

A STUDY ON URBAN AGRICULTURE:  
RECOMMENDED POLICIES FOR CALIFORNIA  
by  
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## APPROVAL PAGE

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## *Dedicated*

*To Casey Burke for his love and support in writing this Senior Project*

*and*

*To my parents and family for making college possible.*



# Chapter 1

## Introduction

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Food: a subject that has the power to unite cultures; the power to cause war; the power to kill. There is no *thing* that is more broadly understood by the entirety of the human race. The survival of people, the continuation of cultures, the existence of civilizations are all linked to food.

This Senior Project presents a contribution to reconnecting Californians with their food system. Through a discussion of food system history and the problems with the current food system in the United States, a clear solution arises. Urban agriculture reconnects communities with the food system, mitigates problems caused by industrial farming, and generates many social, health, and economic benefits.

Chapter 2 discusses definitions and history of food systems, and the relationship between food systems and planning. For the majority of human history, people were closely connected to the food they consumed. They often grew, prepared and consumed their own food; or personally knew those who did so. As civilization has developed, becoming more diversified, specialized, and globalized, people have lost touch with the process that feeds them. Food today is often produced in mass quantities, by massive corporations, and delivered to the average person through innumerable middlemen. The modern food system is riddled with problems that could be solved should people become more connected with it.

To fix a problem, one must first understand it; Chapter 3 provides a thorough discussion of the problems with the United States' food system. These are in the areas of food access and nutrition, sustainability, and globalization and specialization.

The burgeoning practice of farmers' markets has provided occasions to study the benefits of localized food systems across the country. Farmers' markets, which are most popular in California, are a relatively recent institution that connects local farmers to persons seeking

organic, local produce. Studies of farmers' markets are already showing economic and health benefits, as discussed in Chapter 4.

The cases of urban agriculture explored in Chapter 5 provide examples of successful implementation methods. To comprehensively understand effective implementation of urban agriculture and the benefits that accompany it, international (Havana, Cuba), historic (Victory Gardens), and modern (New York, New York and Detroit, Michigan) cases are discussed. Havana, Cuba was chosen as a case study because it is the most comprehensive and successful implementation of urban agriculture in modern times. In the United States, the last large-scale practice of urban agriculture was the Victory Garden Program. The Program was studied to lend an understanding of how urban agriculture interacted with the American Republic and its citizens. New York City and Detroit are two modern American examples of growing urban agriculture practices. New York City was chosen due to its location in a dense metropolitan area. Through innovative policies, urban agriculture has quickly grown in the City despite a dearth of open space. Detroit is one of the few American Cities with comprehensive management of urban agricultural practices. The rapid progression of urban agriculture in Detroit, partly due to the availability of land during the economic recession, prompted the City to enact unique land use policies.

Planning, a profession that has previously not involved itself in the management of food systems, presents itself as a key player in its localization. Planners are in the unique position of already managing many individual portions of the food system. This Senior Project Report culminates in recommended actions for the State of California (Chapter 6) and local governments (Chapters 7 and 8) to implement in order to increase urban agriculture and reap its benefits. The recommended actions focus on the local level, where planning strategies and policies can bring about a transformation of the food system. Chapter 8 contains a sample ordinance for local governments to implement in order to effectively encourage and regulate urban agriculture.

Although urban agriculture is an effective localized food system, other methods of reforming the food system are not discussed. If one desired to conclusively decide the best means of

improving the existing process, they should research, discuss, and compare all possible options of improving it.

Within the parameters of time and resources, through an analysis of past and current food systems, and through studies on existing practices of urban agriculture, this Senior Project Report concludes that urban agriculture is an effective means of improving food systems to be more equitable, resilient, and sustainable.

## Chapter 2

### Food Systems and Planning

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#### 2.1 Definition of Food Systems

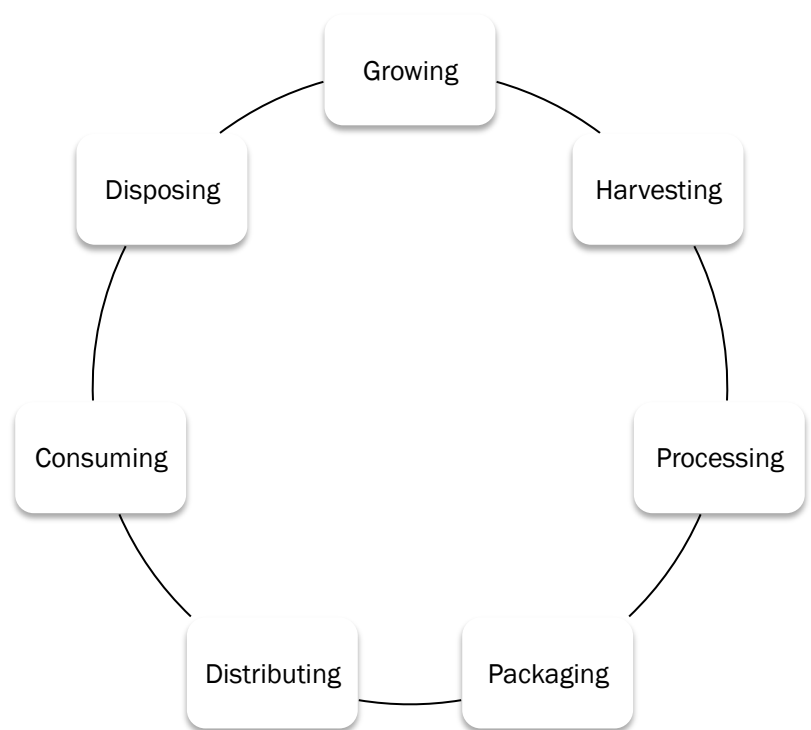
The term *food system* refers to the process and means by which humans receive sustenance. According to Tansey and Worsley (1995), food systems are made up of three aspects:

Biological: The living processes used to produce food and their ecological sustainability.

Economic and political: The power and control that different groups exert over the different parts of the system.

Social and cultural: The personal relations, community values, and cultural traditions that affect people's use of food.

All of these aspects are clearly present in people's daily interaction with food. First, the biological aspect reflects the agricultural component of the food system. The economic and political aspect is demonstrative of the government and business policies that regulate food production, consumption, and price. Finally, the social and cultural aspect defines the types of food people choose to consume and how they interact with and prepare the food.



