities. Chapter three then shows what level of production is physically achievable. Together these chapters give form to the concept of city-scale UA introduced in this chapter and open the door to further research on the full potential of urban food cultivation in Detroit and beyond.

# CHAPTER 2:
# PERSPECTIVES ON
# CITY-SCALE URBAN AGRICULTURE

> *"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."* – Detroit interviewee


## ABSTRACT

In recent years urban agriculture has received increasing support as a strategy for food security and urban sustainability at expanded scales. Scholars have explored the impacts of individual community gardens but there is little understanding regarding the perception of city-wide farms and gardens amongst urban residents. This chapter explores the possibilities for and the perceived dimensions of *city-scale urban agriculture* in Detroit through semi-structured interviews and focus groups. Ten interviews provide an organizational and professional perspective on the potential of scaling up urban agriculture, and five focus groups give insight on the desirability, the presumed dimensions and the context of city-scale urban agriculture from a city resident perspective. Results reveal a belief in the strength of Detroit urban agriculture organizations and a widespread belief in the capacity to expand urban agriculture that simultaneously recognizes the many complexities involved.


## INTRODUCTION

Over the last few decades urban agriculture (UA) activities have continued to grow in scope and extent across the globe. Since the 1960s, when the most recent wave of US community gardening emerged out of the civil rights and environmental justice movements (Hynes, 1996), urban farms and gardens have continued to gain traction in many cities and now find support from a broadening circle of stakeholders including

planners (Balmer et al., 2005; Kaethler, 2006; Mendes et al., 2008), architects (Park & International Center for Urban Ecology, 2005; Viljoen, 2005) and public health professionals (Armstrong, 2000; Brown & Jameton, 2000; Twiss et al., 2003). In recent years urban agriculture has even gained acceptance as a strategy for food security and urban sustainability within municipalities (Mendes et al., 2008).

Much recent writing from UA activists and practitioners either argues or implies that cities should significantly expand urban agriculture for the ancillary benefits and for the presumed contribution to the sustainability of the urban environment. Yet there is little critical understanding of just what urban agriculture expanded towards a city scale might look like or what urban residents themselves might envision. Scholars have explored the impacts of individual community gardens and how these sites are viewed by gardeners, but there is little awareness of how urban residents, both gardeners and non-gardeners, might perceive city-wide farms and gardens. In order to understand the desirability or the possibilities for urban agriculture on a scale many practitioners advocate, scholarly efforts in this vein are crucial.

This research offers an exploration of perspectives from residents of Detroit, MI that provide a foundation for considering if or how urban agriculture might move from an activity affecting the lives of individual garden participants to an enterprise that plays a major role in the urban food system, in creating a sustainable urban environment and in shaping the identity of a city and its residents. There are of course many dimensions to such a consideration. As an entry point to research on scaling up urban agriculture, however, this chapter seeks to understand the perspectives of those participating in, connected with or exposed to urban agriculture in Detroit.

Definitions of urban agriculture vary, and while the FAO has defined it simply as food production that occurs within city limits (Food and Agriculture Organization of the United Nations, 1996), others have recognized uniquely distinguishing characteristics of urban agriculture:

> UA is an industry located within (intraurban) or on the fringe (periurban) of a town, a city or a metropolis, which grows or raises, processes and distributes a diversity of food and non-food products, (re-)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources products and services largely to that urban area (Mougeot, 2000, p. 10).

Here we see that what characterizes urban agriculture is not only its location but the manner in which it is embedded in an urban economic and ecological system (Mougeot, 2000). Furthermore, this definition encompasses the activities which integrate production into a local urban agrifood system in addition to the production dimension itself.

As UA moves away from playing a niche role (de Zeeuw et al., 2000) and expands across a city, the ways in which farms and gardens interact with the community, economic, health, agrifood system, educational and environmental dimensions of the city take on greater importance. Operating through only a niche role versus integrating into all realms of the city can be thought of as two ends of a continuum of UA practices. To differentiate UA at this latter end of the continuum we introduce the concept of *city-scale urban agriculture*, as:

> a network of cultivation spaces and production activities in which food is produced by and for the local community and around which city government and administrative departments, the private sector, non-profit coalitions and neighborhood groups are involved in order to expand, support and integrate these activities into the life of the city.

In many ways Detroit presents an ideal research site for this work. Not only does the city have a long history of municipal support for urban agriculture, beginning with Mayor Pingree during the economic depression of the late nineteenth century (Gopakumar & Hess, 2005), but it currently has one of the country's leading urban agriculture movements, a network of organizations promoting and creating UA opportunities and a newly created mayoral office with the goal of making land available for gardening (Gorchow & Patton, 2008). A Detroit community of artists and architects has even extended what some see as a local "urban agrarian revolution" beyond in-ground cultivation to projects which advocate re-envisioning the "destroyed house icon into a new-use icon" through, for example, worm farms or mushroom growing (Park & International Center for Urban Ecology, 2005, p. 172). Thus, particularly because there is already a network of non-profit organizations and community groups operating at a city-scale, Detroit offers an opportunity to explore the other components of city-scale UA.

Detroit has also experienced greater population loss, has faced a greater quantity of vacant land and abandoned properties and has confronted a greater percentage of its citizens living below the poverty line than the majority of other U.S. cities. Furthermore the retail sector of the dominant agrifood system in Detroit has been shown to woefully underserve its population in terms of providing healthy food access (M. Gallagher, 2007; Zenk et al., 2005). In short, Detroit has many components of a UA movement in place, has the physical territory in which to expand UA and comprises a postindustrial urban ecosystem with a turbulent past and an uncertain trajectory. Where better than here, then, to seek perspectives on what UA could mean at the city scale? This article begins with a review of the relevant urban agriculture literature, outlines the theoretical framework and

methods by which research was conducted, and then presents the results organized according to the sociocultural context and the influence of UA participation, the vision for and expected nature of city-scale UA and the structural context and barriers to scaling up UA.

## Scale and Context of Urban Agriculture Practices

Gardening in the city is for many people simply a matter of personal interest. Garden spaces can be important sites of personal expression harboring multiple meanings for the gardener (Francis, 1990), and the motivations underlying home gardening often combine social and nature-based desires (Clayton, 2007). For immigrant gardeners, urban food cultivation can be a way to maintain cultural identity and homeland traditions (Graham & Connell, 2006). Research on community gardens has further expanded our understanding of how engagement in UA activities confers multiple benefits to gardeners (Blair et al., 1991; Hanna & Oh, 2000; Patel, 1994, 1996; Pothukuchi, 2004; Schmelzkopf, 1995; Wakefield et al., 2007). Scholars have demonstrated the ability of gardens to positively affect fruit and vegetable consumption (Alaimo et al., 2008), enjoyment of nature (Kaplan, 1973), and self-esteem (Waliczek et al., 1996).

In contrast to these individually experienced benefits of urban gardens, other literature discusses urban agriculture in relation to collective efforts within particular societal contexts. Historical accounts of community gardens tend to emphasize the role they play in improving household food security during periods of crisis. The emergence of community gardens in the US has been linked to the economic downturn in the late 1800s (Hanna & Oh, 2000). In the twentieth century, urban agriculture flourished in the form of victory gardens during WWI and WWII (Patel, 1996; Saldivar-Tanaka & Krasny,

2004). During WWII, the US was able to produce 40% of its fruit and vegetable needs through these gardens (Hanna & Oh, 2000), although the US economy was at this point considerably more rural. Nonetheless, these periods, while episodic, demonstrate the capacity and potential scale of UA when the national government provides full material and discursive support and citizens have a worthy motivation.

In the 1960s -1970s, community gardens took on a more overtly political role as a response to urban conditions. The contemporary community garden movement has its roots in the civil rights and environmental movements of this time period, which together promoted UA as a means of combating urban blight and empowering marginalized communities (Hynes, 1996). Scholars influenced by these efforts have looked at urban gardens in relation to community development. Glover (2004) documents the resource networks in community gardens, showing that while garden operations can strengthen neighborhood relationships, not everyone has equal access to the social capital created. Using community-based research, Wakefield et al. (2007) show that community gardens are a venue for facilitating community engagement and sharing across cultures. Involving youth in UA practices can not only facilitate positive individual development, but also enable youth to experience their capacity to contribute to the neighborhood and improve community relations with youth (Allen et al., 2008; Hung, 2004). Community gardens have also been shown to symbolize collective achievement, in so far as they enable people to work towards a common goal (Glover, 2003), and can catalyze further efforts to create positive neighborhood change (Armstrong, 2000).

A small body of literature begins to shed greater light on the role of UA by looking holistically at its impacts on the day-to-day lived experience of residents and

neighborhoods. Alaimo and Hassler's (2003) *From Seeds to Stories, the Community Gardening Storytelling Project of Flint* allows gardeners' stories to speak for themselves in a way that showcases the personal and neighborhood pride community gardens can instill on both individual and collective levels. Hynes (1996) and Warner (1987) also place the role of UA in a larger neighborhood context. Their chronicles weave gardeners' stories into community narratives that highlight how people have used neighborhood gardens to reclaim their rights to green, productive space and their capacity to affect change in communities largely ignored by the market and abandoned by the state.

Slowly, more research is emerging that looks beyond individual gardeners or gardens and explores more broadly the underlying discourse and construction of meaning behind UA practices and how such practices integrate or conflict with other values. Saldivar-Tanaka and Krasny (2004) relate how Latino community gardeners view the role of their gardens in relation to the civic agriculture, community development and open space movements. In New York City, Schmelzkopf (2002) demonstrates how the rhetoric of garden activists in the face of proposed development of garden sites conflicted with market economy discourse, and thus challenged the underlying framework behind the right to open space (see also Schmelzkopf, 1995). Similarly, in her case study of Columbus, OH, Moore (2006) shows that the UA discourse of the urban elite can frame these practices in a way that obscures their continuity and neutralizes the potential threat to the capitalist urbanization process that they represent.

Often coming from a more explicitly advocacy-oriented framework, a handful of other scholars have begun to explore how UA can garner increased municipal support for expanding urban farm and garden activities. Drawing on surveys and interviews with

community gardeners, Holland (2004) argues that community gardens present an opportunity to pursue local sustainability in concert with Local Agenda 21. In one of very few studies to look at perspectives on expanding UA across US cities, Kaufman and Bailkey (2000) paired case studies of entrepreneurial UA projects with interviews of community development practitioners in order to assess the feasibility and interest in utilizing urban vacant land for food cultivation on a broad scale. They found that while many people are skeptical about city farming for a host of reasons, there are nonetheless a diverse and growing number of for-market UA initiatives which have demonstrated the possibility of attracting start-up funding and becoming profitable.

Taken as a whole, research on urban agriculture seems to have progressed from a focus on engagement in UA as a leisure form, punctuated by episodes of stronger government promotion and greater community participation in response to particular crises, towards a focus on the multiple social and ecological benefits by which UA furthers neighborhood revitalization and sustainable urbanization. An increasing body of activist-practitioner literature (Brown & Carter, 2003; Garnett, 1996, 1999; Rees, 1997; Sommers & Smit, 1994), a small number of municipal initiatives (Capital Growth, 2008; City of Vancouver, 2006; President of the Philippines Executive Order No. 776, 2009) and the work of a handful of scholars (Howe & Wheeler, 1999; Mullinix et al., 2008; Smit & Nasr, 1992; Viljoen, 2005) reveal the assumption that individual and neighborhood level benefits of UA will replicate themselves at a larger scale as UA is expanded across a city. Yet the very small body of research contributing to our understanding of how gardens and farms integrate with and affect urban communities has left us ill-equipped to understand the dynamics and the consequences of moving towards

city-scale UA, particularly from the standpoint of community residents. Very little research has asked urban gardeners to expand beyond their personal experiences and consider what urban agriculture means for their neighborhood or for their city, and even less research has sought to explore the perception of UA from non-gardeners. With the goal of addressing this gap, we turn now to the theoretical framework and the methods employed in this research.

## THEORETICAL FRAMEWORK

Recognizing that urban agriculture is embedded in and interacts with an urban ecosystem, a political ecology perspective helps us see that urban landscapes are produced through the influence of political and economic processes that, rather than being either socially or ecologically neutral, result in unequal distribution of costs and benefits among actors (Robbins, 2004). Research in this vein has shown that the resources and material conditions of urban environments can be controlled in a way that benefits the elite to the exclusion of marginalized populations (Swyngedouw & Heynen, 2003). Heynen et al. (2006), for example, show how urban green space in Milwaukee is unevenly distributed in relation to race and ethnicity. Different power structures formed around income and class lines have also been shown to influence what forms of UA become institutionally accepted and what forms do not (Domene & Sauri, 2007). Simply put, political ecology in the urban context highlights how "the regulation of our relationships with nature in cities... is ultimately a question of democracy, governance, and politics of everyday life in cities" (Keil, 2003, p. 729).

The admission that urban ecologies are socially produced through contested processes prepares us to more effectively explore the question of how Detroiters

understand the possibility of expanded UA. In short, the political ecology approach makes clear the need to understand how UA is viewed by different actors and in what context – that is, in relation to what other dimensions of individual, communal and city life – it is seen. Furthermore, if the production of socio-environments is contested and dynamic, the role of urban agriculture spaces and practices within these processes also surfaces as an appropriate focus of analysis. How might city-scale UA intersect with and influence the political-economic processes underlying urban landscapes? This approach both complements and clarifies the concept of urban agriculture as complex set of spaces and activities that interfaces with the urban ecosystem in multiple ways, resulting in a guiding conceptual framework for our research.

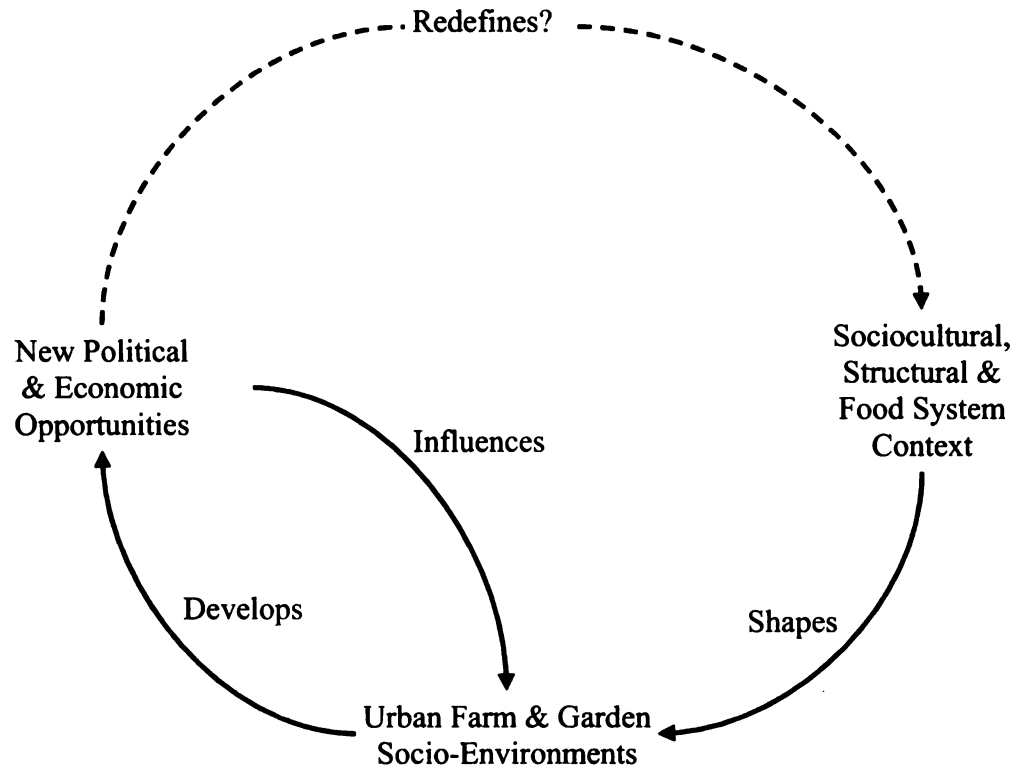


**Figure 2-1: A Political Ecology Framework of City-Scale Urban Agriculture**

One realm of political-economic interests relevant to UA is the dominant food system, which plays a key shaping role with regards to the impetus for, the conformation of and the benefits found in urban agriculture. To understand the potential for moving towards a city-wide urban agriculture, it is necessary to understand the behavior, beliefs and perspectives with respect to the broader agrifood system context and how these factors hinder or encourage UA (see Figure 2-1). Specifically, because UA, by virtue of both its nature and its locale, has a greater degree of interrelatedness with marketing and processing than does rural agriculture (Mougeot, 2000), thinking about scaling up urban production requires consideration of how cultivation might relate to these other agrifood system processes.

Urban agriculture activities, in turn, create new political and economic opportunities which may then affect the context in which they operate. The question then becomes, does a redefining of the context occur? These political and economic opportunities will also tend to influence the nature of urban farm and garden socio-environments themselves. Lastly, looking at the structural context, and the way in which obstacles to UA dictate the requisite supporting infrastructure, can further elucidate the dynamics and actors within city-scale UA as well as the potential to move towards the city-scale end of the UA continuum. Bearing in mind these relationships, our research questions are as follows:

- How does the socio-cultural and food system context hinder or encourage moving towards city-scale UA?
- How does participation in UA affect or reshape the socio-cultural and food system context?
- How do stakeholders perceive city-scale UA?
- What infrastructure is in place and what needs to be in place to support city-scale UA?
- How do obstacles to UA inform the infrastructure needed?