**Figure 2.1** The Food System

Food systems can be seen as the



manipulation of ecosystems through human management of biological organisms for the production of sustenance. A “successful” food system is one that creates a “safe, secure, sufficient, sustainable, and nutritious diet for all, equitably” (Tansey & Worsley, 1995). In order to ensure a “successful” food system, all three aspects must be addressed.

## 2.2 History of Food Systems

The availability of food supplies has been an inevitable driving factor for human survival and in the development and downfall of human civilizations. The growth of civilizations has, for the most part, been directly correlated with an abundant food supply. It is important to note that many other factors impact population growth (i.e. disease, war, weather, etc). Table 2.1 shows an estimation of population growth through humanity’s history. When compared with progressive agricultural technology, a pattern appears.

**Table 2.1** Human Population Growth

Year	Human Population (approximate)	Agricultural Technology
150 thousand years ago *	Few hundred	Hunter-gatherer
50,000 BCE**	2	Hunter-gatherer
8000 BCE	5 million	Cultivated crops and animals
		Irrigation
		The plow
1 CE	300 million	
1200	450 million	
1650	500 million	Fertilization, crop rotation, cover crops
1750	795 million	
1850	1.3 billion	
1900	1.7 billion	Global Agricultural Revolution
1950	2.5 billion	Agricultural industrialization
1995	5.8 billion	
2011	7 billion	

Source: Population Reference Bureau estimates.

\*Include ancestors of *homo sapiens*

\*\*Include *homo sapiens* only

For the majority of human history, food supply was dependent on the hunter-gatherer method. People traveled from place to place, following the food supply, gathering sustenance from wild plants and hunting animals where they were available (Diamond, 1999). While there is speculation that human ancestors practiced a balanced diet, the stability of the food supply and the constant struggle to attain it kept the human population from growing substantially (O’Keefe & Cordain, 2004).

Motivated by climate change and the need for a stable food supply, human ancestors began experimenting with food cultivation. Evidence of agricultural practices dating to 8000 BCE shows the transition away from the hunter-gatherer lifestyle towards cultivating crops and animals (Montgomery, 2008). Much of the evidence supporting this timeframe has been found in an area known as the Fertile Crescent, the region in the Middle East where the earliest human civilizations began (i.e. Mesopotamia, Babylon). Agriculture continued to progress from this point: by 6000 BCE, farm animals (many of which we are familiar with today), had been domesticated; by 5000 BCE agriculture was practiced throughout the American, Asian, African, and European continents (Bulliet, Crossley & Headrick, et al. 2008).

Agriculture provided a much more stable food supply than did hunting and gathering. This not only allowed for a more abundant yield, 10 to 100 times more food calories per acre, but also allowed civilizations to develop other technologies that support population growth (Diamond 1999) (Montgomery, 2008). Crucial technologies in the development of early agriculture made it a viable option. Two of these inventions were the development of irrigation around 6000 BCE, and the plow in 3000 BCE (Montgomery, 2008).

Although agricultural practices allowed for much growth in the human population and experience, it was not without its hardships. Early civilizations began to experience problems of soil fertility and erosion. By the Common Era, Rome had depleted its soil to such an extent that it shipped food from over 1000 miles away (from Egypt and North Africa) to sustain its population. Dependence on distant food sources contributed to the eventual downfall of Rome, as resources were not easily accessible during times of need (Montgomery, 2008).

Indeed, it was not just the earliest civilizations that experienced problems associated with agriculture. After the initial burst of population growth correlated with agricultural practices, human population growth slowed until the introduction of new agricultural techniques in the 17<sup>th</sup> century. The introduction of new ideas - most noteworthy of which were the use of manure for fertilization, crop rotation, and cover crops - helped to mitigate the problems of soil degradation and erosion that agriculture wrought on natural systems (Montgomery, 2008).

The Global Agricultural Revolution, however, did not occur until the turn of the 20<sup>th</sup> century. The development of synthetic fertilizers as well as refrigeration techniques laid the foundation for the industrialized food system that sustains civilization today (Roberts, 2008). Synthetic fertilizers allowed for the replenishment of soil nutrients during heavier agricultural uses, significantly increasing the capacity of agricultural production. Refrigeration techniques created a safe and efficient method for transporting food produce long distances, making a variety of food available at any location at any time of year.

Industrialization transformed the food supply system. Up until the mid 1900s, half of the United States' population was farmers. The agricultural industry was made up of relatively small, family-run farms with a variety of crops and animals on each farm. Mechanization - the replacement of human and animal labor with machinery - of agriculture brought with it a change in culture (Ikerd, 1996). The majority of the American population no longer need to work in agriculture. To increase efficiency, post World War II farmers began specialized operations; not only were these operations much larger than past farms, but they also decreased farming diversity. Today farming is specialized to a point of monoculture – a practice in which a (typically large) field is planted with a single crop species over a given season (Kirschenmann, 2010).

Another component of industrialized agriculture is the use of synthetic fertilizers and pesticides. Between the years 1948 and 2008, agricultural chemical use increased by five times (USDA, 2010). The development of agricultural chemicals has been spurred by the

vulnerability of monocultural farming techniques and the strain that modern industrialized farming places on natural systems.

While industrialization, specialization, and globalization have created a surplus food supply, the food system has progressively manipulated natural ecosystems to increase capacity to the detriment of the planet. As humans continue to bend biological laws, dependence on synthetic fertilizers and technological innovations will continue to grow. With each artificial manipulation of nature must come the assumption that technological innovation will always overcome agricultural production challenges (Kirschenmann, 2010).

### **2.3 Food Systems and Planning**



**Figure 2.2** *Journal of the American Planning Association*

A food system incorporates many different activities: production, processing, distribution, consumption, waste management, and associated regulatory institutions (Pothulkuchi & Kaufmen, 2000). The planning field includes all these activities. While planning regulates agriculture, industrial functions, transportation, and waste management, their relation to one another in the food system is not addressed (for the most part). Since food systems are fundamental to the health of communities, it would be beneficial if they were regulated as a comprehensive planning system rather than as individual parts of the whole.

Planning can provide the platform for such regulation on a local level.

Food systems issues are essential to local communities for many reasons. Pothulkuchi and Kaufmen (2000) studied the relation of food issues to planning and composed the following list of the importance of food issues to healthy communities:

1. Food sector establishments are a large part of any city's local economy.
2. Many city residents are employed in the food sector.

3. City households spend a large portion of their income after taxes on food purchases.
4. Food waste is a significant portion of the total waste in many city landfills
5. City water pollution problems are exacerbated when chemical fertilizers and pesticides are use on farms in a city's region.
6. Many health problems are food related – whether due to inadequate or unbalanced diet, or excessive intake.
7. Household and individual trips to food outlets contribute a significant portion to urban transportation volume.
8. Access to food by public transit methods greatly affects lower-income resident's ability to attain healthy food.
9. Lower-income residents have more difficulty paying for food when affordable housing in short supply.
10. Lower-income residents living in cities depend on emergency sources of food for sustenance.

Planners already consider each of these ten food issues; however, very rarely have they been considered as a system. Planners are in a position that could facilitate regulation of all aspects of local food systems in a comprehensive and effective way. Pothulkuchi and Kaufmen (2000) suggest five ways in which planners can strengthen the food system:

1. Compile data on community food systems.
2. Analyze connections between food and other planning concerns.
3. Assess the impact of current planning on the local food system.
4. Integrate food security into community goals.
5. Educate future planners about food system issues.

Due to the breadth of the existing planning field, planners are uniquely equipped to attend to food system issues and organization. On a regular basis, planners compile data in various fields (including housing, transportation, population, atmosphere, etc.). With this experience, and in union with relevant data already compiled, planners could form a complete view of

the food system that would help to better manage it. Furthermore, because planning already operates in so many sectors of government, the economy, and they community that are also part of the food system, it can facilitate a more holistic analysis of its individual parts.

## Chapter 3

### Problems with United States' Food System

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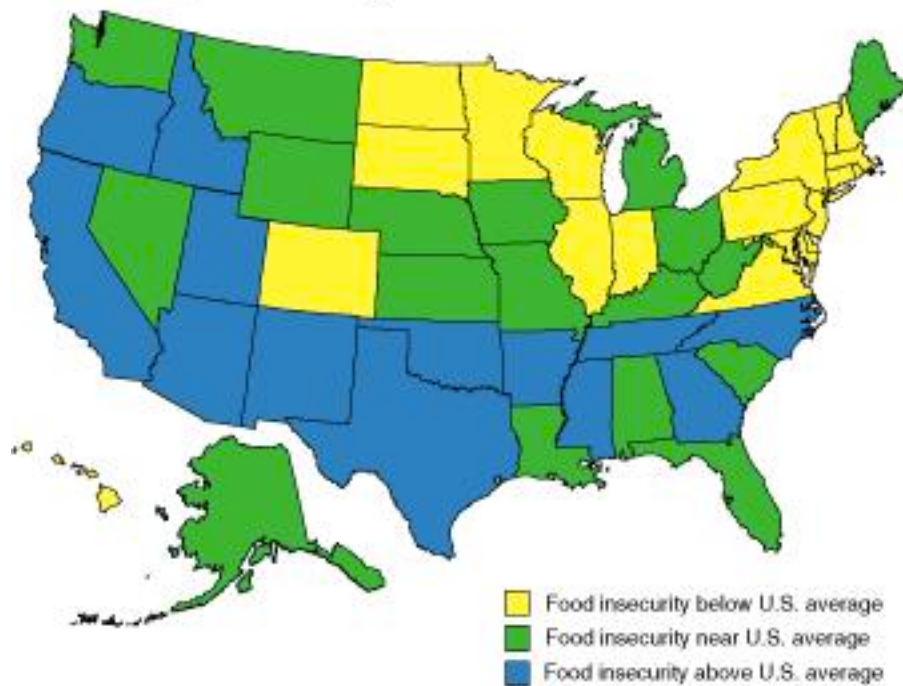
#### ***3.1 Food Access and Nutrition***

The ultimate function of food systems is to produce enough sustenance to nourish the human population. While the production of food has steadily increased in the United States and abroad, the rate of hunger among Americans has increased. According to the Food and Agriculture Organization of the United States (2012), from 1961 to 2009, agriculture production has increased by 170 percent, a rate roughly comparable with world population growth. In fact, the world produced over 13 quadrillion calories of food in 2010, or 5,359 calories per capita per day. The United States per capita food production in 2012 was more than 8,000 kcal/person/day (FAO, 2012). This number represents the potential caloric intake of each person on the planet, should food be distributed evenly. To provide context to these numbers, the average adult should consume between 1,600 and 2,400 calories per day (Zelman, 2008). Should all food produced be distributed and consumed evenly, the US and world population would be properly fed.

In 2006, perhaps to more properly label the malnourished, the government replaced the term “hunger” with “food insecure.” A food insecure household is one where, sometime during the previous year, people did not have enough to eat (McMillan, 2014). While the per capita availability of food has increased, malnourishment is prevalent in the United States. Despite the increase in food production, there were 57 percent more food insecure persons in 2013 than in the late 1990s (McMillan, 2014).

A unique aspect of American hunger is that statistically, minority demographics and living situations do not correlate with food insecurity. In the United States, more than half of hungry households are white, and two-thirds of those with children have at least one working adult – typically in a full time job. Food insecurity in the suburbs doubled from 2007 to 2013 (McMillan, 2014).

Paradoxically, the number of obese persons has increased with those who are food insecure in the United States. According to Melissa Boteach, vice president of the Poverty and Prosperity Program of the Center for American Progress, “people make trade-offs [for] food that’s filling but not nutritious and may actually contribute to obesity.”



**Figure 3.1** Prevalence of Food Insecurity, 2001-2007 Average.

Source: Calculated by Economic Research Service using Current Population Survey Food Security Supplement data.

The logical questions that arise from these statistics are: (1) if agricultural production has increased with the population and greatly exceeds the energy needs of the population, why is the number of food insecure persons increasing? (2) If the number of food insecure persons is increasing, why are obesity rates also increasing?

The answers lie in affordability of healthy food, as well as in access to such food. The cost of healthy foods has increased, while that of unhealthy foods has decreased. For example, since the early 1980s the real cost of fruits and vegetables has increased by 24 percent, while the cost of nonalcoholic beverages – primarily sodas sweetened with corn syrup – has dropped by 27 percent (McMillan, 2014). This staggeringly inconsistent cost difference correlates with government subsidies, which are much higher for commodity crops than specialty crops. In 2012 the United States government spent roughly \$11 billion to subsidize and insure commodity crops like corn and soy - over \$9 billion more than that spent to subsidize “specialty crops” (the bureaucratic term for fruits and vegetables) (McMillan, 2014).