Since we were interested in the opportunities for UA on public land, considering the actors with a role in the use of vacant property helped us identify appropriate research participants. The main actors in the discussion of property reuse in Detroit are the City, the County and the State, along with the land banks at each of these governmental levels; the Planning and Development Department; community development corporations; economic development agencies; developers; UA practitioners; and, finally, city residents. At the time of this writing the City of Detroit had approved the creation of a land bank but this city-level land bank had not yet begun operations. The acquisition and disposition of tax-reverted property in Detroit has been plagued by property database inaccuracies, an opaque and inconsistent process, a lack of cooperation between government levels and a failure to make connections with an overall plan for the city or for particular neighborhoods (Dewar, 2006). Furthermore, City policies do not in any way legitimize UA as a legal activity in the city (Lachance, 2004). It would therefore appear that the bureaucratic and legislative environments are generally unsupportive in regards to the use of public land for UA. The large presence of urban farms and gardens in the city, however, speak to the fact that citizen-groups and non-profits have been effectively able to access land in numerous instances.

## METHODS

This research consisted of a series of open-ended interviews and focus groups with questions on urban agriculture practices, perceptions regarding scaling up urban agriculture and the potential for utilizing vacant land. All data collections occurred in Detroit between June and December 2008 in accordance with the guidelines for research on human subjects established by the Michigan State University Institutional Review

Board (Approved 6/4/2008 no. X08-484). While a systematic approach to the different interests in relation to public land and its availability for UA would be consistent with a political ecology framework, in this exploratory project, we sought out those aligned with or exposed to the UA activities in Detroit, which included representatives of many of the aforementioned actor groups, as a starting point.

A purposive sampling strategy, in which information-rich cases are strategically sought out based on their ability to provide in-depth understanding (Patton, 2002), was used to identify a total of ten interviewees, who were either part of urban agriculture organizations or who were affiliated with urban agriculture in their professional work. This allowed us to gain insight both from those seeking to advance the movement in Detroit and those who are slightly removed but still generally familiar with these efforts. Five interviewees were leaders of organizations engaged in urban agriculture. These UA practitioners represented organizations that collectively support over a thousand school, community and family gardens, a farm that provides produce to a soup kitchen and two farms, one of which includes animals, that sell produce on site and at a Detroit farmers market. An additional five interviewees represented economic development (two interviewees), university extension, farmers markets and planning. Developers and city administrators are conspicuously unrepresented in this sample, which, given the significant influence of these groups over the access to public land for UA, should be borne in mind through the presentation of our results.

A purposive sampling strategy was also used to identify participants for five focus groups with a total of 72 people. Here, however, the approach was closer to maximum variation sampling than the intensity sampling approach taken with interviews (Patton,

2002). Organizations through which focus group participants could be recruited were sought out on the basis of the ability to include both those active in urban farm and garden activities and those not actively gardening as well as the greatest extent of demographic diversity feasible. These organizations consisted of two urban agriculture groups, one senior services group, one high school for girls who are pregnant or have young children that incorporates urban agriculture programming and one neighborhood organization of first and second generation Hmong immigrants. Two focus groups were entirely African-American, one was entirely Hmong and two were majority African-American and minority Caucasian.

The ten topical interviews (Rubin & Rubin, 2005) consisted of semi-structured questions and averaged approximately an hour each (see Appendix A for the interview protocol). The five focus groups (Krueger, 1994) were also semi-structured in nature and averaged between one and a half and two hours in length (see Appendix B for the focus group protocol). The interviews, with individuals who see the UA activities in Detroit from a range of organizational and professional angles, and the focus groups, representing communities with a range of participation levels in UA, together allowed us to approach the full-spectrum of possible relationships to the Detroit farms and gardens in our sample.

All data collections were audio-recorded and transcribed for later analysis. Initial transcripts were inductively coded for dominant themes relevant to the research questions using ATLAS.ti 6.0. The coding scheme was successively adjusted with subsequent transcripts as necessary to reflect new themes (Rubin & Rubin, 2005). The coding scheme was applied to two of the transcripts by a graduate student external to the project

who provided critiques on the clarity and reliability of the coding scheme as well as its appropriateness for the data, which were used to make further adjustments. In the next step of the analysis, each data collection was analyzed, first by code and then by research question, as a way to build summary statements that accounted for dominant themes, that answered the research questions and that maintained the context of the specific interview or focus group. The resulting summary statements were then compared across data collections for each research question, which provided the basis for the final analysis (Miles & Huberman, 1994). In this way the analysis was successively constructed and the data collections progressively abstracted, but grounding in the verbatim transcripts was guarded throughout.

## RESULTS AND DISCUSSION

Neither the interviewees nor the focus group participants are representative of the full demographic diversity of Detroit. The Latino and Arab populations are noticeably unrepresented amongst the focus groups participants despite best efforts to include particularly the former group. Furthermore, because of the nature of the sampling strategy and the over-representation of individuals and groups engaged in urban farm and garden activities, the results likely reflect a greater awareness, appreciation and belief in the potential of urban agriculture than would a random sample of the general population. This however was an intentional strategy to over-sample those with the greatest experience of urban agriculture in Detroit and those who, if urban agriculture does scale up, will be at the heart of the effort. The inclusion of two groups either not affiliated with an urban agriculture organization or not actively engaged in gardening and a third group of high-schoolers who were gardening but not by choice expands the breadth of

perspectives in this study, lends credence to the interest in urban agriculture revealed and uncovers themes for further research on general population perspectives on urban agriculture in Detroit. We turn now to the results, organized according to three main themes: the agrifood system context and the influence of UA participation; the vision for and the perceived nature of city-scale UA; and the structural context, including obstacles and supporting infrastructure.

### *Agrifood System Context and the Influence of Urban Agriculture Participation*

Our first two research questions are addressed by looking at, first, how research participants relate the food retail environment and the urban setting to the potential for engaging in UA and, secondly, how they relate UA participation to these influences.

#### The Influence of the Urban Agrifood System on UA

All focus group participants were generally dissatisfied with the food available in the retail venues near them and most were resoundingly so. The exception was found in the group held with youth. While many of the youth participants acknowledged that Detroit neighborhood stores had a number of shortcomings and admitted to doing most of their shopping farther from the city, at the same time they felt that most Detroit residents were content with the food retail options. The four other groups revealed a widespread desire for greater access to natural foods and a pervasive distrust of food from industrial modes of production. Many individuals found gardening to be a way to bridge the access gap for trusted food.

The reasons for criticizing production methods of the dominant food system ranged from political, to personal health, to the desire for transparent access to information about the foods they purchase. The latter was particularly true among the Hmong, for whom the language barrier and cultural differences hinder obtaining product

information, and among the seniors, several of whom felt that food manufacturers, marketers and grocers take advantage of high-poverty, urban, African-American groups. Interviewees also generally agreed that the lack of access to healthy food in Detroit was among the most pressing issues in the food system, and several of the UA practitioners spoke of how this was part of their motivation to extend opportunities for UA. Taken as a whole, the focus groups and interviews reveal that in many ways dissatisfaction with the food retail landscape may lend itself to a greater openness to alternative means of food sourcing such as urban agriculture.

Even if the retail environment has limitations, however, several groups showed that the context of an urban environment can dissuade people from engaging in UA because it does not seem like a necessary activity in a commercially developed area. The participants in the youth focus group suggested that many people take food for granted and do not consider growing food in the city because it is not necessary for survival. In answering the question why more people do not garden, several responded saying:

> "I don't know. Maybe it's because they always have had other opportunities- like as far as going to the store and everything. But if all those things wasn't there, what would they do- they never think like that."
>
> "I think they don't do it, 'cause they don't know about it."
>
> "I think people, like, they come to the city so they can be more- I don't know- like country people feel like they gotta do more stuff because they in the country, city people want people to, like, do stuff for them, they wanna be like taken care of. So basically you don't have to grow nothing, because the city has everything."

Likewise, the younger generation in the Hmong community is much less inclined to grow their own food than the first generation immigrants because they see it as less necessary either economically or politically. Similarly, two of the interviewees felt that many people will only be pushed to grow their own food if economic conditions continue to

worsen. Other interviewees also noted the dependence on corporations for food access, the prevalence of a "fast food culture" and the dominance of TV and media, which together build patterns of processed food consumption, create expectations of instant gratification and discourage residents from realizing their own agency in accessing food through cultivation.

The groups connected to UA organizations discussed the disconnect from one's source of food from a different angle. One group spoke of how being in a city, and particularly one underserved by the grocery sector, obscures the possibility of eating fresh, garden produce: "You can't get no produce. And the children, it's just, they don't even know what produce is. I was picking a pea pod this morning and none of the children knew what a pea pod was. Never heard of it." The conversation in the second UA-affiliated group also focused on the ways in which limited food retail options encourage eating patterns that include limited amounts of fresh produce:

> Well people aren't going to go from junk food to organic overnight, so it'll have to be... if we could just get fresh produce – accessibility to fresh produce – to the residents of the city of Detroit, and then we can take it up a notch to organic, but they gotta get used to fresh, because it's like canned everything, and it's like fast food haven here in Detroit. So, we get them back in the kitchen, that's right there, making the first step.

In short what we see from these focus groups is that the food retail landscape in Detroit can be both a motivation for, in so far as its limitations encourage many people to look to food sources outside of the conventional food system, and a barrier to, in so far as it would necessitate major shifts in diet and food system practices for many people, expanding towards city-scale UA.

Influence of UA on Agrifood System Behaviors

As focus group participants revealed the benefits they experience through the activity of gardening or farming, we can begin to look at how participation in UA affects the sociocultural context in which it operates. The focus group participants active in UA organizations saw involving people in UA as a way to introduce new foods and new ways of eating that could shape the relationship to food and expressed a strong belief that youth gardening programs are among the more effective ways to influence food culture and eating patterns. One comment made during the youth focus group exemplified a general theme consistent with this idea:

> My granddaddy, he bought it [farm produce] all the time, but I wasn't as interested. Just like the regular tomatoes and stuff like that, I'd eat that, but he used to be there with like the curly kale, or all the, you know, and he'd be like, this is good for you, and I be like, no, I ain't tryin' it. But then I got here, and I was like, okay, I'll have some of that... really, bring me some.

Many of the interviewees also noted that participation in UA can encourage consumption of unfamiliar fruits and vegetables and start to foster "a different connection to food." But participants also broadly recognized that a food system based on UA would have to develop slowly and take into account current consumption patterns in order to have widespread participation, rather than try to force rapid dietary changes. In essence, while the agrifood system context may dissuade UA engagement, such engagement may begin to reshape this context in a way that increases openness to UA as a food source.

The focus groups and interviews also revealed that UA participation can impact agrifood system behaviors in ways beyond the influence on consumption and, in turn, the nature of UA in the city. As several UA-affiliated focus group participants emphasized, gardens can be a venue for instilling leadership capacity and food system ownership:

> It's not just about food. It makes a difference as to how you educate those who are coming on, as to whether they want to learn, and once you open that up to those that are in the leadership, then those of us that are seniors can then pass that on to them. So that they can be prideful. I don't want to overemphasize the pride thing, but it's that kind of thing that makes a difference, and, then establishing the foods they eat, and how it affects their lives, and for them to become a better person. With a voice.

Several interviewees similarly saw the workforce development capacity of UA as one of its primary benefits, particularly because of its accessibility to marginalized groups. As one of the professionally affiliated interview participants put it:

> It [food] provides so many simple starting points that it - if people in leadership positions are really serious about creating opportunity for everybody, agriculture is one of the few sectors in society that really can be grabbed onto by anybody. Another, another sector that would be comparable would be music and the arts, okay. But, but food is really that type of very big canvas to paint on and there are lots and lots of opportunities.

One of the UA practitioners engaged with youth also spoke of how UA can provide opportunities to not only instill a work ethic and a sense of responsibility, but to also teach life lessons such as recovering from mistakes. Furthermore, UA can be a way for people, in the midst of a consumer culture, to understand that they have the power to produce something of value.

What we see here, then, is that broader engagement with UA at the city scale may reshape the relationship with food and create a foundation for instilling greater agency in shaping the agrifood system among citizens. This is consistent with the community garden literature that emphasizes the role of UA in initiating community organizing for social change (Armstrong, 2000). One focus group participant in a UA-affiliated group articulated precisely this capacity:

> I think also that for residents currently living in the city, to participate in gardens with their neighborhoods is also, I think it improves the quality of life for those citizens already living in the city 'cause there's a platform for their community involvement and in terms of if other issues come around that come out of knowing your neighbor and the safety in your neighborhood, and there's these social networks that are especially important I think in neighborhoods like ours in Detroit, I think that in terms of people already living here it has that kind of, more resounding qualities, are a lot of what's important.

One of the UA practitioner interviewees also commented on the community interaction within gardens, an observation similar to that made by several other interviewees:

> And it [the garden] also breaks down barriers. I mean we've had Muslim, Jewish, Christian, Black, White, old, young - all kinds of people working together where normally if they had passed each other on the street they probably wouldn't have talked to each other. But you know, they'll be like kickin' it on the garden and I know, I've talked to other gardening organizations and they have the same experiences so there's something about the garden, it's like people just come together...

Thus there are numerous sociocultural influences, including the anomaly of self-provision in an urban setting and the limited exposure to and consumption of fresh produce, that run counter to the consumption and cultivation of local foods. From this research it seems that UA participation interacts with many of these influences. Furthermore, it seems that the ancillary benefits of UA, such as building leadership and personal capacity and fostering cross-cultural social networks, have the potential to lay the groundwork for affecting the sociopolitical context in which UA in Detroit exists.

### *Vision: The Nature of City-Scale Urban Agriculture*

The question of how stakeholders, both residents and those professionally involved with UA, perceive city-scale urban agriculture gets to the heart of this research. Fundamentally, do Detroiters see UA harmoniously integrating with their urban

environment on a large scale? And what would this look like? The interviews and focus groups conducted provide insight regarding the overarching vision for the future of UA in Detroit, the perceived value of UA at a city scale, the desired level of permanency or temporality of UA, the expected level of interest in UA participation and the degree to which an "urban" feel should be preserved.

Participants in all focus groups and interviews favored utilizing Detroit's vacant land for food cultivation, though with varying degrees of intensity. Several individuals spoke of the vacant land as an asset and offered their vision for an agriculturally-based city:

> I've had this vision for 20 years – of turning Detroit into an agricultural powerhouse. Because, again, all these lots that... 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! And that land could be used to – I mean, Detroit could be known worldwide for being an inner-city that grows food in the community then – boom! Big Time. – participant in a UA-affiliated focus group

> I mean, I think Detroit is a unique situation, as far as urban cities, in that our curses have been a blessing almost. Detroit had opportunity open to people at one time, you know, houses and businesses, and things of that sort, but out of the course of – due to white flight and people moving out in general, so you have a dearth – many, many acres of land available. That you don't have in most cities... We need to see how much we could actually produce in the city of Detroit feasibly – on a produce level as well as on a possible aquaculture level. And once that survey's done, it has to be taken advantage of and... It's gonna take money. That's the reality of it. It's gonna take several million dollars probably to do. A lot of manpower, and a lot of time. But once it's set in place, you gonna have a model that's gonna provide food, as well as ways for people to provide for their families as well. You know, the economy's real bad, so why not create your own economy. So that's what I see as the solution. – participant in a UA-affiliated focus group

> I would love to see the city designate some areas in the city, rezone them as like semi-agricultural zones where people can have maybe some chickens and some big gardens, commercial gardens where

> they could sell out of. ... 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 and try to get some zones at least rezoned so that these people who choose to live in an agricultural, they don't all have to do that, the whole city doesn't have to have chickens but, you know, it's - those people who like that would like - at least would have chickens. – participant in a UA-affiliated focus group

> Detroit could feed itself, Detroit could actually distinguish itself from any other metropolitan area in North America; it's one of the truly unique things about Detroit, and I tell you they could do it in a way that would actually encourage development that might actually, at one point, come to reduce the amount of land that's available for urban agriculture, but that's about the only way we'd get to that point as far as I can tell. – professionally affiliated interviewee

These are far reaching visions that recognize Detroit's unique situation opens the door to opportunities for UA.

Several participants also looked at the prevalence of vacant land as a unique opportunity for Detroit to move towards urban sustainability. Believing that food prices will continue to go up and gardening will become increasingly necessary for household livelihoods, one person in a UA-affiliated focus group commented "...they look at us as oddballs now, but twenty years from now we're going to be the ones that teach others to survive." Other people, however, simply saw UA as a good way to make use of otherwise idle and unmaintained spaces, which some felt project a negative image of the community.