Many Americans do not have convenient (geographic) access to healthy foods. According to the USDA's Economic Research Service (2014), approximately 23.5 million people live in "food deserts."

"Food deserts are defined as urban neighborhoods and rural town without ready access to fresh healthy, and affordable food. Instead of supermarkets and grocery stores, these communities may have no food access or are served only by fast food restaurants and convenience stores that offer few healthy, affordable food options. The lack of access contributes to poor diet and can lead to higher levels of obesity and other diet-related diseases, such as diabetes and heart disease" (USDA, 2014, p. 50).

The existence of food deserts can be attributed to many factors. Among them are economic factors that keep grocery stores from opening in low-income areas, as well as the pattern of development in the United States. Traditional Euclidean Zoning - which champions the strict separation of uses - has encouraged residential developments without a regard for its accessibility to necessary amenities (such as healthy food).

Although the American agricultural industry produces a food surplus, an increasing number of persons within the country suffer from malnutrition and food insecurity. A combination of factors has led to this rise, including certain economic and zoning policies, which have inhibited access to healthy and affordable foods.

### **3.2 Sustainability**

Due to its inherent nature, food systems are tied to biological systems. The practice of agriculture is closely tied to cultural behavior since it reflects the necessities and commonly accepted practices of a group of people (Vasey, 1993). However, agriculture is bound by the constraints of living organisms and biological laws, which humans attempt to bend while still maintaining equilibrium. As is now largely known, the introduction of several technological advancements in agricultural practices generated a series of negative reactions from

Nature. Climate change, pollution, loss of biodiversity, water use, and waste are all impacts compounded by industrialized agriculture and result in an increasingly unsustainable future, particularly for the food systems.

In March of 2014 the Intergovernmental Panel on Climate Change (IPCC) reported that the food system is vulnerable to climate change (Folger, 2014). According to Michael Oppenheimer (2014), a climate scientist at Princeton, the biggest threat of climate change is a breakdown of food systems. Climate change has already started to affect the plant yield. According to the IPCC report, “In the last 20 years, particularly for rice, wheat, and corn, there has been a slowdown in the growth rate of crop yields.”

Furthermore, crops have become more susceptible to climate change and disease due to monocultural agriculture. According to Jason Treat of National Geographic Magazine (2014), “People increasingly eat the same types of food. People now get more calories from wheat, rice, corn, sugar, oil crops, and animal products...Greater homogeneity in world diets also make the food supply vulnerable.” Monocultural agriculture has arisen from the industrialized food system - a practice in which only one variety of a crop is widely used. Not only are the same genera of plants being increasingly cultivated and consumed, but only a few species of each genus are widely used (Kirschenmann, 2010). The fewer number of species planted, the more vulnerable a food supply is. One disease, or a change in temperature, that negatively affects the development of a certain crop species can wipe out a large percentage of the food supply.

Modern agriculture is one of humanity's primary driving forces impacting climate change through its emission of green house gases.

“Agriculture is among the greatest contributors to global warming, emitting more green house gases than all our cars, trucks, trains, and air planes combined – mostly from methane released by cattle and rice farms, nitrous oxide from fertilized fields, and carbon dioxide from the cutting of rainforests to grow crops or raise livestock” (Foley, 2014, p. 13).

According to Pirog et al., (2001) and Saunders and Hayes (2007), food is increasingly traveling further from its point of origin. The average food product in the United States travels an average of 1300 miles from a field to someone's plate (Hendrickson & Heffernan, 2002). The industrial food system is designed to use large amounts of non-renewable resources to transport food hundreds of miles to its final destination.

Additionally, the current food system exacerbates natural systems through large water usage and pollution of the same water. According to the USGS, nearly 75 percent of all freshwater in the State of California, the state with the largest water use in the United States since 1950, is used for agricultural purposes. As climate change affects precipitation patterns in California, water is a growing area of concern (USGS, 2014). Synthetic fertilizers, pesticides, and herbicides used to increase crop production and stave off potentially detrimental insects, are absorbed into the water supply and pollute it, further compounding the water issues that California faces. According to the Environmental Protection Agency (2010), more than half of the pollution contaminating rivers and streams in the United States is from farm runoff containing chemical fertilizers and pesticides as well as manure.

Agriculture is a necessary function in maintaining civilization, however, the current food system fails to adequately provide food access, is vulnerable to the environment, can negatively affect the environment, and perpetrates excessive waste. Much of the world's agricultural production goes to livestock, biofuels, and industrial products, never reaching consumers plates (Foley, 2014). An estimated 25 percent of the world's food calories are lost or wasted before they can be consumed. In affluent countries most of the waste occurs in homes, restaurants, or supermarkets. To place waste within the perspective of the broader food system and environment, one year of food loss accounts for over 25 percent of all fresh water used for agriculture in the US (Foley, 2014).

### 3.3 Globalization and Specialization



**Figure 3.2** Monocultural Agriculture  
Source: USDA.gov.

The United States food system has become increasingly concentrated, specialized, and industrialized. Several factors have contributed to this including the development of industrial machines, the use of chemical fertilizers, the globalization of food systems, and government subsidies (Peters, 2010).

While the development of industrial farming techniques, including the use of chemical fertilizers, has allowed increased production of crops, it has also caused issues. Increasingly, farmers that can afford the cost of industrialized farming technology are large agribusinesses, rather than the small local farms that used to constitute the United States food system (Peters, 2010). As a few businesses have taken over food production in the United States and the rest of the world, they have created increasingly specialized products - meaning, they are cultivating less diverse crops. The loss of diversity makes food systems more vulnerable to environmental factors and has negative effects on diet.

Large agribusinesses have also been encouraged by and profit from government subsidies. Agribusinesses take advantage of subsidies by maximizing short term yields and profits at the expense of the environment and small local farmers (Peters, 2010). Additionally, subsidies support the overproduction of commodity crops within the country, forcing the United States to import fruits and vegetables. Relying on foreign trade and transportation for food significantly increases the vulnerability of the food system to volatile political situation and oil supplies (Peters, 2010).

The United States food system is quickly consuming resources, while failing to perform its function of effectively feeding its population. As climate change continues and international

events occur, the vulnerability of the current United States agricultural system becomes more evident; our food system must evolve.