Interviews revealed a similar divergence. Among the UA practitioners, several had visions of revamping food production in a way that tilts much more heavily towards the urban setting or goals of transitioning unutilized spaces, whether vacant parcels or rooftops, into productive areas. But several of the professionally affiliated interviewees felt that UA was just the best way to productively use vacant land in what they saw as an

interim period in the city's growth, especially because it can be undertaken with minimal resources and because it does not limit future development. This idea of UA as a transitional activity was exemplified by one person who said "[urban agriculture] puts land and people into productive use, perhaps not as intensely as we would like from the city-building standpoint, but far more intensely than the market might otherwise be for a while." Or as another professionally affiliated interviewee put it,

> If you think about having to use land differently in Detroit as an interim, as we try to readjust land usage, [urban agriculture] might be a good way to use land because of all these ancillary benefits like the learning opportunity, the entrepreneurial opportunity, the health opportunity.

In short, all research participants were supportive of using vacant land for UA but for some it was with the goal of creating a different future for Detroit and reconceptualizing the agrifood system while for others UA represented a way to realize the many ancillary benefits that are associated with urban food production until there is a stronger market for development.

The Role of UA

Focus group participants differed significantly in both interest levels in UA participation and expectations of how UA would contribute (or is contributing) to their lives or their community. Within the Hmong community, group members desired to cultivate large blocks of land as a way to provide for themselves, to reclaim their agrarian heritage and to regain access to culturally appropriate foods in an affordable manner from a source they trust. Their goal is to have enough land for each family to both provide for themselves and sell extra produce. This would also enable them to fulfill their desire for increased control over the source of their food, as indicated by this summary from the group translator: "And they, they don't trust the food that they buy from the stores; that's

why they make [their own] here... 'cause that's what they expect - what they eat, nothing wrong."

The group of seniors seemed to indicate that more UA opportunities would be a good way to obtain food outside of the distrusted conventional market channels and also expressed a desire for healthier food access within walking distance. At the same time, many in this group expressed a strong desire for mainstream, full service grocers in Detroit, indicating that either efforts to improve the structure of the conventional food system should occur simultaneously with UA expansion or distribution points for UA would need to have an equivalent level of functionality. On the other hand, many in this group could recall the time period of Victory Gardens when relative self-sufficiency was much more common. And at least a couple individuals pondered whether gardening might run counter to corporate interests in the food system:

> "Well, do you think that that could be fitting into somebody's conspiracy theory? They make you have to walk in that store and spend their money?"
>
> "Yeah, 'cause you know back when my mother and them had a garden, greens, tomatoes, peppers, onions, strawberries and blackberries - you didn't buy those things."

The youth represented an interesting perspective among the focus group participants because they were gardening not by choice but because it was a required part of their high-school curriculum. As such, the interest level in engaging in UA beyond their current setting varied, and some had no interest in further farm or garden involvement. Among the youth who were interested in possibly using vacant land to garden, there was a recognition that growing one's own food made sense in terms of the higher quality of produce, the economic savings and the freedom from reliance on stores.

In response to one person who expressed doubt regarding growing food in cities, another said:

> "Um, I don't agree with what you said. Because if there was no stores, how would ya'll be eatin'?"
>
> "We do have stores."
>
> "I'm sayin', if we had no stores, we'd have to grow food. We'd have to eat from the garden."
>
> "Yeah, that's true."
>
> "Alright, so I figure it would be best if we just grow..."
>
> "And I feel the food is more natural than the ones in the grocery store, with all pesticides and whatever all stuff in there. So it's better to grow it."

The vision for the role of UA was, not surprisingly, much stronger and much more overtly political within the groups affiliated with UA organizations. One group articulated a vision of being able to reconnect with food sources through gardening, of fostering diversity by tapping into the agrarian roots of different ethnicities, of moving towards increasingly sustainable food systems and of decentralizing food retail towards neighborhood produce markets in ways that support the choice of those interested in growing or purchasing local food. The other group envisioned using the cultivatable spaces as an opportunity for the community to address its own problems and create its own solutions in the food system: "We can help solve this problem because we have access to grow... I don't think it has to be a Whole Foods, you know, a commercial line store as a solution." This group emphasized the need to create a fundamentally different food system model that would be community-based, vertically integrated and, most importantly, owned by and created by the African-American community, and they saw UA as the entry point into this vision.

Collectively, interview respondents envisioned city-scale UA as a means of developing a local agrifood system that is more responsive to community needs, of reducing food insecurity, of achieving greater urban sustainability, of gaining citizen ownership in the agrifood system, of reducing vulnerability to crises and of reinvigorating education through outdoor classrooms that enable students to experience the joy of discovery. One UA practitioner noted that efforts to grow the UA movement in Detroit should parallel efforts to address pressing social issues such as joblessness, poverty and the lack of educational opportunities. Another professionally affiliated interviewee, however, felt it was precisely those issues that justify expanding UA in the city; as an enterprise that demands comparatively few resources and prior skill sets, it can effectively engage marginalized populations. Several professionally affiliated interviewees also emphasized that as UA expands it should integrate with, rather than hinder or supplant, more traditional urban development as well as be explicitly linked to economic development through connections with food processing, food retailing, workforce development and on-farm employment opportunities. But, as the economic development interviewees in particular recognized, such links necessitate determining appropriate distribution mechanisms and market outlets for UA, beyond simply addressing the cultivation component.

Relationship to the Urban Landscape

Even among the research participants who articulated the most far-reaching vision for city-scale UA, there was still recognition that a city is fundamentally an urban environment, which means agriculture in this setting will play a different role than in a rural setting. Numerous participants were reluctant to embrace a predominantly agrarian landscape:

> "Well, you know what, I'm not against [UA organization], I'm just against the way they do it. They put down wildflowers as they call them, I call them weeds, everywhere, they want to put that everywhere, they want to just grow trees and I'm not against [UA organization], but this is an urban area city. I do not want to walk past a field of wildflowers. Because that's just, you know..."
>
> "I thought they was pretty though. On Eight Mile, going down Eight Mile, somebody's putting those pretty little wildflowers out there and it's beautiful." – conversation in seniors focus group

> I just think it's better to go in the country, because you have more room. It just seems like the city is so high-polluted and, I just feel like it's not a good place to grow food. – participant in youth focus group

> I think you need to give the people a choice, to expect that the whole city becomes an agricultural area is asking too much, but I think set apart some areas, for those people who want to do that would be wonderful. – participant in UA-affiliated focus group

In these quotations we can see both a desire to live in what would traditionally be considered an urban environment and the realization that not everyone will want to engage in UA activities. One of the professionally affiliated interviewees likewise felt that as UA expands it will be important to minimize undue impact on neighborhood character and to also honor the desire of residents who want to live in an urban area:

> 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.

Other interview participants recognized the potential conflict between UA and the urban imaginary but advocated a shift in consciousness. One UA practitioner felt that a paradigm shift in terms of how we conceive the city is necessary in order for more people to be open to the possibilities of UA. Another UA-affiliate thought that the image of UA, which for some "is a sign that the city of Detroit has died and it's going back to its native

landscape," would impede the expansion of farms and gardens. In short, for many research participants, regardless of how much they support UA, there is a fundamental desire to preserve a level of distinction between urban and rural settings within any efforts to scale up urban production.

The Participants in City-Scale UA

When conceiving of scaling up urban food production in a city like Detroit, one of the fundamental considerations is *who* will be involved in urban farm and garden sites. The data collections offer some preliminary insights into what level of interest in UA research participants see in their communities. While some participants felt that the younger generation is the furthest removed from food cultivation, others shared their experiences with members of the older generation who have no desire to return to the hard agricultural work of their earlier years: "I was trying to get my mother to help me in the garden, she's like, 'been there, done that, I'm not doing it anymore. The food market is right down the street.'" On the other hand, one of the UA practitioners spoke of the agrarian heritage of Detroiters as an asset for the city's UA movement: "We have a culture, a farming culture in the city, much of the population that remained are from down south and the seniors in the city who are aging, but they're here and they're staying here, have a lot of history and skills in terms of food production."

In spite of disagreement over generational interest in UA, most participants across the focus groups agreed that the young people are the easiest to reach through gardening because they tend to be most open to new experiences. The focus group with the Hmong community was the exception to this; gardening was a common activity among the older individuals but many of the young people were becoming increasingly acculturated to Western society and urban life and abandoning their agrarian heritage. The youth focus

group participants also felt that the school gardening model they are exposed to would not necessarily work at other high schools because typical high school students have not taken on the same responsibility level that they have through pregnancy and motherhood. One individual's comment in a UA-affiliated focus group conveyed the belief that the interest in UA is not sufficient to reshape the food system landscape: "I think it'll help but it's not going to really change the people's accessibility, you know, I think some people will, and the majority won't grow their own food." As a whole, then, the research indicates that potential differences in inclination towards UA activities are more nuanced than a clear generational split one way or the other but that clearly not all Detroit residents have an interest in self-provision of food.

Several interviewees also made clear that neither the capacity nor the desire to participate in food cultivation are absolute amongst Detroit residents. One of the UA practitioners spoke of 3 broad categories of people: those who value buying local food and growing their own, those who prefer the convenience of mainstream retailers, and those who are just trying to get by. She argued that as UA becomes a larger part of the Detroit agrifood system, it will also be necessary to ensure there are systems in place to support people in all of these situations. Similarly a professionally affiliated interviewee recognized that interest in high quality food does not always translate into interest in produce from urban farms and gardens:

> Then on the other end, a person like me, I understand to buy from the local Detroit Eastern Market, you know the urban ag. people there. But a lot of people like me are at Plum Market or Salvagio's or whatever on the 'burbs and getting what they think is the higher end better quality product. I think for the customer base the concept of quality is going to be important. Locally grown tomatoes do not look like hot house tomatoes. And it freaks people out sometimes to

> know what that is, they're like "what is that?" What does that matter, it's tasty!

In other words, both participation in UA and the purchasing of UA produce represent potentially unfamiliar behaviors in which not everyone will be able to or desire to engage.

In summary, a wide spectrum of perspectives on UA emerged in this research. While some people envision an agrarian city, others want to safeguard an urban look and feel. And while some see UA as a strategy for new levels of urban sustainability, food security and agrifood system ownership, others see a pragmatic opportunity in the face of a poor economy. Participants disagreed on generational interest levels in UA but agreed that not everyone would want to cultivate their own food. Among those currently participating or desiring to participate in UA, some desired self-sufficiency while others were, on balance, more comfortable with mainstream retailers. What was consistent across the data collections was, first, the openness to expanding UA in Detroit in some way and, second, the recognition that UA at the city scale needs to integrate not only with other food system sectors but the socio-economic dimensions of the city. But the question of how to make this happen is one that will have to be slowly and deliberately negotiated as the UA movement grows. With precisely these questions of how might the stakeholder vision, in its range of permutations, be implemented, we turn now to the structural context.

### *Structural Context: Obstacles and Supporting Infrastructure*

The final two research questions, regarding what infrastructure is in place, what needs to be added or amended and how do experienced obstacles to UA inform this, are addressed through three inter-related themes. First, focus group participants articulate the

challenges they experience. Secondly, interviewees discuss their current and predicted organizational roles in the expansion of UA. Finally, all research participants contribute to an understanding of government involvement and the prospects for UA.

Community-Level Obstacles

Participants in the two focus groups not connected to organized UA activities expressed a desire for organizational support for securing land and for specific tasks such as plowing. The predominant sentiment in both groups, however, was cynicism regarding the interest or capacity of the city government to assist the development of UA. As one person said, "But you know the other thing about it is, the city has gotten to the point now that they don't actually encourage gardening... the city has gotten to the point of not caring." Participants in these two groups were also generally unaware of the programs and activities of the UA organizations operating in Detroit.

Individuals in these unaffiliated groups were also pessimistic regarding the availability of the vacant lots, believing that ownership is difficult to determine, that they are owned privately and therefore not available for UA, or that the tenure is so insecure that motivation to engage in UA is undermined:

> Yeah, but the only thing I'm saying to you is just like in our neighborhood, yes, we could just use the land, but the minute they decide to come and take the land, they can do that at any point... I'm just saying if they decide to come in the middle of your growing season and take your land, they just take your land. So that's another reason why it slow people down from all that...

Among the professionally affiliated interview participants, one person was concerned that because the vacant parcels are scattered across the city and because few lots are contiguous, even though the total quantity of vacant land is large, it is not conducive to efficient food cultivation. She further felt that because established models of urban farms

linking productivity levels to land area and contiguousness are lacking, it is difficult for the city to develop a policy framework to guide the use of vacant land for UA.

Many in the unaffiliated groups also expressed concerns regarding soil contamination, the vulnerability of gardens to theft and the safety of gardeners in unfenced gardens. A few individuals in the youth focus group had similar concerns, and several people from these three groups shared stories of garden theft they had experienced or had heard about from others. The focus group with the Hmong community in particular revealed a general sentiment that the inner city of Detroit is resource-poor, polluted and characterized by poor community relations as compared with the suburbs. The following comment from one of the participants in this group reveals how the underlying political-economic dynamic of an economically depressed city bordering comparatively wealthy suburbs affects how optimistic people are in regards to UA:

> In the suburbs people will leave each other alone. Just like if you grow your own garden, your neighbor doesn't bother you, the neighbor's friendly, you know, and your vegetables are safe, you know. But in the black community people will climb your fence, they will come into your garden and maybe sometimes steal your food or, you know. Because, everybody's having a hard time in this community, it's not just us. The black community's having a hard time working and a hard time - everybody's trying to find food and everybody's trying to survive, you know? And you know, it's hard to survive, living in the ghetto here. So basically, you know, we're trying - everybody's trying to move up and over to the next level to the suburbs.

And as eager as many members in this group were to extend their access to cultivatable areas, they wanted these issues addressed explicitly. Interestingly, none of the participants from the two groups engaged in formal UA activities brought up any concerns related to soil contamination or to theft, which could indicate the perception of

these obstacles may be greater than the reality, that these organizations are effective in addressing these issues, or perhaps that the UA community is overly optimistic in the face of these challenges.

Another potential challenge to city-scale UA that emerged during the focus group conversations is the prevalence of racial and ethnic tensions in Detroit. Some members of the Hmong community felt that because the African-American community does not have the same cultural ties to gardening, they do not always understand or respect the gardening practices of the Hmong. Two groups were also concerned that African-Americans were not adequately reflected in the leadership of the UA organizations and movement in Detroit. Similarly, one of the UA practitioners felt that it was almost impossible to formally engage in UA activities in Detroit without going through Caucasian-dominated organizations. While only three of the five groups acknowledged the presence of racial tensions, the issue is an important one to keep track of as Detroit's UA movement grows. As one participant acknowledged, race is an inherent dimension of UA in the US, particularly in Detroit:

> Detroit, again, is 90% people of African ancestry. This country was built by African people. We did the majority of the agriculture for this whole country to get this country to where it is today. Your urban areas are densely populated by people of color. Mostly black people in all the urban areas. So when you're talking about agriculture and you're talking about urban, and you're talking about urban agriculture, you're talking about black folk.

A handful of studies have shown that community gardens have the potential to foster cross-cultural understanding (Shinew et al., 2004; Wakefield et al., 2007) but this will not be achieved without deliberate action.

Non-Profit Infrastructure

The organizations represented by the interview participants currently provide the following supporting roles to the UA movement in Detroit: provision of resources, technical assistance and educational opportunities; creation of school and community gardens; connection of groups interested in UA participation to available resources and support networks; operation of a model urban farm system; development of a model for incorporating a farm into a high school curriculum; support for food and agriculture entrepreneurship; management of a major market retail venue for urban producers; development of additional market outlets and facilitation of connections between funders and community groups engaged in UA.

The educational opportunities offered by these groups include skill development in areas such as nutrition, cooking, canning, organic growing methods, beekeeping, passive-solar greenhouse installation and use, as well as sharing the importance of food security issues. The interviewees also shared a number of supporting roles they envision themselves taking on as the UA movement expands, including linking UA to food processing and marketing opportunities; connecting food producers to institutional markets; coordinating the different UA entities to develop a vision and structure to guide the growth of UA; and determining the requisite policy and zoning code changes as well as the pace at which to proceed with their implementation.

Several interviewees discussed pieces of the non-profit support for UA that they would like to see strengthened, such as non-profit capacity to support workforce development through UA, increased collaboration around UA between economic development and public health sectors, and integration of UA into projects undertaken by developers and government housing agencies. As a whole however, there was an

overwhelming belief in the strength and the capacity of the UA non-profit infrastructure among the interviewees and a general belief that the groups are collaborating well and the pieces are in place to take UA to the next level. What is needed is to expand the capacity of the existing groups and work towards a collective vision. As one professionally affiliated respondent put it,

> I think it's a great story to tell, I think there's just something that could happen here that quite frankly, can't happen in most other American cities anytime soon. The pieces are kind of here, we just gotta do a better job of leveraging back and forth... Like at Eastern Market, you got the technology at Michigan State, you got the people who can train at the not-for-profits, you got the land, and we got the people that are underutilized, people in terms of work force, so. We've got five pieces that seem to be to kind of come into alignment around this idea of urban agriculture.

We see, then, that while the interviewees have great faith in the non-profit infrastructure behind the UA movement, several focus group respondents were either unaware of their existence, unsure what they offered or concerned that their community was not reflected in these organizations. This indicates that for the aforementioned resources provided by the various non-profit entities to be accessible to communities throughout the city, not only will capacity have to be increased, but greater involvement of the community in the delivery of these resources may also be important.