## Chapter 4

### Localized Food Systems and Urban Agriculture

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#### *4.1 Localized Food Systems in the United States*

The United States Department of Agriculture's (USDA) working definition of locally sourced food is that which travels a maximum of 400 miles from its origin, or that which is grown within the same state as its consumers (regardless of size). Other definitions of local food systems are focused on direct-to-consumer marketing - or a system in which the food produce is sold directly from the grower to the consumer (2010).

##### *Farmers' Markets*



**Figure 4.1** *Farmers' Market Produce*  
Source: San Luis Obispo Farmers' Market. March 12, 2014.

As discussed previously, while industrial agriculture has benefits (i.e. quantity) it also perpetuates problems in the realms of healthy food access and sustainable agricultural practices. Americans have experienced these problems and responded to them by encouraging the emergence of local food markets, as evidenced by the exponential growth in the popularity of farmers' markets.

According to the USDA the number of farmers' markets has risen by

approximately 74 percent in the past five years to a total of 8,268 markets in 2014. Furthermore, winter farmers' markets have increased by nearly 60 percent in the same time period. California has the largest number with 764 farmer's markets.

According to Kathleen Kerrigan, former Deputy Secretary of Agriculture, "farmers' markets are a critical ingredient to our nation's food system. These outlets provide benefits not only to the farmers looking for important income opportunities, but also to the communities

looking for fresh, healthy foods” (sustainablebusiness.com, 2012). Indeed her statement is not just an opinion, but a fact as empirical studies suggest that localizing food systems stimulates economic development, promotes health and nutrition, and increases food security (Henneberry et al., 2009; Otto & Varner, 2005; Swenson, 2008 & 2009).

Local food markets encourage the purchasing of food from nearby sources, therefore keeping more money within the local community. Import substitution – or consumers’ decision to purchase locally grown food over imported food – is the most direct way through which economic stimulation of a local economy is evident (Swenson, 2009). Rather than the cash flow of food products being exported to other economies, local food systems allow it to circulate within the local economy.

As locally grown food becomes more popular and profitable, processing activities also move within the local economy creating more jobs and economic development (Swenson, 2008 and 2009). Otto and Varner (2005) studied the impact of local food systems and farmers’ markets on local economies. In Iowa, for instance, they found that for each dollar spent at farmers’ markets, an additional \$0.58 in indirect and induced sales was generated. For each dollar earned at farmers’ markets in Iowa, an additional \$0.47 in indirect and induced income was generated. To clarify, each dollar spent at a farmers’ market creates a multiplier effect within the local economy which results from the investments into locally-owned businesses recirculating within the community, in comparison with outside businesses that are unlikely to input more money within the community.

Farmers’ markets are also found to have positive effects on employment within the local economy. According to the same study in Iowa, farmers’ markets have a job multiplier effect of 1.45. That is, each full time job created by farmers’ markets supported almost half of a full time equivalent job in other sectors of the economy (Otto and Varner, 2005). Similar economic statistics were found by empirical studies in other states (Henneberry et al., 2009).



### *Benefits of Localized Food Systems*

Research explains two direct correlations between locally grown food and healthier and more nutritious diets (Lea, 2005; Moreland et al., 2002). The first is related to the nutrient content of the food. Locally grown food is fresher, less processed, and retains more nutrients than non-local systems. As food ages after harvest, specifically during the transportation process, some nutrient content is lost (Lea, 2005). Diets of fresh, locally grown food have improved nutrient content in comparison with foods transported long distances.

The second correlation between locally grown food and healthier diets is through food access. According to Moreland et al. (2002), improved access to healthy food is associated with healthier dietary choices. Consumer's choices are often guided by convenience. In many communities, such as those located in food deserts, healthy food is not readily available. Locally grown food markets increase the convenience of healthy options and therefore can increase the nutrient content of consumers' diets.

Farm to school initiatives are an example of success in increasing the nutrient content of a population's diet. These initiatives increase the availability, reduce prices, and provide point of purchase information to students. A study conducted by French and Stables (2003) found direct correlations between farm to school initiatives and healthier student diets with increased fruit and vegetable consumption.

The USDA defines food security as: all people at all times have access to enough food for an active, healthy life (2010). It would then follow that increasing the market of healthy food would increase access and therefore food security. Cowell and Parkinson (2003) argue that increased access to local food creates increased choices to consume healthy food and leads to healthier diets. Although the exact role through which local food affects food security is ambiguous, it is logical based on the correlation between convenience and consumer choices.



Arguments for localized food systems are based on economic development, healthier diets, and increased food access. As problems with the industrialized food system increasingly underscore the need for alternative agricultural methods, local food systems have begun to fill a niche in the food economy. In doing so, they have facilitated the beginning of a reformation of the food system.

## ***4.2 Definition of Urban Agriculture***

There is a category of localized food systems that has thus far not been discussed: urban agriculture. The American public generally recognizes urban agriculture in its form of community gardens, which are emerging throughout the country as a method to engage communities and promote healthy food. Urban farms and gardens can be community, corporation, or individually maintained; and can vary in size. The growing popularity of urban agriculture has elicited some working definitions from government and planning agencies.

The definition of urban agriculture provided on the USDA's website attempts to limit it by naming the locations and instances in which plant and animal cultivation becomes urban agriculture:

“City and suburban agriculture takes the form of backyard, roof-top and balcony gardening, community gardening in vacant lots and parks, roadside urban fringe agriculture and livestock grazing in open space” (USDA, 2015, web).

The American Planning Association has a similar definition. However, it differs in that it provides a benchmark (other than examples) for when backyard gardening becomes urban agriculture:

“Urban agriculture includes production, beyond which is strictly for home consumption or educational purposes, distribution and marketing of food and other products with the cores of metropolitan areas and at their edges”

(University of California, Division of Agriculture and Natural Resources, 2015, web).

The difficulty in defining urban agriculture is that it is a relatively new idea in the United States' modern history. As such, all existing definitions are “working definitions” that will continue to change over time as urban agriculture takes its place within American cities. The following chapters will delve into analyses of urban agriculture case studies that will assist in clarifying its definition, while revealing the breadth of its scope.

## Chapter 5

### The Practice of Urban Agriculture

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Case studies are important in understanding the practice of urban agriculture and its practical implications. The case study subjects were chosen based on occasions of successful implementation of policies and empirical evidence of benefits caused by their implementation.