Policy and Government Support

Several of the interviewees expressed the need for policy changes that would provide a sound legal footing for UA (many Detroit farm and garden activities are technically illegal but enforcement is rare) and facilitate the process of land use by UA groups, many of whom currently face insecure land tenure and must navigate through cumbersome and lengthy bureaucratic processes in order to lease land from the city. As with focus group participants, interviewees recognized the challenge of soil

contamination. However, many had encountered this issue in the creation of farms and gardens and had been able to effectively deal with it by undertaking extensive soil tests, by bringing in clean top soil, by planting above ground, and by building up clean soil via a technique called the lasagna method or utilizing remediation techniques. The major barrier with respect to soil contamination, according to one UA practitioner, is the fact that from an institutional standpoint there is virtually no precedent for food cultivation on remediated parcels and therefore there is no established process for government approval. In short, it seems that the issue of soil contamination is surmountable but it does necessitate additional financial resources and expertise as well as a process through which food cultivation on remediated soil can be approved as a legal activity.

The majority of interviewees agreed that political acceptance of UA presents a greater challenge than the technical aspects. As one professionally affiliated individual put it,

> I think there's a lot of inertia that, you know, as we talk about land use planning and zoning and urban agriculture there's still a hell of a lot of inertia to overcome from people who think that that's sort of somehow beneath the city to be considering those kinds of things... There's a higher, better use than growing chickens and sheep.

Another UA practitioner recognized that because most politicians "view development through the prism of how much money can be brought into the city" UA practitioners will have to speak to them in that language but will also have to help them shift their thinking to consider the social benefits of UA "so that they don't perceive development in terms of concrete and bricks, but they see development in terms of people, and quality of life." One of the professionally affiliated interviewees thought that actual exposure to the gardens could help change the mindset of city planners:

> A lot of the folks that have to work with zoning and codes that have not seen the gardens in Detroit or been exposed to it, have it in their mind we are going down a slippery slope, that we are going to have farm animals, there's compost, the compost smells, it brings in rats. There is all this negative stuff in their head and it's only because they haven't been exposed to them. If we could get them out to see the gardens in Detroit that are working I think that they may change their minds. But it's a slow and deliberative process to get some of the folks on board.

Both of these viewpoints reveal, however, that full political support for UA is neither entirely present nor likely to emerge quickly.

While all interview participants felt city government can and should do more to support UA, they had different experiences with how supportive they presently are. There was general agreement, however, that an increased awareness of agrifood system issues and a move towards considering issues more holistically were leading to greater openness to UA activities among city officials in the last few years. One professional affiliate felt that the community success in advancing UA has paved the way for taking it to the next level:

> I think there has been some success in that the city is talking about it in a serious way but we need to bring action to the talk. I think we are right on the verge of that. I think we will go from seeing community success to the government getting on board and see institutional success, I think we are right on the verge of that.

Several people also mentioned that the philanthropic community is taking a greater interest in UA in Detroit. And even as much as interviewees viewed the reluctance of city officials to embrace UA as a challenge to the movement, nearly all of them felt that the grassroots community groups should be taking the lead and that city government should primarily play an enabling role.

## CONCLUSION

The visions for city-scale urban agriculture held by Detroit residents are far from homogenous. Rather, there is a wide range of perspectives on everything from personal interest in garden and farm activities, to how permanent cultivation sites should be, to the degree to which urban agriculture should affect the perceived essence of the urban environment. Even so, Detroiters expressed strong interest in expanding urban agriculture in their city. Still, the focus groups and interviews together revealed a number of ways in which divergent visions and expectations for UA and uneven experiences with the resources available to support UA signal tensions around the reasons for and the value of moving towards city-scale UA.

In regards to the agrifood system context, this research shows three influences relevant to UA: the unsatisfactory retail landscape may prompt garden creation as an alternative means of access, the consumerist ethic of the urban setting may suppress food cultivation considerations, and the dearth of retail produce options may push eating patterns away from those which would include garden foods. Because the retail landscape is related to the broader political economy of the city, this demonstrates concrete ways in which political and economic forces can both spur and discourage the creation of garden spaces.

At the same time, at least some research participants felt that gardening engagement may contribute to a foundation for confronting such forces, both because it can influence consumption patterns and reshape an individual's relationship to food and because community gardens can be a precursor for broader community organizing. Other research participants, however, were more interested in improving the retail landscape than pursuing alternative access points. Furthermore, as many focus group participants

noted, expanding urban production to a level in which it contributed significantly to the city's food supply would necessitate diet changes, food preparation changes and confronting the social acceptability and the unfamiliarity of manual labor involved with agriculture. To the extent, then, that expanding UA prompts significant changes in the urban food system, tension may erupt as some groups advocate and others resist such changes.

In relation to the vision for UA, this research reveals widespread interest in UA across the focus groups but very different understandings of the role that UA would play. The Hmong group desires land for subsistence and market farming as a way to maintain their agricultural traditions. One of the UA-affiliated groups, which formed in response to the distribution of power and resources in the food system, desires to use UA to provide a foundation for a community-owned food system. The UA-affiliated group organized around community gardens wants to see the ancillary benefits of gardens more fully realized and to expand gardens into other parts of the city in order to provide opportunities for greater participation. The last two groups, the seniors and the youth, support UA opportunities but are not necessarily interested in gardening themselves. These divergences reveal that, while there is great support across groups for ensuring that those interested in UA have access to opportunities, both the local discourse on UA and UA spaces themselves may be contested terrain relative to the movement's agenda.

Finally, the discussion of the structural context for UA demonstrates uneven access to land and other resources within a general context of inadequate municipal support. The focus groups show that the non-profit resources supporting UA and the nascent attitude of support from the local government and the philanthropic community

discussed in the interviews are not consistently apparent at the community level. It seems that the individuals not connected to a UA-affiliated organization are more apprehensive about soil contamination, theft, the possibility of utilizing vacant parcels and the capacity of the City to provide assistance. The fact that these concerns were minimal among those affiliated with a UA organization may speak to the ability of such groups to overcome these challenges but also demonstrates that some communities are unaware of the resources they provide. Furthermore, both the interviews and focus groups show that the cumbersome process for accessing land imposed by the City hinders not only the expansion of UA and citizen motivation for UA participation, but community-driven processes for the creation of green space.

In regards to the potential for city-scale UA as revealed by this research, many of the challenges seem to be intangible rather than technical. In fact, apart from concerns of pollution and soil contamination, there was no opposition to continuing to strengthen the food cultivation activities currently taking place. And because the participants in the UA-affiliated focus groups expressed no concerns regarding soil contamination and because UA practitioner interviewees had encountered and overcome instances of soil contamination, it seems that this issue, while it does demand the availability of resources to carry out the requisite testing and remediation, is not seen as a major impediment to UA moving forward. On the other hand, it could be that the existing gardens are located in areas with uncontaminated soil and that expanding urban food production would magnify this issue considerably.

The support of the City, however, is not yet sufficient to allow community groups to realize their goals with respect to UA. Furthermore, the need to create appropriate

policy in regards to such new and unfamiliar practices presents a major challenge. Much remains unknown regarding how incorporating UA at the municipal level best functions and regarding how to develop permissive policy that simultaneously respects the interests and concerns of those who have not embraced UA. And while, by most accounts, the non-profit community fueling the Detroit UA movement is remarkably strong and well-networked, because not all communities are effectively included, their capacity will need to be strengthened in order to serve the city as a whole.

This research has attempted to enter the unexplored arena of citizen perspectives on urban agriculture at a municipal level by utilizing a framework that highlights the multiple ways in which UA is integrated into its setting. Though our findings are situated in a particular place and context, they reveal important themes to consider. As the activist-practitioner literature continues to advocate expansion of UA practices, as the scholarly literature continues to explore the dimensions of UA as a mass movement, and as municipalities continue to endorse city-wide farms and gardens, awareness of the ways in which UA affects the everyday lives of urban dwellers, such as those revealed here, will be increasingly crucial. Clearly, the potential impacts of UA are not insignificant in the minds of residents, and clearly the possibility of major changes to the urban landscape or the urban agrifood system will not be wholeheartedly welcomed by all communities. It will be important, therefore, to further understand the nuances of these perceptions and to work to include diverse perspectives in locales where efforts to expand UA are occurring.

Drawing on the insights from political ecology can help bring to the fore the ways in which ecological changes in the urban landscape are not socially neutral. For example, this research reveals how the racial tensions in Detroit and the economic imbalances

between Detroit and its suburbs affect how citizens see the potential for UA and the way in which UA expansion should unfold. The interviews and focus groups further show that different perspectives on the role of UA lead to divergences in the types of political-economic opportunities desired from urban farms and gardens. Research designed more explicitly through the lens of political ecology, however, could further elucidate the important role of political-economic structures relative to opportunities for and consequences of urban agriculture.

We have argued that the concept of *city-scale urban agriculture* can contribute to the quest for a better understanding of expanded farms and gardens by highlighting the shift in the relevant questions that emerge with greater numbers of actors involved to greater degrees. By presenting the many nuances of citizen visions for urban agriculture that emerged in the research, we hope to contribute to the literature considering the role of UA as a social movement by laying the groundwork for further research on the possibilities for and perspectives on city-scale urban agriculture as a strategy for food security and urban sustainability. Furthermore, we hope to inspire citizen inclusion in shaping the dimensions of urban agriculture as it unfolds in new ways in US cities.

# CHAPTER 3:
# PRODUCTIVE CAPACITY AND EXPANSION POTENTIAL

*"We need to see how much we could actually produce in the city of Detroit feasibly – on a produce level as well as on a possible aquaculture level. And once that survey's done, it has to be taken advantage of... It's gonna take money. That's the reality of it."*
– Detroit Focus Group Participant


## ABSTRACT

As interest in urban agriculture has grown, municipal level support for expanding urban food production as a means towards sustainable urbanization and food security has emerged in a handful of cities. With Detroit, MI as a research site, a city that exemplifies the need to rethink land use and urban form in the context of deindustrialization, this study aims to explore what scale of food cultivation would be possible and how production at this scale would compare to resident dietary consumption. Starting with present and recommended consumption levels of fruits and vegetables and accounting for seasonal limitations within a range of post and extended season production scenarios, we calculate the amount of land needed to supply this produce quantity. We then use GIS mapping to quantify publicly-owned vacant property in Detroit. Our results show that if biointensive cultivation methods are assumed, putting the available vacant land into production of fruits and vegetables could supply a substantial portion of the yearly supply of fresh produce for city residents. This data indicates that the promotion of urban agriculture as a potential basis for augmenting the sustainability of the city by relocalizing components of food production merits attention.


## INTRODUCTION

The deindustrialized cities of the US, many with large amounts of vacant land and a transitioning economic foundation, force us to reconsider how we think of urban land

use. In some instances the traditional urban infrastructure patterns may no longer be supportable under the low density of the remaining population resulting from urban out-migration. Furthermore, the size, shape and location of vacant urban parcels are often seen by city officials as inconducive to redevelopment (Bowman & Pagano, 2000). In this context, some scholars have proposed developing green infrastructure, including urban agriculture, as a way to "revitalize urban environments, empower community residents, and stabilize dysfunctional markets" within shrinking cities (Schilling & Logan, 2008, p. 451). Likewise, research out of Germany points to community gardens as a good use of land in deindustrialized areas, not only because of the social and ecological benefits, but also because these uses tend to require minimal up-front investment and do not impede later edificial development (Rosol, 2005). And indeed, in many of the US cities that have faced severe declines in leading manufacturing industries, such as Philadelphia, Detroit and Milwaukee, urban agriculture movements have been able to utilize vacated spaces to cultivate food and reinvest in neighborhoods (Gray, 2007; Hair, 2008; McGuire, 2007; McMillan, 2008; Wells, 2008).

At the same time, as scholars have begun to understand the array of social and environmental benefits associated with urban agriculture and as the concerns with human impact on the natural world have increased, the possibility of urban agriculture on a larger scale has gained attention as a potential strategy for moving towards sustainable urbanization. Yet as activists and practitioners look beyond individual- and neighborhood-level benefits of community gardens to consider the potential impacts of urban production across a city, there is very little understanding regarding what shape this would take or what impacts this would have. Though from the time of the earliest cities

food cultivation has been spatially and economically integrated into urban life (Jacobs, 1969), and urban areas of many developing countries continue to include formal and informal agricultural practices, subsequent to the Industrial Revolution food production spaces largely have been excluded from urban areas of the US (Hynes & Howe, 2004; Warner, 1987). The resulting dichotomy between urban and agricultural spaces has shaped the ideal of urban space in ways that have excluded food production from consideration within urban policies (Moore, 2006; Pothukuchi & Kaufman, 2000). A clearer idea of what is feasible and achievable within city-scale food production is needed as a way to challenge this mental and physical marginalization of agriculture in modern cities, to inform the development of facilitative policy and to substantiate links claimed to sustainable urbanization by urban agriculture advocates and practitioners.

While there are many dimensions to sustainable urbanization, an increase in local food production as a way to diminish a city's reliance on heavily resource-consumptive imported foods is one dimension often posited by advocates of urban agriculture (see for example Deelstra & Girardet, 2000; Garnett, 1999; Rees, 1997). This chapter applies this concept to research conducted in Detroit, MI. As a starting point for considering the potential scale at which urban agriculture could occur in Detroit and as a way to further the dialogue on the desired role and possible contributions of urban agriculture, we asked two questions. First, what percentage of current and recommended Detroit resident dietary intake could be met through urban food production? Secondly, how much land would be necessary to achieve this level of production and is the utilization of this quantity of land feasible given the quantity and distribution of vacant, publicly-owned land in Detroit?

In many ways, Detroit offers an ideal place to conduct research to explore the opportunities for scaling up urban agriculture. The city arguably epitomizes America's deindustrialized landscapes. As a Detroit-based landscape architect put it: "Detroit has been taken over by the ecology of globalization in its first act of massive deurbanization" and it is now the largest shrinking city since ancient Rome (Park & International Center for Urban Ecology, 2005, p. 176). In addition to the city's large quantity of vacant land, there is a strong urban agriculture movement, and residents have shown a high degree of support for expanding urban farms and gardens (see Chapter 2). What's more, Detroit historically had very fertile soil for orchards and vegetable crops and was once home to many productive farms along the river (Farmer, 1890). In short, Detroit offers an opportunity to consider how urban agriculture might contribute to a level of sustainable urbanization not possible in many other places.

This chapter begins by summarizing the links between urban agriculture and sustainable urbanization argued in the literature. We then present our research methods alongside a discussion of our results. We conclude by placing our research in the context of the prospects for large-scale urban agriculture in Detroit and beyond, paying particular attention to the ways in which our results are relevant for planners.

## URBAN AGRICULTURE AND SUSTAINABLE URBANIZATION

Research has begun to link urban agriculture (UA) to ecological dimensions of sustainability in a handful of empirical studies. Cited environmental benefits have included improved air quality, preservation of cultivatable land, cooler buildings, improved urban biodiversity, waste and nutrient recycling, and stormwater management (Deelstra & Girardet, 2000; Mendes et al., 2008). Even simply greening roofs can

significantly reduce greenhouse gas emissions (Brown & Carter, 2003). On a more abstract level, Toronto researchers demonstrate through a case study approach how community participation in the creation of a garden can model both ways to meet the needs of diverse urban residents, e.g. through food production, and ways to restore connections between the urban and natural environments (Irvine et al., 1999). These authors see in the subject garden of their research a contribution to sustainability at the neighborhood scale and a model for defining the dimensions of urban sustainability.

Other scholars have also offered their vision for pursuing sustainable urbanization through UA. Smit and Nasr (1992) conceive of UA integrating into the urban environment and improving sustainability through its ability to recycle urban wastes, utilize idle land and water bodies and conserve energy or other resources by substituting for less sustainable practices associated with food importation. Landscape architect André Viljoen (2005) and his contributing authors advocate urban landscapes that are socially, economically and environmentally productive and envision UA playing a key role in achieving urban sustainability as sites for recreation, for ecological services and as the foundation for food system relocalization. Yet, absent empirical research in the developed world on the impacts of UA on the city as a whole, much in these visions remains speculative.

A small body of work also looks at how UA can contribute to the social dimension of sustainability. Ferris et al. (2001) show that community gardens can play a role in restoring environmental justice to ecologically degraded and marginalized communities. Even more than that, garden sites can be a model of dynamic and participatory "sustainability in action" through social inclusion, environmental protection

and organic food production (Holland, 2004, p. 304). Furthermore, Howe and Wheeler (1999) argue that UA can support local economies by providing vocational training, by producing goods and services and by bridging market gaps in the mainstream food system. Both the social and ecological impacts of gardens can be particularly pronounced when blighted vacant lots necessitating continual city maintenance expenditures are transformed into places of beauty that foster safe play for children and neighbor interaction (Pottharst, 1995).

In regards to the contribution of UA to the food supply, estimates have been given but in many cases the details behind these figures, including the boundaries used to designate urban production, are unclear. We do know that fruit and vegetable crops provide the highest yields and value per area cultivated (Viljoen et al., 2005). It is therefore presumably most feasible for a city to satisfy food requirements in this category. This seems to be reflected in the available estimates. For example, Shanghai and Beijing are apparently fully self-sufficient in vegetables (Howe et al., 2005). Several urban centers in Africa, including Brazzaville (Congo), Dar Es Salaam (Tanzania) and Accra (Ghana), also produce more than 80% of their leafy vegetable needs (Mougeot, 2005). Estimates suggest, as well, that some large Latin American cities are able to meet one third of vegetable demand through urban production (Mougeot, 1993). These figures fail to offer any insight into the land base needed for food self-sufficiency in a given region however. A master's thesis from Kingston, Ontario did find that urban agriculture could utilize 5,600 hectares in the inner-city to meet the fresh fruit and vegetable needs of 76% of city residents (Lam, 2007). Yet this analysis relied heavily on the use of basements, rooftops and vertical walls, spaces that are not often cultivated at any

significant scale in practice. In short, there is a dearth of empirical research, particularly in the US, relating an urban land base to food consumption by urban residents.

Nonetheless, a small but growing number of US municipalities have begun to recognize the multiple links to sustainability and have embraced UA as a means of sustainable urbanization (Mendes et al., 2008). City government support has often come from the desire to increase green space and capitalize on public concern with environmental issues (Connelly & Ross, 2007). Both Portland, OR and Vancouver, BC have undertaken land inventories to identify as many potential sites for UA as possible (Balmer et al., 2005; Kaethler, 2006).

In 2006 the City of Vancouver announced an initiative to create 2,010 new gardens as a legacy for the 2010 Olympics and as a way of "enhancing food security and reducing the City's ecological footprint by reducing 'distance to fork,'" of "encouraging increased social interaction" and of "supporting and encouraging an environmentally and socially sustainable activity" (City of Vancouver, 2006; Morris & Tapp, 2008, p. 3). Similarly, in 2008 the mayor of London and her appointed Chair of London Food announced a program to support the identification of land and provision of resources for the creation of 2,012 garden sites by the 2012 Olympics (Capital Growth, 2008). At the national level, an executive order from the Philippines mandates funding for "the setting up of urban vegetable gardens and backyard fisheries" as protection against the global financial crisis (President of the Philippines Executive Order No. 776, 2009). All of these initiatives cite environmental benefits and increased food security from UA as motivating forces.

Yet the question remains, what portion of the food supply could really be achieved through urban cultivation in the US? Despite the interest in UA, there remains a fundamental need to understand what level of urban production is feasible and what level is desirable across a city. At the neighborhood scale, the connections between UA and sustainability have been demonstrated; but, while numerous advocates and scholars have speculated about UA's ability to diminish the unsustainability of a city's complete reliance on imported food, little research has explored what level of urban production would achieve this type of impact on the urban agrifood system. The starting point for this research, then, is the goal of understanding how much of local fruit and vegetable consumption could be supplied through city production of food in Detroit.

## METHODS AND RESULTS

In order to estimate how far cultivation on the vacant land in Detroit could go toward meeting present and recommended residents' consumption levels, we drew together data from a number of sources that would allow us to estimate fruit and vegetable consumption, the seasonal availability of each crop, fruit and vegetable yields for small-scale cultivation and the quantity and acreage of Detroit's publicly-owned vacant parcels. Figure 3-1 depicts an overview of our research process, where X, Y, and Z represent the greatest percentage of real and hypothetical consumption levels technically possible based on the seasonal limitations within the given production scenario. These steps, and the results we obtained in each of these steps, will now be discussed in greater detail. In presenting our methods in relative depth and their limitations transparently, we aim to stimulate further scholarly conversation on the best ways to estimate a possible scale of urban production.

***Current and Recommended Consumption***

Figures for current consumption were calculated using a ten year average (1996-2006) of the US Department of Agriculture Economic Research Service (ERS) average daily per capita servings for fresh fruits and vegetables. We used the ERS Loss-Adjusted Food Availability database, which starts with aggregate food availability data and, first, adjusts for spoilage and other waste, and then calculates national average daily per capita servings (U.S. Department of Agriculture Economic Research Service, 2008). These per capita servings were multiplied by the resident population of Detroit according to the 2006 US Census Bureau.[4] The number of fruit and vegetable servings that should be eaten according to the USDA Nutrition Guidelines was calculated based on the My Pyramid recommendations for daily consumption of fruits and vegetables according to sex, age range and either a sedentary or active lifestyle (U.S. Department of Agriculture Center for Nutrition Policy and Promotion, 2005). An active lifestyle is defined as one that, in addition to the activity of daily life, involves "physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour" (U.S. Department of Agriculture Center for Nutrition Policy and Promotion, 2005).

[4] It should be noted that the Detroit population differs from the US population as a whole in some significant ways – most notably the city is 83.2% African-American and 32.5% of individuals are below the poverty line, according to the 2006 US Census, compared to the national average of 12.2% African-American and 13.3% of individuals below the poverty line – which will certainly impact consumption patterns. For example, the national average per capita consumption of collard greens is very low but this crop tends to be more popular in African-American communities. Furthermore many Detroiters suspect that the US Census significantly undercounts the city's population, particularly in the poorest communities. Despite these limitations of the national data, we believe that the data nonetheless provide the appropriate order of magnitude for fruit and vegetable consumption.

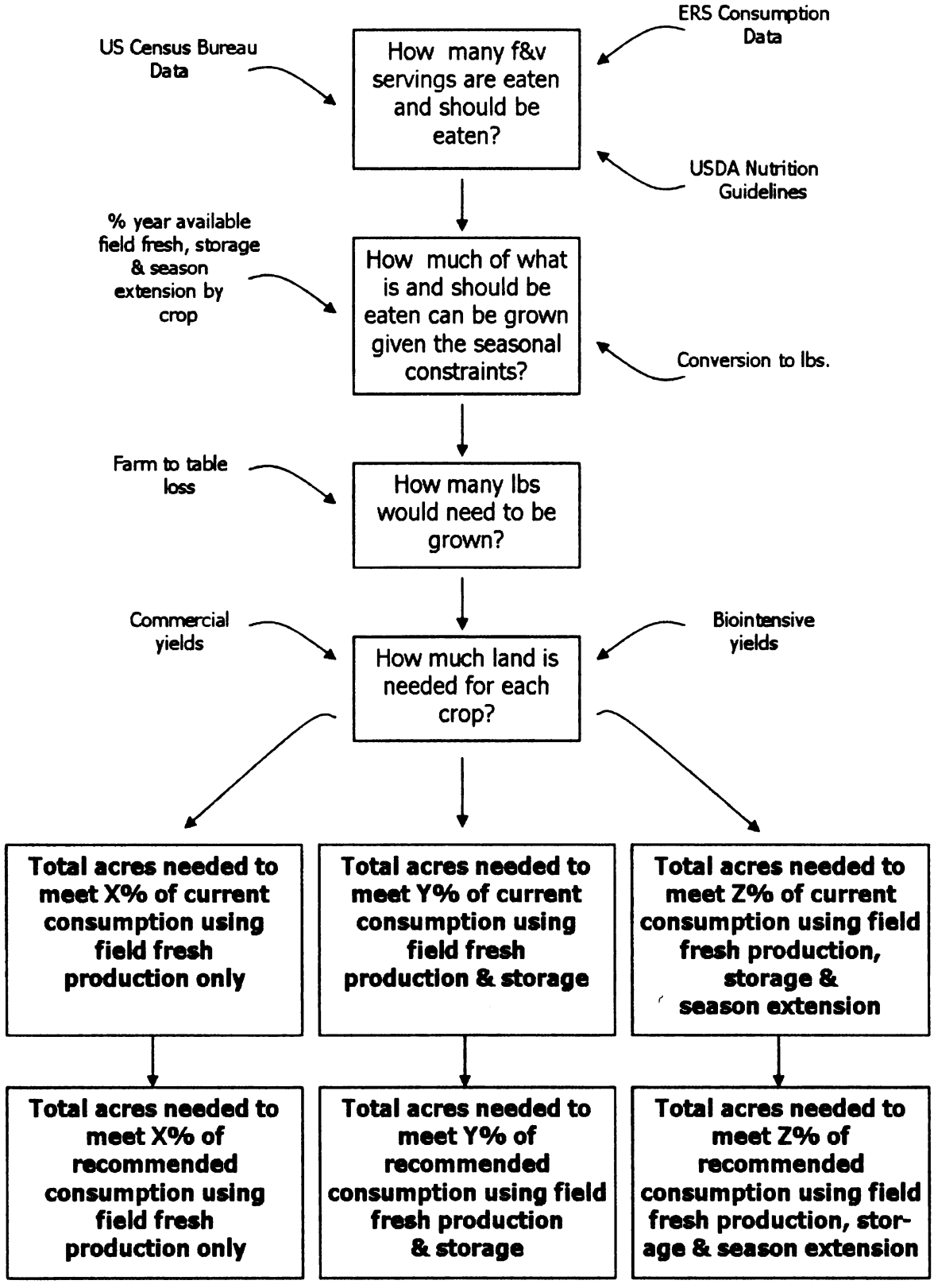


**Figure 3-1: Summary of Local Production Potential Analysis Steps**

Following the assumption made by Conner et al. (2008) that two-thirds of the population is sedentary and one-third of the population is active, we used the 2006 US Census Bureau data to determine the resident population by sex and age range (U.S. Census Bureau American Fact Finder, 2006) which then allowed us to calculate the yearly number of fruit and vegetable servings that should be eaten by Detroit residents. Since it was beyond the scope of this study to explore the potential for the processing of locally grown fruits or vegetables, only the consumption of fresh, unprocessed fruits and vegetables was considered.[5] Consumption levels of dried, canned, frozen or otherwise processed fruits and vegetables, which together comprise approximately 45% of total fruit and vegetable consumption in the average US diet, were excluded. (For the relative proportions of fresh fruit and vegetable types consumed, see Table 3-3, which is discussed in a later section.)

Of the fruits and vegetables tracked by ERS, only one vegetable, artichokes, cannot be grown in the Detroit region. However, twelve of the twenty-three fruits cannot be cultivated in this area, namely oranges, tangerines, grapefruit, lemons, limes, avocados, bananas, kiwifruit, mangoes, pineapple, papayas and cranberries. Cranberries are the sole non-tropical fruit in this list and while, on the basis of seasonal temperature fluctuations they could be grown in Detroit, their cultivation necessitates distinct production techniques that involve flooding the crop at various stages, the possibility of which was not considered in this analysis. In this analysis we included artichokes and cranberries in the total number of current and recommended servings but excluded the aforementioned eleven tropical fruits, which we presume would continue to be imported

[5] Based on the ERS Loss-Adjusted Food Availability database, "fresh" means fruits and vegetables are purchased in their fresh, unprocessed state but does not necessarily mean they are not cooked before being eaten.

and consumed in the same relative proportions. In other words, the total number both of presently consumed and of recommended vegetable servings include all vegetables for which data was available; but, the total number of fruit servings include only the non-tropical fruits.[6]

Again following Conner et al. (2008), we assumed that if Detroiters increased their daily servings of fruits and vegetables, they would still maintain both the relative proportions of different fruit and vegetable types and the relative proportions of fresh and processed produce in their diets. We therefore multiplied the total number of recommended fruit and vegetable servings by the proportion each fruit or vegetable in its fresh form represents within current fruit and vegetable consumption. This allowed us to compare quantities of current fresh fruit and vegetable consumption with hypothetical quantities of fresh fruit and vegetable consumption that would accord with dietary guidelines even though there is no recommendation for levels of fresh produce consumption.

In this analysis both current and recommended consumption figures assume that individuals consume equal portions of all fruit and vegetable crops throughout the year. While this is likely generally true for many crops, some crops, such as strawberries or pumpkins, are likely eaten in greater quantities during the harvest months. To the extent that this is the case, the proportion of current consumption that could be met through local production will be underestimated in our analysis, as will the amount of land necessary to supply current consumption levels.

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[6] Of all the fruit and vegetable crops included in this analysis, all but six of the vegetables (asparagus, eggplant, escarole/endive, garlic, kale, and lima beans) and all but three of the fruits (cherries, grapes, and plums) were grown in Detroit gardens in the 2005-2006 growing seasons (Alaimo & Miles, 2007).

According to our calculations, Detroiters eat an annual total of 285,036,649 fresh vegetable servings and 98,232,531 fresh, non-tropical fruit servings. If dietary patterns were to follow USDA recommendations, they would eat 854,131,315 fresh vegetable servings and 410,572,711 fresh, non-tropical fruit servings. This means that recommended consumption levels are more than four (4.2) times higher for fruit and three (3.0) times higher for vegetables than current consumption.[7]

***Seasonal Availability***

In order to compare consumption data with what could be grown in Detroit, it was necessary to factor in the months of the year during which different fruits and vegetables are available. In addition to considering the season in which each crop is available fresh from the field, we also looked at whether and during what time period any of these crops could be available through the use of storage or season extension technology such as hoop houses. Based on harvest and distribution data from the Michigan State University Student Organic Farm[8], on a previously published Michigan Availability Guide (Michigan State University Extension, 2004) and on feedback from two staff members of Michigan Food and Farming Systems, we determined the months each crop is available fresh from the field, through crop storage and through season extension (see Table 3-1).

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[7] In a related statistic that confirms this consumption pattern, the 2005 - 2007 Michigan Behavioral Risk Factor Surveillance System Regional & Local Health Department survey found that 77.2% of Detroit residents consume less than 5 servings of fruits and vegetables per day (Fussman, 2008).

[8] Unpublished data from the Michigan State University Student Organic Farm 2004-2008 growing seasons. See http://www.msuorganicfarm.com/

**Table 3-1: Seasonal Availability of Fruit and Vegetable Crops**

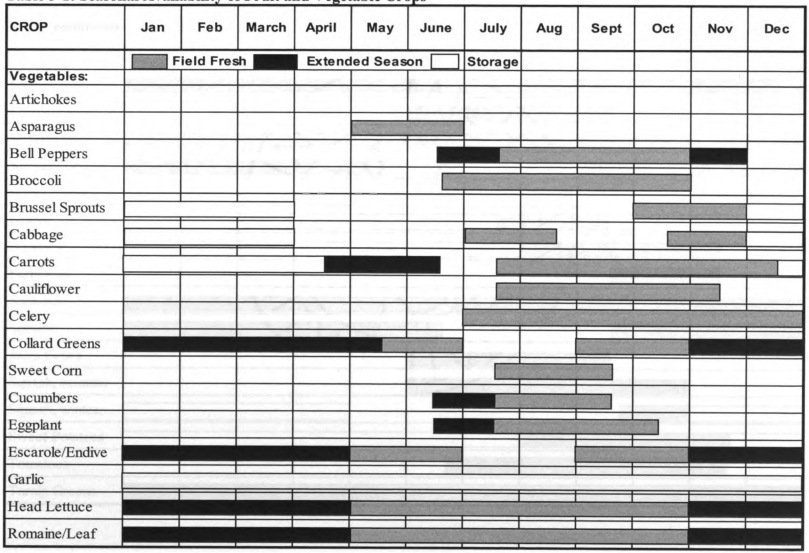

**Table 3-1 (cont'd)**

| CROP continued | Jan | Feb | March | April | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field Fresh | | | Extended Season | | | Storage | | | | | |
| Kale | | | | | | | | | | | | |
| Lima Beans | | | | | | | | | | | | |
| Mushrooms | | | | | | | | | | | | |
| Mustard Greens | | | | | | | | | | | | |
| Okra | | | | | | | | | | | | |
| Onions | | | | | | | | | | | | |
| Potatoes | | | | | | | | | | | | |
| Pumpkins | | | | | | | | | | | | |
| Radishes | | | | | | | | | | | | |
| Spinach | | | | | | | | | | | | |
| Snap Beans | | | | | | | | | | | | |
| Squash, summer | | | | | | | | | | | | |
| Squash, winter | | | | | | | | | | | | |
| Sweet Potatoes | | | | | | | | | | | | |
| Tomatoes | | | | | | | | | | | | |
| Turnip Greens | | | | | | | | | | | | |

**Table 3-1 (cont'd)**

| CROP continued | Jan | Feb | March | April | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field Fresh | | | Extended Season | | | Storage | | | | | |
| **Fruits:** | | | | | | | | | | | | |
| Apples | | | | | | | | | | | | |
| Apricots | | | | | | | | | | | | |
| Sweet Cherries | | | | | | | | | | | | |
| Grapes | | | | | | | | | | | | |
| Peaches | | | | | | | | | | | | |
| Pears | | | | | | | | | | | | |
| Plums | | | | | | | | | | | | |
| Cranberries | | | | | | | | | | | | |
| Strawberries | | | | | | | | | | | | |
| Cantaloupe | | | | | | | | | | | | |
| Honeydew Melon | | | | | | | | | | | | |
| Watermelon | | | | | | | | | | | | |

Based on this table, we calculated the percentage of the year, according to half month increments, that each crop would be available in each of these production scenarios.[9,10,11]

We assumed the use of the lowest technology system available; that is, if a crop could be grown with and without season extension technology in the same time period, we only considered the availability fresh from the field in the percentage calculation. We also only included the crops for which there is a viable early or late season retail market in Michigan, as opposed to what would be possible to cultivate, in the season extension availability estimates. Furthermore, we assumed that a given land area would only hold a single crop through the entire length of the growing season rather than a rotation of two or more crops. This assumption likely has the effect of significantly overestimating the acreage necessary to meet a given percentage of consumption. The resulting data shows three scenarios – field fresh only; field fresh and storage; field fresh, storage and extended season – that meet a progressively larger portion of local consumption but also necessitate a progressively more substantial financial investment and technical infrastructure for postharvest management and extended season production.