To comprehensively understand effective implementation of urban agriculture and the benefits that accompany it, international (Havana, Cuba), historic (Victory Gardens), and modern (New York, New York and Detroit, Michigan) cases are discussed. Havana, Cuba was chosen as a case study because it is the most comprehensive and successful implementation of urban agriculture in modern times. In the United States, the last large-scale practice of urban agriculture was the Victory Garden Program. The Program was studied to lend an understanding of how urban agriculture interacted with the American Republic and its citizens. New York City and Detroit are two modern American examples of growing urban agriculture practices. New York City was chosen due to its location in a dense metropolitan area. Through innovative policies, urban agriculture has quickly grown in the City despite a dearth of open space. Detroit is one of the few American Cities with comprehensive management of urban agricultural practices. The rapid progression of urban agriculture in Detroit, partly due to the availability of land during the economic recession, prompted the City to enact unique land use policies.

The case studies will be discussed through an understanding of the role of urban agriculture in the cities, the successes and failures of their policy framework and implementation strategies, and the benefits urban agriculture brought to the communities being discussed. The University of California, Division of Agriculture and Natural Resources conducted an extensive literature review to arrive at a set of key impacts of urban agriculture.

These will provide the framework for which the benefits of the policies in the cased studies will be examined (2014):

**Social Impacts**

- ⇒ Creating Safe Places  
Reducing Blight
- ⇒ Access to Land
- ⇒ Community Development  
Building Social Capital
- ⇒ Education and Youth  
Development Opportunities
- ⇒ Cross-Generational and  
Cultural Integration

**Health Impacts**

- ⇒ Food Access and Security
- ⇒ Increased Fruit and  
Vegetable Consumption
- ⇒ Food and Health Literacy
- ⇒ General Well-Being (Mental  
Health and Physical Activity)

**Economic Impacts**

- ⇒ Job Creation, Training and  
Business Incubation
- ⇒ Market Expansion for  
Farmers
- ⇒ Economic Savings on Food
- ⇒ Savings for Municipal  
Agencies
- ⇒ Increased Home Values

## 5.1 International Case Study: Havana, Cuba



**Figure 5.1** Location of Havana, Cuba  
Source: Google Maps.

Havana, Cuba is home to arguably the most successful implementation of urban agriculture in the modern world. Spurred by possible starvation, the 2.2 million inhabitants of Havana transformed the city's infrastructure to facilitate the production of 90 percent of perishable produce consumed in the City (Peters, 2010).

Prior to the 1990 collapse of the Soviet Union, Cuba's agricultural system shared many similarities with that of the modern United States system. The methods of farming were similar: highly monocultural, dependent on petrochemicals, oil, and machinery. Furthermore, the food system depended on international trade. Cuba traded sugar cane – a crop that had been produced in Cuba since its colonization by the Spanish – for food imports and oil,

namely from the Soviet Union. Before its collapse, the Soviet Union provided 57 percent of Cuba's food supply through imports (Peters, 2010). Its dependency on trade made Cuba's food system and economy exceedingly vulnerable. When the Soviet Union failed, Cuba lost nearly 90 percent of its total trade and over 50 percent of its gross domestic product (Houck, 2003). The Torricelli Bill (1992) was the last in a long line of embargoes against the communist country effectively terminating all possible relationships American or American companies had with Cuba (Peters, 2010).

The combination of the Soviet Union's collapse and the United States' embargoes crippled Cuba's food system. Not only was the Country unable to import food, which accounted for the majority of its food in the past, but it also lacked the resources and infrastructure to grow it. Cuba was cut off from food production supplies and oil. Before this point, the machines used in agriculture were all imported from outside the country and they were fueled by oil, a two pronged predicament that made industrial farming almost impossible. Furthermore, the fuel shortage affected, and effectively terminated, food transportation to urban areas (or any considerable distance from the food source). Cuba's leading agricultural product, which occupied the majority of agricultural land, was sugar cane. Following the events of the early 1990s, sugar cane exports greatly diminished. By 1992, Cuba's food crisis reached dire levels, with average daily caloric intake of its population dropping 30 percent from those of the previous decade (Crawford, 2003).

### *Urban Agriculture in Cuba*

The initial emergence of urban agriculture in Cuba was disorganized (Crawford, 2003). Motivated by the food crisis, Cubans in urban areas were forced to produce their own food without the use of chemicals or machines - which were no longer available due to trade restrictions. The residents of Havana began growing produce everywhere they could, including in yards, patios, balconies, rooftops and vacant land sites near their homes (Peters, 2010). With a lack of funds and commerce, people began to give up their previous occupations to farm. Areas within Havana that were abandoned when their designated uses were no long relevant were also converted to agricultural land. Those who had more land also began to raise farm animals such as pigs, rabbits, and chickens (Peters, 2010).

As in all other sectors of the Cuban economy, agriculture was highly regulated. However, after the events of the early 1990s, the Government was not able to effectively govern some sectors. Urban agriculture grew from necessity and community efforts during this time. In 1994, the Cuban Government declared the “Special Period,” in which they enacted measures to save the starving Cuban population. The policies built upon the existing urban agriculture movement, and allowed it to grow and flourish within Havana and beyond (Endres and Endres, 2009):

*1. State-Run Farms*

The Government of Cuba converted 60 of its state farms into entities that owned the means and process of their production. After allocating a specified amount to the State, the remainder could be sold at market price.

Prior to the Special Period, agriculture was all state-run, with very little products (if any) sold at market prices. Rather, the government took the produce and distributed it as it saw fit. In order to encourage farming and to increase the amount and type of food available, the State later changed its policies to allow more free exchange of goods.

*2. Farm Labor Initiatives*

There were several initiatives employed to increase the number of agricultural workers. First, the government mandated that urban workers go to the countryside and perform agricultural work for two-week periods on an annual basis. Second, incentives of better housing and higher wages were offered to those who volunteered to work on farms for a two-year period. Third, as an alternative to compulsory military service, one could spend one year on a state farm producing food.

Faced with both a food and labor crisis, Cuba utilized both incentivized and compulsory service to increase food production.

### 3. *Farmers' Markets*

Cuba used free market principles to stimulate food production when it reopened farmer's markets in 1994, allowing anyone to sell any produce at market price. To offset the prices of the free market, the government opened its own "limited price" markets to sell produce from state-run farms.