### *GIS Vacant Land Identification and Mapping*

Vacant parcels were identified using the November 2008 dataset from the City of Detroit Information Technology Services Department Geographic Information Systems Sales & Service Center (City of Detroit, 2008). Though this dataset originates with the City of Detroit Assessment Division and the accuracy of the city's property database has

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[9] Due to minimal available harvest data for lima beans, the seasonal availability of snap beans was used as a best estimate. The seasonal availability of okra was based on Conner et al. (2008).

[10] Because the goal was to compare these numbers with consumption data and it was unclear in the ERS data whether "squash" referred to summer or winter squash, the seasonal figures reflect the availability of at least one of these varieties. Accordingly the squash yield figures (discussed later) are an average of winter squash and zucchini given in Jeavons (1995).

[11] The seasonality data for season extension assumes unheated hoop houses.

been questioned (Dewar, 2006), we believe that this was the best available comprehensive dataset that would allow us to map and calculate the acreage of publicly-held vacant parcels to provide an understanding of the distribution and magnitude of vacancy across the city in keeping with our purpose. The limitations of our data in regards to the vacancy status of individual parcels are even more pronounced considering that changes are continually occurring through purchases of property from the city, acquisitions of foreclosed properties by the city and demolitions of abandoned structures. Nonetheless, after cross-referencing our catalog of vacant parcels against 2005 aerial imagery (Michigan Geographic Data Library, n.d.) we found only 45 of 1,323 parcels (3.4% error rate) that appeared to have a home or other structure present.

Only fully vacant parcels located within city limits and owned by the city, the county, the state, the county land bank or the state land bank were considered in our tally of vacant property. All parcels owned by the City of Detroit Recreation Department were excluded. The selected parcels were mapped and their area calculated using ESRI ArcInfo® 9.3. The number and area of vacant parcels was totaled by zip code after missing or erroneous zip code data were corrected for over 500 parcels. Road data and city boundary data were obtained from the Michigan Geographic Data Library (n.d.).

From the final GIS analysis we tallied a total of 44,085 vacant parcels comprising 4,848 acres, or 7.6 square miles. Based on this figure, 11% of the 386,584 total parcels present in the city are publicly-owned, non-park, vacant land. Approximately 70% percent of these parcels are owned by the city, approximately 27% are roughly split between Wayne County and the state land bank and the remaining 2% are split between the state and the county land bank (see Table 3-2). At the time of this writing the City of

Detroit had approved the creation of a land bank but this land bank had not yet acquired title to any parcels.

**Table 3-2: Number and Acreage of Vacant Parcels 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** |

As expected, the quantity of publicly-owned vacant lots in Detroit seems to be far higher than many other US cities. Bowman and Pagano (2000) found that the average number of vacant lots owned by 58 reporting cities was 1,069 with a median of merely 50 lots. The number of vacant lots we calculated is on the low end of other Detroit estimates found outside the peer-reviewed literature, however. These estimates range from 40,000 (Gopakumar & Hess, 2005; Stohr, 2003), to 65,000 (Lachance, 2004), to 103,000 (Roberts, 2008) parcels. The corresponding acreage also seems to be far lower than other rough estimates, which range from 17,000 acres (Gray, 2007), to 25,600 acres (J. Gallagher, 2008), to nearly 30,000 acres (Altman, 2009; McKee & Ortolani, 2008). Furthermore, our tally of vacant parcels does not include parcels with abandoned buildings, which have been estimated to number more than 80,000 (Riley, 2008). None of these popular press estimates discuss how their figures were obtained however.[12]

[12] It is likely that the discrepancy between our tally of vacant parcels and the estimates in the popular press is largely due to the private ownership of vacant parcels and the typical waiting period before a foreclosed property returns to the city or other government entity.

We can also compare our numbers to research within specific neighborhoods. In a report on the Brightmoor neighborhood of Detroit, researchers estimated there were 2,000 vacant lots owned by the city, state or county and an additional 700 properties, some of which housed abandoned buildings, owned by the Northwest Detroit Neighborhood Community Development Corporation (Doherty et al., 2008). This neighborhood roughly corresponds to zip code 48223, for which we estimated a total of 1,756 vacant parcels. In sum, we believe that the figure of 4,848 vacant acres is a conservative estimate of unutilized land in Detroit and thus production potential will be underestimated.

Calculating the total number and acreage of vacant parcels by zip code (see Figure 3-2) reveals areas of the city with high and low vacancy. The borders of the city, as well as the central downtown area (zip code 48226 is the central business district), tend to have fewer vacant parcels, though in some cases this is obscured by zip codes that overlap political jurisdictions such as 48239 and 48236. The vacant parcels in the five zip codes on Detroit's Eastside – 48211, 48207, 48213, 48214, 48215 – total 1,678 acres, or 35% of the total vacant acreage in the city. Several of the areas of high vacancy correspond to neighborhoods targeted for Detroit's Neighborhood Stabilization Plan, namely Brightmoor, Southwest, Northend and Kettering, which will prioritize the demolition of vacant structures (City of Detroit Planning and Development Department, 2008) and, absent a reversal in market conditions, presumably further increase the number of empty lots.

**Figure 3-2: Number and Acreage Total of Vacant Parcels by Detroit Zip Codes.**
This figure shows the 29 zip codes represented in Detroit. For each zip code the total number of publicly-owned vacant parcels and the corresponding acreage total is shown. The map of zip code boundaries was adapted from City of Detroit GIS Sales Center Zip Code Map July 2005 accessed online at http://www.ci.detroit.mi.us/Portals/0/docs/its/maps/gis_new/map_zipcode.pdf

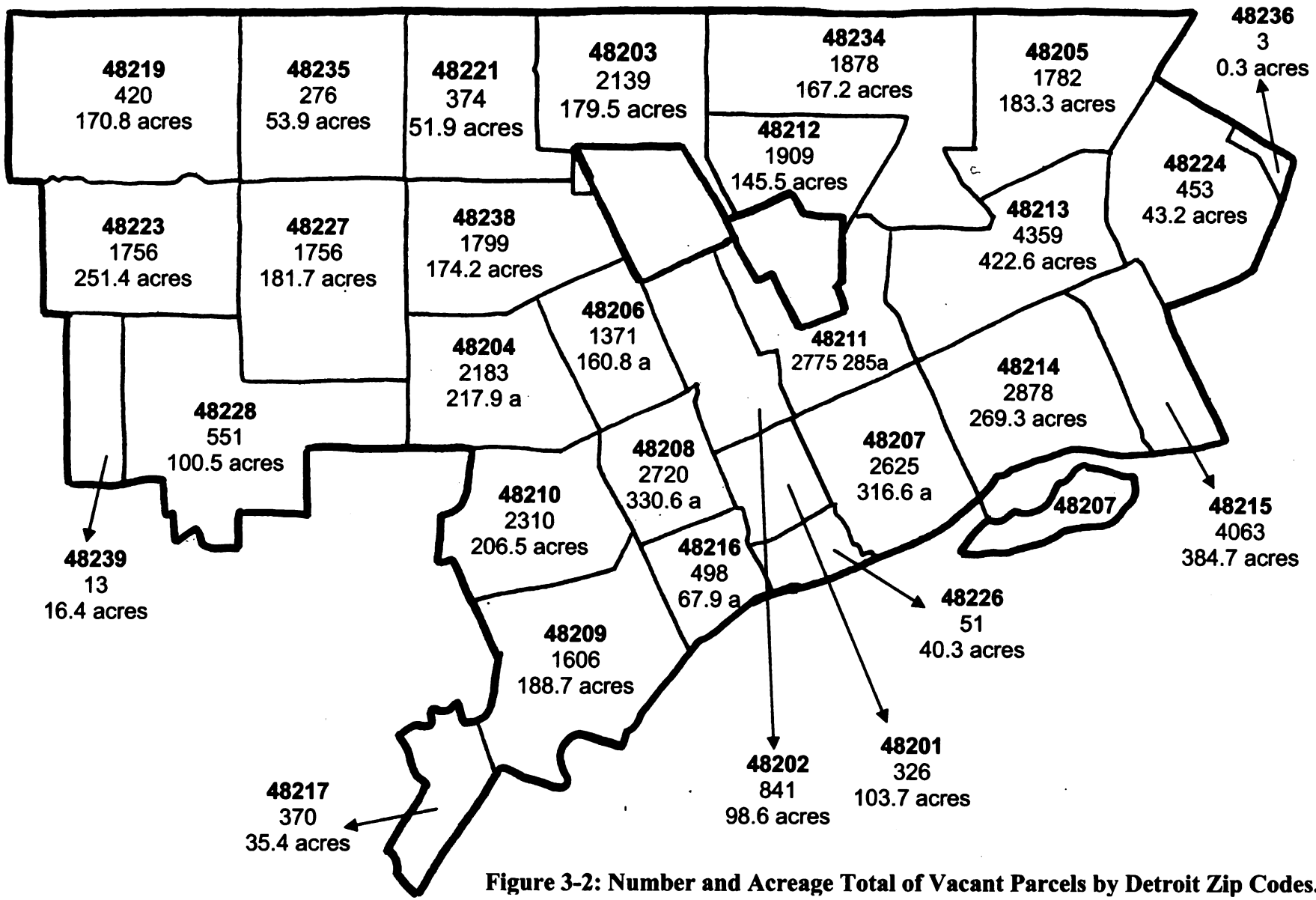


**Figure 3-2: Number and Acreage Total of Vacant Parcels by Detroit Zip Codes.**

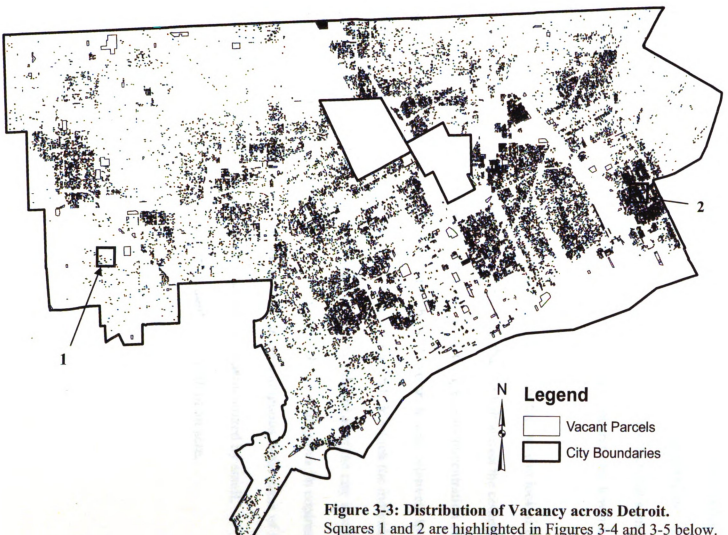


**Figure 3-3: Distribution of Vacancy across Detroit.**
Squares 1 and 2 are highlighted in Figures 3-4 and 3-5 below.

Looking closely at Figure 3-2 also reveals some discrepancies in the average acreage per parcel. The vast majority of the twenty-nine zip codes represented in Detroit have an average acreage per vacant parcel ranging from 0.1-0.2 acres, which reflects a typical residential parcel. The few zip codes – 48219, 48239, 48201, and 48226 – in which the average acreage per vacant parcel is higher account for the fact that some zip codes have a relatively high total of vacant acreage despite a comparatively low number of vacant parcels.

Mapping the vacant parcels across the city provides another way to look at the range in vacancy levels (see Figure 3-3). Here we see that the belt across the center of the city, and the eastside neighborhoods in particular, have the greatest concentration of vacant property. Figures 3-4 and 3-5 show snapshots of two areas with relatively low (Figure 3-4) and relatively high (Figure 3-5) vacancy at a scale in which the individual parcels are distinguishable. Figure 3-5 is representative of the areas of the city in which vacancy is extremely high and many of the vacant parcels are contiguous. In contrast, Figure 3-4 demonstrates that very few vacant parcels are contiguous in the areas of the city in which vacancy is relatively low. These areas are characterized by small, interspersed lots, the majority of which are roughly one-tenth of an acre.

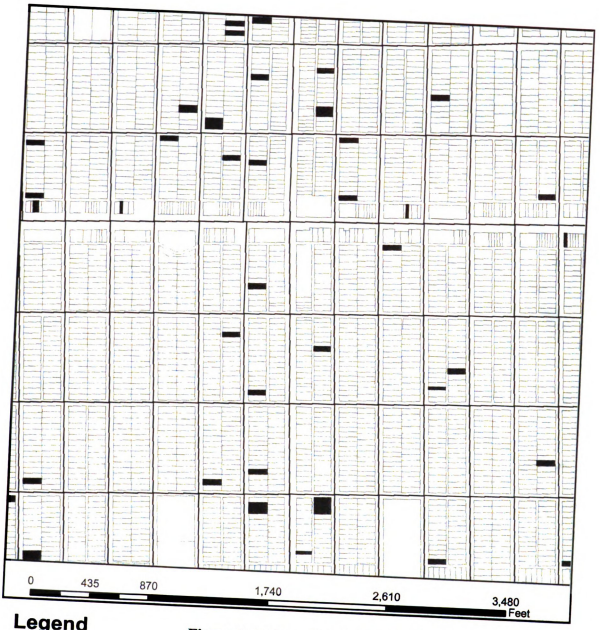


**Figure 3-4: Example of Vacancy Distribution in Low-Vacancy Neighborhood.**
These neighborhood blocks, which are located within zip code 48228, correspond to Square 1 in Figure 3-3 above.

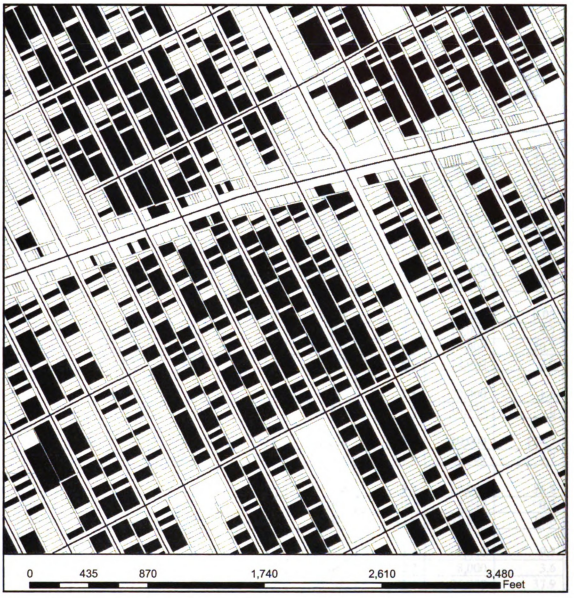


**Figure 3-5: Example of Vacancy Distribution in High-Vacancy Neighborhood.**
These neighborhood blocks, which are located within zip code 48215, correspond to Square 2 in Figure 3-3 above. Most of the larger shaded areas are comprised of multiple parcels.

**Table 3-3: Acreage Required by Crop**

This table reflects the acreage required to supply current consumption based on field harvest only (without storage or season extension).

| Vegetable Crop | Loss-Adjusted Seasonally Avail. Lbs. Consumed | High-Prod. Yields (lbs/acre) | Acres Req. | Low-Prod. Yields (lbs/acre) | Acres Req. | Comm. Yields (lbs/acre) | Acres Req. |
|---|---|---|---|---|---|---|---|
| Artichokes | 0 | | 0 | | 0 | | 0 |
| Asparagus | 79,453 | 16,553 | 4.8 | 4,138 | 19.2 | 1,930 | 41.2 |
| Bell Peppers | 578,461 | 85,813 | 6.7 | 15,682 | 36.9 | 28,000 | 20.7 |
| Broccoli | 884,142 | 23,087 | 38.3 | 11,326 | 78.1 | 3,000 | 294.7 |
| Brussel Sprouts | 27,611 | 61,855 | 0.5 | 30,928 | 0.9 | 10,000 | 2.8 |
| Cabbage | 701,432 | 166,835 | 4.2 | 41,818 | 16.8 | 36,000 | 19.5 |
| Carrots | 1,604,569 | 470,448 | 3.4 | 43,560 | 36.8 | 36,000 | 44.6 |
| Cauliflower | 99,039 | 126,760 | 0.8 | 19,166 | 5.2 | 14,000 | 7.1 |
| Celery | 1,515,866 | 417,740 | 3.6 | 104,544 | 14.5 | 49,400 | 30.7 |
| Collard Greens | 234 | 166,835 | 0.001 | 41,818 | 0.01 | 9,000 | 0.03 |
| Sweet Corn | 96,666 | 29,621 | 3.3 | 7,405 | 13.1 | 10,000 | 9.7 |
| Cucumbers | 365,438 | 253,084 | 1.4 | 68,825 | 5.3 | 18,000 | 20.3 |
| Eggplant | 153,939 | 71,003 | 2.2 | 23,522 | 6.5 | 22,000 | 7.0 |
| Escarole/ Endive | 48,644 | 130,680 | 0.4 | 32,670 | 1.5 | 30,000 | 1.6 |
| Garlic* | 0 | 104,544 | 0 | 26,136 | 0 | 16,333 | 0 |
| Head Lettuce | 2,693,255 | 130,680 | 20.6 | 32,670 | 82.4 | 20,000 | 134.7 |
| Kale | 33,487 | 66,647 | 0.5 | 33,106 | 1.0 | 9,000 | 3.7 |
| Romaine/ Leaf Lettuce | 1,135,023 | 235,224 | 4.8 | 58,806 | 19.3 | 20,000 | 56.8 |
| Lima Beans | 773 | 10,019 | 0.1 | 5,009 | 0.2 | 2,937 | 0.3 |
| Mushrooms+ | 975,349 | 71,874 | 13.6 | 71,874 | 13.6 | 71,874 | 13.6 |
| Mustard Greens | 87,138 | 117,612 | 0.7 | 78,408 | 1.1 | 9,000 | 9.7 |
| Okra | 29,018 | 52,272 | 0.6 | 13,068 | 2.2 | 8,000 | 3.6 |
| Onions | 985,095 | 235,224 | 4.2 | 43,560 | 22.6 | 26,000 | 37.9 |
| Potatoes | 6,515,348 | 339,768 | 19.2 | 43,560 | 149.6 | 32,500 | 200.5 |
| Pumpkins | 459,758 | 83,200 | 5.5 | 20,909 | 22.0 | 14,500 | 31.7 |
| Radishes | 80,144 | 235,224 | 0.3 | 43,560 | 1.8 | 5,100 | 15.7 |
| Snap Beans | 92,575 | 47,045 | 2.0 | 13,068 | 7.1 | 5,500 | 16.8 |
| Spinach | 158,139 | 98,010 | 1.6 | 21,780 | 7.3 | 12,000 | 13.2 |
| Squash | 465,988 | 180,338 | 2.6 | 45,738 | 10.2 | 13,000 | 35.9 |
| Sweet Potatoes | 604,874 | 214,315 | 2.8 | 35,719 | 16.9 | 14,000 | 43.2 |
| Tomatoes | 1,262,972 | 182,081 | 6.9 | 43,560 | 29 | 22,000 | 57.4 |
| Turnip Greens | 241,336 | 156,816 | 1.5 | 43,560 | 5.5 | 9,000 | 26.8 |

* We assumed garlic would be available 100% of the year through storage but not available field fresh.

+ The commercial yield was used for mushrooms in all three production scenarios.

**Table 3-3 Cont'd**

| Fruit Crop | Loss-Adjusted Seasonally Avail. Lbs. Consumed | High-Prod. Yields (lbs/acre) | Acres Req. | Low-Prod. Yields (lbs/acre) | Acres Req. | Comm. Yields (lbs/acre) | Acres Req. |
|---|---|---|---|---|---|---|---|
| Apples | 2,443,043 | 43,560 | 56.1 | 21,780 | 112.2 | 18,180 | 134.4 |
| Apricots | 4,055 | 43,560 | 0.1 | 10,890 | 0.4 | 2,971 | 1.4 |
| Sweet Cherries | 64,040 | 22,216 | 2.9 | 7,405 | 8.7 | 4,444 | 14.4 |
| Grapes | 326,852 | 39,204 | 8.3 | 19,602 | 0 | 9,884 | 33.1 |
| Peaches | 374,364 | 52,272 | 7.2 | 26,136 | 14.3 | 6,714 | 55.8 |
| Pears | 186,969 | 47,045 | 4.0 | 15,682 | 11.9 | 7,956 | 23.5 |
| Plums | 33,297 | 24,829 | 1.3 | 8,276 | 4.0 | 6,124 | 5.4 |
| Cranberries | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Strawberries | 212,300 | 139,392 | 1.5 | 17,424 | 12.2 | 5,160 | 41.1 |
| Cantaloupes | 282,227 | 63,162 | 4.5 | 21,780 | 13.0 | 8,000 | 35.3 |
| Honeydew Melon | 995,314 | 63,162 | 15.8 | 21,780 | 45.7 | 12,000 | 82.9 |
| Watermelon | 628,220 | 139,392 | 4.5 | 21,780 | 28.8 | 20,000 | 31.4 |
| **Fruit & Vegetable TOTAL** | **22,526,451** | | **263** | | **894** | | **1,660** |

***Acreage Needed to Meet Consumption Levels***

In order to determine the amount of land necessary to support as much of the fresh fruit and vegetable consumption as possible through Detroit-based production given seasonal limitations, we first converted the serving totals of each crop, at both current and recommended consumption levels, to pounds, based on published servings per pound figures adapted for adult populations (U.S. Department of Agriculture Food and Nutrition Service, 2008).[13] Next we multiplied this number by the percentage of the year available for each of the three seasonal production scenarios. We then factored in losses in the transmission of the produce from the farmgate, the loss due to any inedible share, the loss at the retailing stage and the loss in cooking (Kantor, 1998; Peters et al., 2002). This

[13] Servings per pound were based on a ¼ cup serving in the USDA report created for child nutrition programs but were adapted to the basis of ½ cup servings for the purposes of this research. Servings per pound figures for all fruits and vegetables discussed in this research were derived from this report except for garlic, for which the estimation of 5.5 servings per pound was estimated.

enabled us to determine a total weight in pounds for each of the fresh fruits and vegetables commonly consumed by Detroit residents. Table 3-3 shows the loss-adjusted figures for current consumption based on the percent of the year each crop is available fresh from the field. In other words, column two in Table 3-3 does not show the total amount of fruit or vegetable type consumed, but rather only shows the portion that could be supplied during the growing season.

We were then able to use these figures in conjunction with published high and low productivity biointensive yields that reflect small-scale cultivation (Jeavons, 1995)[14] to determine a range of acreage needed for each crop.[15] For the sake of comparison, we also calculated requisite acreage according to Michigan commercial crop yield figures compiled from several sources (National Agricultural Statistics Service Michigan Field Office, 2006; Peters et al., 2002, 2003; U.S. Department of Agriculture Economic Research Service, 2003; Zandstra & Price, 1988). While the monocropping agricultural production system these numbers reflect is unlikely to be appropriate in the urban Detroit setting, these more modest yields can nonetheless provide a cautious upper limit to the quantity of land necessary. Table 3-3 shows how these yields determine the acreage needed for each crop as applied to current consumption levels and assuming field harvest only. Similar calculations were made for the other two production scenarios at current consumption and for the three production scenarios at recommended consumption levels. Finally we took the sum of these fruit and vegetable acreages to show approximately how

[14] Jeavons discusses low productivity figures as reasonable for beginning farmers and gardeners and high productivity figures as achievable for experienced farmers and gardeners.

[15] The two exceptions were escarole/endive, for which the yield data for head lettuce was used as a best estimate, and mushrooms, for which the commercial production NASS figure of 71,874 lbs/acre was used for both low and high productivity from http://www.nass.usda.gov

much land would need to be put into production in order to meet a given percentage of local consumption with various scenarios of seasonality.

**Table 3-4: Acreage Needed to Supply Current and Recommended Consumption**

| Production Scenario | | Acreage Needed to Meet Current Consumption | Acreage Needed to Meet Recommended Consumption | % Annual Consumption Supplied |
|---|---|---|---|---|
| Field Only | High Biointensive | 263 | 916 | 31% Veg<br>17% Fruit |
| | Low Biointensive | 894 | 3,001 | |
| | Commercial Yields | 1,660 | 5,549 | |
| Field + Storage | High Biointensive | 511 | 1,831 | 65% Veg<br>39% Fruit |
| | Low Biointensive | 1,839 | 6,174 | |
| | Commercial Yields | 3,063 | 10,210 | |
| Field + Storage + Extension | High Biointensive | 568 | 2,014 | 76% Veg<br>42% Fruit |
| | Low Biointensive | 2,086 | 6,976 | |
| | Commercial Yields | 3,602 | 12,067 | |

Table 3-4 shows the range of acreages needed. The first two rows in each production scenario reflect high and low productivity under biointensive cultivation while the third row reflects commercial agriculture yields. If a high level of biointensive agricultural productivity is assumed, putting only 263 acres into production could meet 31% of current fresh vegetable consumption and 17% of current non-tropical fruit consumption without any postharvest management or season extension techniques. That is, of the total quantity of fresh vegetables and fresh non-tropical fruits consumed annually, only 31% of the vegetables and 17% of the fruits could be produced without the use of storage or season extension. If low productivity is assumed, the acreage needed to meet the same level of consumption increases significantly to nearly 900 acres, which is

similar to acreage requirements for the recommended consumption levels of both fruits and vegetables at high productivity.

If both postharvest management and season extension techniques such as unheated hoop houses are used, the percentage of consumption that could technically be achieved escalates to three-quarters of vegetable and nearly half of fruit consumption. The acreage requirements, however, are roughly double those of the requirements under field harvest at each of the three yield levels. Still, in regards to present consumption, these percentages could be achieved with 568 acres and high productivity biointensive yield levels according to this analysis. Utilizing less than half of the catalogued publicly-owned vacant acreage could achieve these percentages for present consumption levels at low productivity biointensive yields or for recommended consumption levels at high productivity biointensive yields. The inclusion of the acreage requirements based on commercial yields is intended for comparison and as a more conservative estimate since this production scenario would be unlikely and largely inappropriate within the urban boundary of Detroit.

## DISCUSSION

### *Reflections on Research Results*

This study sought to understand the scale of food production possible within the city limits of Detroit. Our estimate of roughly 4,800 vacant, publicly-owned acres in Detroit does not include land in and around parks, golf courses, cemeteries, schools, churches, hospitals, jails, utilities or right-of-way areas. This analysis furthermore excludes the possibility of food cultivation in residential yards. These land constraints ensure that our assessment of the amount of land potentially available for UA is

conservative. Though we do not assert that all vacant land should be converted into farms and gardens, transitioning a portion of the available land into productive spaces appears very appropriate and could generate significant impact. Based on our analysis of consumption, seasonal availability and yield potential, an investment in infrastructure for postharvest management paired with less than half of the available land (roughly 1,800 acres) could provide two-thirds of fresh vegetables consumed and 40% of fresh non-tropical fruit consumed at low-productivity levels or the same percentages of recommended consumption levels at high-productivity levels. Significant investments in the construction of hoop houses and larger quantities of land could supply even greater proportions of the fresh fruits and vegetables consumed.

In addition to only cataloging the publicly-owned land, this analysis includes a number of (previously stated) assumptions that overestimate the amount of land required to produce a given amount of food: namely that only one crop would be grown on a given square foot through the length of the growing season, that hoop houses would only be used for crops for which there is a reliable early or late season retail market, and that hoop houses require additional acreage rather than increasing the productivity of existing acreage. On the other hand, assuming that all fruit and vegetable crops are consumed at the same level throughout the year underestimates the amount of land necessary to supply current consumption. Furthermore, because we only considered fresh fruit and vegetable consumption, if all fruit and vegetable consumption were included, the land base required would approximately double. Finally, the significant increase in land necessary under commercial yields indicates that the biointensive yields may be overly optimistic.

In the end, meeting a substantial portion of current local fruit and vegetable consumption seems feasible given the amount of vacant land we have catalogued and the assumptions we have made, even if yields on par with the commercial level of productivity are assumed. Supplying the recommended levels of fruits and vegetables may not be feasible unless yield levels akin to high-productivity biointensive production are achieved. However, because the pace of the demolition of abandoned buildings in Detroit is scheduled to increase in the 2008-2009 fiscal year (Riley, 2008), the quantity of vacant land will presumably continue to grow. A city report from December 2008 predicts that due to the housing foreclosure crisis, which has hit Detroit particularly hard, a quarter of the city's housing stock will be vacant properties by 2011 (Diggs & Winters, 2008).

If the City takes seriously the possibility of scaling up urban food production, more accurate mapping of the vacant parcels will be needed. Inventories of these parcels that assess the soil quality and other physical conditions of the property, considerations that were beyond the scope of this research, will also be crucial. The recently established Detroit Vacant Property Campaign, whose goal is to support communities in their efforts to turn vacant property into assets, may be the best entity to continue efforts to accurately map and quantify Detroit's vacant land and, in so doing, work with residents to identify the best uses in different parts of the city (Detroit Vacant Property Campaign, n.d.).

Through the course of this research we also sought to work towards developing a method that would generate reasonable estimates of the scale of production possible in other urban areas. The most significant limitation of this analysis is the fact that our catalog of vacant properties hinges on the accuracy and continual maintenance of an

enormous database of city parcels that is constantly in flux. As discussed, we can only hope that this research presents a reasonable picture of the scale and distribution of vacant properties and our cross-reference with aerial imagery affirms this. The second major limitation is that the yield data we have relied upon, first of all, are not specific to the Detroit area and, secondly, assume either biointensive growing methods, which are not or would not necessarily be used by current and future urban gardeners and farmers, or commercial growing methods, which are generally not applicable to food cultivation on small patches of land in urban areas. Nonetheless, in presenting a range of production levels we hope to illuminate the relationship between land area devoted to urban production and food supply.

***Reflections on Urban Agriculture at the City Scale***

Even if we believe that a significant level of food production is possible in Detroit and other urban areas, many logistic considerations linger. Furthermore, on a conceptual level there remains a need to consider critically how scaling up UA could integrate into the urban landscape. Expanding urban production will transform the design of everything from buildings to neighborhoods to cities themselves. On the leading edge of this new research frontier, Mullinix et al. (2008, p. 4) coin the term "agricultural urbanism" to describe "a comprehensive social, environmental and economic integration of an agri-food system, in all of its dimensions and manifestations, within the planning, governance and function of the city" and a small handful of scholars have begun to explore the shape of such integration (see for example Barr et al., 2008; Gorgolewski, Komisar, & Nasr, 2009; Viljoen, 2005).

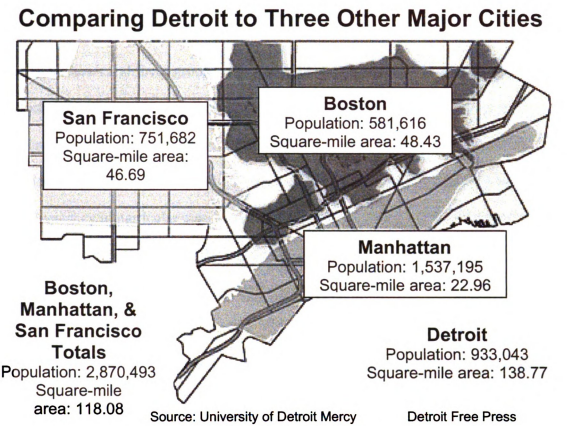


**Figure 3-6: An Illustration of Detroit's Low Population Density**
Adapted from (J. Gallagher, 2008)

These same questions apply to Detroit. A map created by University of Detroit Mercy School of Architecture professor Dan Pitera illustrates how low the population density of Detroit is in comparison with other major US cities (see Figure 3-6) (J. Gallagher, 2008). Though we do not intend to argue that Detroit should become as dense as Manhattan, given that the population densities of Manhattan (66,951 persons/mi$^2$), San Francisco (16,099 persons/mi$^2$) and Boston (12,009 persons/mi$^2$) are significantly higher than that of Detroit (6,724 persons/mi$^2$)[16], we do contend that there is a sufficient land base to move towards new urban geographical configurations that include space for food

[16] All population densities based on the "Comparing Detroit to Three Other Major Cities" map (J. Gallagher, 2008).

cultivation on a broader scale. Comparatively low population densities indicate that there is a greater potential for UA as a true food source in Detroit than in some other large cities. Interviews and focus groups with Detroit residents suggest that many people are supportive of expanding food production in the city but also that not everyone is comfortable abandoning the traditional cityscape (see Chapter 2). Taking this into consideration, along with the low overall population density and the high concentration of land vacancy in particular areas of the city, supports moving towards developing distinct agrifood districts within Detroit as the most feasible path towards a city-scale urban agriculture.

## CONCLUSION

In conclusion, this research indicates that urban farms and gardens can contribute significantly to the supply of fresh fruits and vegetables at a city scale in cites like Detroit with large amounts of vacant land. If residential yards and spaces around other buildings were considered, this level of production may well be achievable in other urban areas as well. Achieving these levels would no doubt have a major impact on the degree to which a city relies on food imports. If the city's waste products could also be utilized as inputs to this urban production, major strides in sustainable urbanization could be made.

The research presented here suggests many possible avenues for future inquiry in relation to moving towards a municipal commitment to supporting urban food production. How will farm and garden spaces integrate into the cityscape? How can planners support UA and also maintain distinctly urban settings? What tools are available for the remediation of soils contaminated to varying degrees? If urban production is increased, how will the food be marketed and distributed? As researchers continue to

investigate the social and ecological services of urban agriculture and as metropolises are increasingly faced with concerns of sustainability and food security, we predict that in many urban centers these questions will rise to the fore. For planners in particular, this research helps guide considerations of expanding urban agriculture as a means of urban food provisioning by clarifying the relationship between land base and fruit and vegetable supply related to average consumption. Furthermore, this chapter has shown that in the context of deindustrialized cities, urban agriculture can play an especially significant role.