Cubans were familiar with farmers' markets before the Special Periods. During the Soviet-era, farmers' markets were allowed for a brief time. However, the Government closed these markets because farmers began keeping their best products for the free-market rather than the "limited price market. Allowing market price food sales economically incentivized persons to farm.

### 4. *Land Re-Utilization & Small-Scale Gardens*

With an emphasis on urban agriculture, the Cuban Government gave authority to local government to allocate land for food production. The City of Havana created an Urban Department of Agriculture with satellite offices throughout the City. Incremental goals of devoting specified amounts of square meters per person in urban areas for food production were set. To accomplish these goals, the Government relaxed laws restricting urban food production in backyards. Consequently, urban residents began constructing raised bed gardens on land that was otherwise unusable. Urban backyard and patio gardens emerged, using intensive methods of vegetable gardening. Additionally, the local governments appropriated fallow private land and assigned production rights to those who agreed to produce food.

Providing the means and incentives for urban residents to produce their own food built off the urban agriculture movement that started immediately following the fall of Soviet Union. However, profit and necessity are not the only driving factors in the success of urban agriculture in Havana. In return for free use of land, community members share surpluses with local schools and



hospitals (which also have their own garden). The cohesive functioning of neighborhood community units furthers the success of urban agriculture.

### *5. Agricultural Extensions*

The Cuban Government realized that agricultural education is crucial in urban agricultural settings. The Government opened centers through the country where extension agents could advise gardeners and other food producers on biological pest control methods. In Havana, these extension agents were located in the offices of the Urban Department of Agriculture dispersed throughout the City.

Agricultural techniques taught by extension agents focused on organic methods of pest management, soil improvement, and conservation. The Government also provided hundreds of seed stores and composting centers.

### *Analysis of the Success of Urban Agriculture in Cuba*

As of 2005, Havana was producing over 90 percent of all fruits and vegetables consumed in the City as well as a significant portion of its milk and meat (Peters, 2010). Cuba's urban agriculture program, as exemplified by Havana, was successful in producing a sustainable and self-sufficient food system. Havana grew from a City with zero agriculture in 1990 to one 90 percent sustained by it within its borders in only 15 years.

Along with solving the food crisis, the urbanization of agriculture came with numerous benefits. According to Peters (2010) these benefits span the fields of sustainability, economics, equity, national security, quality of life, and health.

Environmental sustainability in the context of food systems focuses on the productive use of land with minimal impact to the planet. By using already urbanized land for agriculture, natural lands can be conserved. Furthermore, agriculture in urban settings tends to use fewer chemicals. In the case of Cuba, this was partially due to the unavailability of these chemicals, but it was also due to the proximity of agricultural processes to living places.

When agricultural occurs “close to home” people are more concerned with the health effects from inorganic farming methods and favor other methods of pest control and soil maintenance. As seen in Havana, composting and organic pest control techniques became the predominant method of agricultural management. The size and location of urban gardens prevent heavy agricultural machinery, which create green house gasses, from being used. Such practices decrease green house gas emissions and limit the synthetic chemicals that are released into the soil and water supplies (as often happens in industrial farming techniques). Additionally, urban agriculture reduces monoculture. Because every individual farmer is able to plant a variety of foods, there is greater variety in the species of plants that are grown. This ecological principle, known as biodiversity, allows for greater resilience in ecological systems, making the food system less vulnerable. Urban agriculture promotes sustainable practices, including land use, conservation, and organic methods, that are beneficial to the environment and human health.

Economic stimulation through the provision of skills and jobs is another advantage of urban agriculture. This was particularly evident in Havana where the economy and food system crashed simultaneously. The Cuban government implemented programs to teach organic agricultural methods through “agricultural extensions.” Citizens were able to visit the agricultural extensions that teach farming techniques as training for an agricultural job. These individuals could then grow their own produce in their backyard, patio, rooftop, or on an abandoned lot re-allocated for agriculture by the Government. The conversion of previously abandoned or un-usable lots to agricultural land efficiently used the resources available within the City and reversed the decline in urban areas. Farming in Havana stimulated the economy in several ways. First, residents with farming skills were able to grow food for personal consumption, mitigating their personal food shortage crisis. Second, they were able to sell their goods, creating or supplementing an income. Urban agriculture in Havana provided food, jobs, and more efficient use of land resources.

Increased equity among urban residents is another benefit of urban agriculture. This is achieved in several different ways. When urban residents were given resources to grow their own food, they are able to achieve self-sufficiency. In the absence of urban agriculture, food

often travels long distances to reach its destination - a situation in which urban residents have very little control over their food supply.

Urban agriculture also provides an opportunity for residents to develop a sense of ownership and pride in their neighborhoods. When a person invests time and effort into their home and/or land, they are more likely to feel prideful of it and continue to take care of it. Finally, urban agriculture helps to create equity between all social classes by ensuring that all residents have access to fresh and healthy food. Cultivating ones' own food in an urban setting can be much less expensive than buying fruits and vegetables from a store. When the economy crashed in Cuba, there was very little work or food. However, Havaneros were able to produce enough food to survive through urban agriculture.

Cubans experienced first-hand the national security risk of a global and industrial food system. When a food system is dependent upon foreign countries, it is vulnerable to political tumult and natural disasters that occur in other countries. In the case of Cuba, the country lost its entire food trade, as well as foreign imports of oil and synthetic chemicals (used in fertilizers) in the early 1990s. The combined collapse of the Soviet Union and embargoes from the United States crippled the Cuba. The import of food was no longer an option, the means of growing its own food were taken away, and the transport of food became impossible. This triple threat, caused by foreign factors, thrust Cuba into a food crisis. However, Havana, as well as the rest of Cuba, was able to use urban agriculture to climb out of the crisis in a sustainable and resilient way. A local sustainable agricultural system is not dependent upon foreign oil to produce chemical fertilizers, run farm equipment, or transport food to the market. Such a system diminishes threats to the food supply from foreign powers, oil shortages or prices, and transportation crises.

According to Peters (2010), "urban gardens have enriched the quality of life in urban neighborhoods." For urban agriculture to be successful, as in Havana, communities need to come together to share plants, gardening techniques, and food. Local farm stands increase the contact community members have with other people in their neighborhoods. Havaneros take pride in their neighborhoods as they participate in its beautification together. The

accomplishments that Havana achieved offered a sense of pride and ownership of the City. The Havana community united itself in the cause of producing food, thereby strengthening its community spirit.