# CHAPTER 4:
# CONCLUSION

## DISCUSSION OF RESEARCH RESULTS

The aim of this thesis has been to introduce the concept of *city-scale urban agriculture* as a way to describe the expanded levels of urban food production necessitating greater levels of infrastructure that UA practitioners are increasingly advocating and that a handful of municipalities are beginning to endorse. This is defined as:

> a network of cultivation spaces and production activities in which food is produced by and for the local community and around which city government and administrative departments, the private sector, non-profit coalitions and neighborhood groups are involved in order to expand, support and integrate these activities into the life of the city.

Differentiating city-scale UA calls into question the implicit assumption that the social and ecological benefits researchers have attributed to gardens at the individual and neighborhood scale will simply be replicated at a larger scale. Furthermore, articulating the possibility of city-wide UA that more intensively involves greater numbers of actors brings into focus a new set of questions regarding the role and the impact of urban farm and garden spaces.

Building on the work of UA scholars who have argued that UA is uniquely integrated into the urban ecosystem (Mougeot, 2000), this concept assumes that expanding urban farms and gardens across a city would impact numerous dimensions of urban living – for example the community, economy, environment, health, agrifood system and education dimensions. The utility of this concept is in its ability to highlight these multiple interactions, which are not yet understood, and, in so doing, to point towards new avenues for UA research.

The two components of the research presented here begin to give form to the concept of city-scale UA. The qualitative component of this research uncovers the context in which UA is considered by urban residents (see chapter two). The quantitative component demonstrates how to quantify possible production levels and their contribution to the urban food supply (see chapter three). Together these chapters start to challenge the conceptual boundaries between urban and rural and to demonstrate that the urban locale as a throughput of food is not the only possibility for cities.

Chapter two draws on data from ten interviews and five focus groups. The interviews reflect the perspectives of five UA practitioners and five professionals in fields related to UA, including planning, economic development, the management of farmers markets and cooperative extension. The focus groups involved participants with a range of engagement levels with UA. Two groups were comprised of individuals connected to one of two different UA-affiliated organizations; one group was comprised of members of a community organization, many of whom were gardeners but were not affiliated with a formal organization; one group was comprised of high school students who had experience with gardening through their high-school curriculum; and the final group was comprised of members of a senior organization, the majority of whom were not gardeners. The transcripts resulting from the audio recording of these fifteen data collections were analyzed for themes relevant to the concept of city-scale UA.

Together, this body of qualitative data speaks to the vision for the role of urban agriculture in the city, its relationship with the urban agrifood system and the structural constraints and opportunities for expansion. The strongest support for city-scale UA was found among the focus group participants affiliated with UA organizations and several of

these individuals articulated their vision for an agriculturally-based city. Others, however, were far more modest in their support for UA; they desired opportunities for UA to be accessible for those interested but were reluctant to embrace major aesthetic changes to the landscape of their city. Research participants frequently acknowledged that if urban agriculture came to serve a greater role in the urban food supply, it would likely compel changes in the food consumption and acquisition patterns of many Detroit residents. Some saw this as an obstacle to the support for UA but others saw urban farms and gardens as an opportunity to re-shape not only individual relationships to food but the nature of the urban food system itself. Finally, the interviews and focus groups revealed that administrative and policy support from city government is not currently adequate to sustain city-scale UA, and, while the non-profit infrastructure behind UA is generally strong, the supportive resources they provide are not currently accessible to all Detroit communities.

These wide-ranging perspectives demonstrate that there are a number of ways in which the nature and the scale of UA practices in Detroit may be contested as the local UA movement continues to grow. Still, this research demonstrates that the broad support for expanding current farm and garden activities, even if to varying degrees, offers an opportunity to include greater numbers of participants in UA practices and in the local dialogue on the role of these practices in Detroit. Lastly, this research seems to indicate that the greatest challenges to scaling-up UA are intangible rather than the commonly feared obstacles of soil contamination or garden theft. This again points towards continued deliberation among groups and individuals, including the city itself, on the future of UA in Detroit. In regards to soil contamination, however, it is unclear to what

extent the fact that few UA practitioners have encountered substantial obstacles of this type actually underestimates the problems of soil contamination or buried foundations that might arise if food cultivation were expanded significantly.

Chapter three estimates the potential contribution to the urban food supply of cultivation on the publicly-owned vacant parcels within Detroit city limits. This entailed 1) estimating consumption levels of fresh fruits and vegetables, which was calculated both according to current consumption levels and hypothetical consumption levels that would accord with dietary recommendations; 2) estimating the seasonal availability of fruit and vegetable crops based on three distinct production scenarios: field fresh harvest only, field fresh harvest and post-harvest management through crop storage, and field fresh harvest, post-harvest management and season extension technology, such as hoop houses; and 3) cataloging the number, acreage and distribution of publicly-owned, non-park parcels through GIS mapping. These processes enabled the determination of the percent of current and recommended fruit and vegetable consumption that could be supplied through each of the aforementioned production scenarios and the quantity of land that would be necessary to achieve this level of production. For the sake of comparison, the requisite acreage was calculated according to both low and high productivity biointensive yields and commercial yields, all of which were crop-specific.

According to the consumption data and the seasonal availability data used, it would be technically possible for Detroit gardens and farms to supply between 31% (using only field fresh harvest) and 76% (using field harvest, storage and season extension) of the fresh vegetables consumed and, based on the same parameters, to supply between 17% and 42% of the fresh non-tropical fruits consumed. Based on the

database of Detroit parcels used and the process for identifying available vacant parcels employed, it was determined that Detroit has 4,848 acres of vacant, non-park land under public ownership. Even assuming the maximum seasonal availability (use of both storage and season extension in addition to field cultivation) and minimal yields (commercial equivalents), putting roughly 75% of this available land (3,600 acres) into production would enable Detroit to supply the largest portion of current consumption technically possible.

Given that in a number of ways these research methods overestimate the amount of land necessary to supply a given quantity of food and that the catalog of vacant land underestimates the amount of unutilized land in the city, this indicates that there are strong grounds for arguing that urban food cultivation could contribute significantly to the quantities of fresh fruits and vegetables that Detroiters eat. When speaking of recommended consumption levels, however, which are more than four times present consumption for fruit and three times present consumption for vegetables, the amount of land required to supply the same percentages is more than three times greater. Still, reaching the highest percentages technically possible is within the range of feasibility if high productivity biointensive yields are assumed, which would require less than half of the acreage cataloged assuming the use of field harvest, storage and season extension techniques. In short, then, even if Detroiters significantly increased the quantities of fresh fruits and vegetables they eat, urban agriculture could still potentially play a considerable role in the required production.

***Implications***

Bringing the two research components together, it is apparent that Detroit has the physical space to expand the number of farms and gardens significantly and that there is strong support for transforming the city through UA among some and modest support for enabling those interested in gardening to do so among others. With this in mind, it would seem that the UA movement in Detroit should first work to make sure supportive resources for UA are accessible to all communities and then aim to include diverse voices in shaping the future of UA in the city.

Both components of this research were highly specific to the Detroit context and therefore cannot immediately be applied in other contexts. Still, there are a number of ways in which these results can speak to UA in other urban areas. While the qualitative results do not reflect all possible perspectives of the Detroit population, let alone beyond, these findings nonetheless reveal a number of important considerations relevant to scaling up UA from the perspective of community residents, UA practitioners and UA-affiliated professionals. Most importantly, communities have different expectations for the future of UA and its role within the city. Furthermore, the prospects for and interest in city-scale UA seem to be shaped by the broader urban context.

Much of the quantitative approach would be applicable in other settings. The variables most dependent on the locale are the seasonal availability of the different fruit and vegetable crops and the population size, which determines the current and recommended fruit and vegetable consumption levels. Assuming there was a local data source for post- and extended-season availability, these variables could be adjusted without tremendous difficulty and the basic analysis would stand. Quantifying the

available acreage for food production would also depend on the availability of a local data source of the city's parcels and their attributes.

### *Future Research*

This exploratory research on stakeholder perspectives of city-scale UA has uncovered a number of important themes but further research could extend these findings significantly by exploring this topic with a larger population and greater demographic representation and by delving into these themes, and the socio-cultural – political-economic context in which they appear, more systematically. In regards to the question of how urban agriculture can contribute to the food needs of residents, knowing how much of the requisite fruit and vegetable supply can be produced given seasonal constraints and how much land this would require opens the door to a host of other questions around not just how feasible this really is, but what the impacts would be if it were achieved. In terms of feasibility, there are serious considerations around soil contamination, implementation funding, particularly for hoop houses if extended season production was employed, recruiting and training large numbers of producers and honoring the needs and desires of residents living near vacant lots. Expanding food production towards the levels discussed could also have significant impacts on public health, food security and local economic development. All of these arenas point towards avenues for future research.

## SUMMARY

In summary, this research helps to shed light on many of the dimensions of city-scale urban agriculture. The qualitative results begin to show the different ways in which scaling up urban food production will impact the lives of residents and the character of the city. The focus groups and interviews also reveal many of the considerations that

advocates of UA in Detroit should bear in mind, including limitations in the degree to which residents want to cede the urban character of their community and limitations residents perceive in the level of interest in participating in UA. The quantitative results show that meeting a significant portion of fresh fruit and vegetable consumption is possible on the publicly-owned vacant land base in Detroit. Together these two research projects show that moving towards city-scale urban agriculture in Detroit is both possible and immensely complicated, involving a diverse array of actors and myriad dimensions. Yet the support for a greener Detroit, the strong non-profit infrastructure sustaining UA, and the emergence of increased governmental interest in UA just may lay the path for what some have called the transition from "Motown" to "Grow-town."

# APPENDICES

# APPENDIX A: INTERVIEW GUIDE

*Note: The questions relevant to this research are in bold. The questions in regular typeface were written for the Fair Food Foundation research, which served to provide a context of food system issues within Detroit.*

Their Work

1. What is the primary goal of your organization with respect to the food system?

2. What are your specific approaches and activities?

3. What have been your major accomplishments? How do you measure success/gauge progress?

Their Network and Lessons Learned

What are other key organizations that you work with in Oakland/Detroit on food system issues? Are there other organizations of whom you are aware that you don't interact with very much?

4. Do you feel that organizations working on food issues in Oakland/Detroit are well enough linked to one another?
    a. Why or why not?
    b. Can you provide an example of how it worked well and where there are gaps?
    c. Do you want to work with any of the other organizations, agencies, or people that you are not yet working with?
    d. What would be needed to improve these linkages?

5. How do food issues intersect with other issues (e.g. economic development, housing, health care, education, etc.) in Oakland? Are there key groups working in these areas of whom you are aware that don't have any focus on food?
    a. How have groups from these areas collaborated with one another?
    b. Do you think there should be more collaboration?
    c. What would be needed to foster this kind of collaboration?

6. What lessons can be learned from efforts—your own or others'—that have succeeded?

7. What lessons can be learned from efforts—your own or others'—that have not succeeded?

The Food System

8. What do you think are the most pressing problems in the current food system in Oakland/Detroit? What is working well?

9. What do you think are the best strategies for addressing these problems? Are there strategies you or others have employed that you think didn't or won't work?

10. Do you see a difference between ideal and realistic solutions?

11. If you could construct a food system for the region that would be fair and sustainable, what would that look like?

12. What would be needed to ensure that: farm workers are paid a living wage and work in a health-promoting environment; farmers are being paid fairly for their costs of production and livelihood; distributors and retailers have enough profit to pay employees and invest in the maintenance of their operation; and the cost of the food is low enough that consumers will purchase it?

13. **Taking into account the large amounts of vacant land in Detroit, what would lead you to say urban agriculture is or is not a viable strategy within the effort to develop a just and sustainable food system?**
    a. **What would be the implications of urban agriculture as a city-wide strategy?**

14. **What are the biggest challenges or barriers to making these changes? What are the assets?**
    a. **(Follow-up in regards to urban ag. where appropriate)**

15. What types of organizations, activities/strategies, and organizational and/or public policies would be needed to make these changes happen locally?
    a. Which are present in your region, and which are not present but needed?
    b. **(Follow-up in regards to urban ag. where appropriate)**

16. Do terms such as 'food desert', 'food security', 'food system', 'food justice' resonate with your work and how you describe your work to others? Are there better terms to describe the work?

17. Does your organization work to increase demand for healthy food, such as through nutrition education, cooking classes, or other efforts?
    a. Are other organizations working on these issues?
    b. Do you collaborate with them?
    c. What do you think makes groups more or less successful at increasing demand?

<u>Sustainability</u>

18. What are the biggest challenges to sustaining your activities? What type of support could move you towards sustainability?

19. What kind of 'start-up' support is most critical for local food system efforts?

# APPENDIX B: FOCUS GROUP GUIDE

*Note: The questions relevant to this research are in bold. The questions in regular typeface were written for the Fair Food Foundation research, which served to provide a context of food system issues within Detroit.*

1. Please think about how you decide where you decide to do your grocery shopping. Going around the table one at a time, what are the 2-3 major places that you get most of your food from?
    a. Probes: Do you make other, smaller trips?
    b. How often and how far do you go?
    c. What determines this?

2. Are you satisfied with this?
    a. How easy is it to get the food you need?
    b. What are some of the important things that determine how you obtain your food?
        i. Is transportation or distance from your home a factor? How far is reasonable walking distance?
        ii. How about Price?
        iii. Condition of the store/market?
        iv. What kind of food variety and selection is important to you?
        v. How about quality?

3. What are things about the food that make up quality?
    a. Probe: how do you define freshness?

4. **Does anyone have anywhere else that they get their foods, like from a backyard garden, community garden, or outdoor market?**

5. **Are you satisfied with this? What encourages or discourages you from growing your own food?**
    **a. Is transportation or distance from your home a factor?**
    **b. How about affordability?**
    **c. How about quality or types of food available?**
    **d. Other factors?**

6. How often do you cook your own meals? Go out and get prepared food?
    a. Are you satisfied with this?
    b. Are you interested in preparing/cooking food but face obstacles in doing so?

7. If so, is it a factor of
    a. time
    b. access to cooking facilities
    c. cooking skills

d. other factors?

8. Would anyone like to list their favorite recipe that is easy and affordable to prepare?

9. Do you have any food habits that have been passed down through family or friends?

10. What about cultural foods- is it easy for you to obtain culturally appropriate foods where you live?

11. What do you think of as a "healthy" food?

12. Do you think that you and your household currently eat a healthy diet? Why or why not?
    a. Probe: where do you get your health information?

13. Let's go around the table and list one thing that would make it easier to get the food you need.

14. Do you think that all neighborhoods in Detroit face the same challenges that you do here in your neighborhood? Are there imbalances within the city?

15. Have you ever thought about the way you get your food in terms of fairness or equity?
    a. Definition: Some say that access to healthy, fresh and sustainably-grown food is a fundamental right that everyone should have.
    b. What do you think of this? What does this mean to you?

16. Is how your food is grown or raised important to you? Are pesticides or growth hormones a factor in how you make your purchases?

17. Have you heard the term sustainably grown food? What does this mean to you?
    a. Definition: We can think about sustainability in terms of the way we get our food by asking, how long can we continue getting our food this way? For example, how long can California continue producing fruits and vegetables for the rest of the US, in the face of a water shortage?
    b. What do you think of this? What does this mean to you?

18. Have you heard of any efforts going on in your community around healthy, fresh, sustainably grown food?
    a. Probe: (Fill in here with specific efforts in community and/or these general examples:)
        i. Garden resource programs
        ii. Community co-ops
        iii. Healthy food in corner stores

iv. Community garden- here and elsewhere
v. WIC/Project Fresh/fd stamps at farmer's market
vi. nutrition education (extension)
vii. Grocery buses
viii. Community Kitchens
ix. Food enterprise mentoring
x. What do you think of these efforts? What do they mean to you?

19. **If there is vacant land in your neighborhood, do you think using this land for farms and gardens would be desirable for yourself and other residents? How so? How possible do you think growing food on vacant land in the city would be?**
    a. **Would doing this improve access to healthy, fresh food?**
    b. **How else would having more urban farms and gardens impact your neighborhood? (i.e. what other good or bad things would there be about the presence of urban gardens throughout the city?)**

20. If there was better access to healthy, fresh, sustainably-grown food in your community, do you think community residents would purchase and eat the food?

    a. from neighborhood grocery stores
        i. from neighborhood farmers/gardeners

Moderator: Gives a short oral summary statement of what was covered in the session, listing the key questions and big ideas that emerged.

Is this an accurate summary? Is there anything important I forgot to include?

Let's go around the room one more time and each list the most important thing that was said about changing to the opportunities your community has to get good food. What needs to change to make it easier for you, or more fair?

Moderator: Restates the purpose of the study, leaving 5-10 minutes prior to adjournment time for final discussion.

The reason for this study is to discover what is most important for you as residents of Detroit/Oakland for obtaining a healthy, satisfying diet from appropriate sources. The second part of the study will review work underway in the community to improve the food system and food access. Our primary goal was to capture what the most important changes in Detroit's/Oakland's food system are for you as residents. Have we missed anything in covering these areas?

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