Many health benefits are associated with urban agriculture. In Cuba, these health benefits were evidenced in the simple provision of food that would otherwise be wanting. There are, however, other benefits. First, urban agriculture increases the awareness of the role of nutrition on health. Not only are people able to consume fruits and vegetables because of their availability, but they are also aware of how farming practices can impact health. Havana exemplified this through its educational programs about organic farming methods, spurred partially by health concerns from chemical exposure. Second, urban agriculture gives individuals greater control over their diets through crop selection (Crawford, 2003). Consumers in an industrial agricultural system are limited to the produce available and economically attainable at a store; however, through urban agriculture, one can choose what types of fruits and vegetables they would like to have. Access to a variety of healthy foods benefited all inhabitants of Cuba.

#### *Analysis of the Applicability of Cuban Policies in the United States*

The current United States food system is very similar to that of pre-crisis Cuba: industrialized, dependent on foreign fuel, and highly dispersed. Although Cuba was forced into urban agricultural practices through a crisis, the United States can learn from its situation. Cuba's example of the vulnerability of a country's food supply is one that other countries should not ignore. Should an American food crisis occur, due to war, climate, or environmental factors, Cuba serves as an effective example.

While some policies that the communist country employed would not be appropriate in the United States' capitalist society, certain key principles and ideas should be applied to United States urban agricultural policies. To understand the applicability and potential benefits and shortcomings of each Cuban program in the United States, they will be analyzed separately.

1. *State-Run Farms*

State-run farms are non-existent in the United States. For a predominately capitalist society, the measures taken by Cuba to privatize farms are irrelevant and duplicative.

2. *Farm Labor Initiatives*

Short of an ongoing national crisis, compulsory farm labor would not be allowable in the United States. However, providing incentives for people to work in organic and urban agriculture is promising concept that could be applied in a capitalist society.

The concept of incentives for urban agriculture provided by Cuba, can be adapted to the United States through ideas similar to farm subsidies. Government subsidies are a hotly contested issue. Agricultural subsidies in the United States, called Commodity Credits by the USDA, protect farm income and prices for commodity products (USDA, June 2014). For small farmers, this income subsidy allows them to make a reasonable profit while still keeping prices low for the consumer. According to data from the last couple of decades, subsidies are increasingly going to buffer the profits of large agribusinesses (USDA, June 2014), rather than those of small farmers. The current subsidies only cover specified “commodity” produce (corn, dairy, certain meats); if the program were reformed to include urban agriculture subsidies, people would be encouraged to begin such a practice.

3. *Farmers’ Markets*

Farmers’ markets are already popular in the United States, especially in California.

4. *Land Re-Utilization & Small-Scale Gardens*

The urban planning and design methods used for land re-utilization in Cuba are very applicable in the United States. Existing cities, such as San Francisco, already have building restrictions based on views of open space from residential units. Every California city must meet a required ratio of park space per 1000 residents. Such goals and policies are similar to those in Cuba that required specified amounts of land for urban agriculture. The specification of such goals in an American city would be instrumental in increasing the amount of urban agriculture.

Furthermore, the appropriation of fallow land, such as the abandoned land found in many United States Cities during the Recession, for use in urban agriculture could help revitalize blighted areas. The appropriation and use of land would provide work, feed blighted communities, and beautify neighborhoods.

Requirements that schools and other public facilities have land devoted to urban agriculture are an easy way to promote its use for food production. Such programs that are directly under the government's control help to further the practice of urban agriculture without placing undue burden on landowners.

#### *5. Agricultural Extensions*

The United States' Government already has a network of offices throughout the Country. Implementing educational programs through government offices or schools for residents to learn about urban agriculture would be relatively easy, but would make a substantial difference in the effectiveness of any program. Education of proper and organic methods of urban agriculture is key to its success. Much like the Cuban program, education should cover organic methods of pest management, soil improvement, and conservation.

In Cuba, the government also provided seed stores and composting centers. As urban agriculture becomes popular, the market will provide a supply of seed stores to satisfy the demand. Composting is rising in popularity in the United States. In environmentally progressive cities, such as those in the San Francisco Bay Area, composting infrastructure is already in place and being utilized. Such programs will grow with urban agriculture.

#### *Conclusion*

Havana, Cuba provides insights into the successful implementation of urban agriculture in the modern world. Although the realization of a city sustained on urban agriculture, in this

situation, was brought about by necessity, the means by which it was achieved are applicable in other less urgent situations.

The benefits of urban agriculture are made clear through the example of Havana. The methods used in urban agriculture are more organic, produce less green house gas emissions, and promote greater diversity in comparison with industrial farming. These environmentally sustainable methods bring health benefits to the planet. Economic benefits of urban agriculture were exemplified in Havana through skill and job training and land revitalization. In a similar way to an economic stimulus, urban agriculture is linked to increased equity. The promotion of self-sufficiency, neighborhood ownership and pride, and access to healthy foods creates opportunities for people of all economic statuses. Cuba is a particularly poignant example of the link between urban agriculture and national security. The Country's dependence on foreign powers for oil and food sources was the main contributor to its food crisis in 1990. Localizing agriculture to an urban setting makes the system resistant to foreign powers and global events. Cuba provides evidence of the advantages that urban agriculture provides to a neighborhood, a community, and a country.

While Cuba's system of government is very different from that of the United States, principles taken from Havana's successful agricultural system can be implemented in a capitalist republic. In particular, the ideas of incentives, farmers' markets, land re-utilization, and agricultural extensions are applicable in the United States. Furthermore, many similar policies were implemented in the United States' during World War II (see following sections). Some policies utilized in Cuba, or models similar to them, have already been employed in various capacities in several United States cities.



## 5.2 United States Historical Case Study: Victory Gardens



**Figure 5.2** Victory Garden Propaganda

Source: The National WWII Museum. Retrieved from [www.nationalww2museum.org](http://www.nationalww2museum.org).

In order to understand the place of urban agriculture in the United States today, it is important to analyze historic examples of its implementation. A pertinent example of large-scale urban agriculture in the modern era is the Victory Garden movement during the Second World War.

The United States enjoyed a food surplus through the late 1930s. However, following world events, the surplus quickly dwindled (Endres and Endres, 2009). As Germany conquered southern Europe, the food sources of United States' allies, namely Great Britain, were severely affected. In April 1941 the United States responded to the international wartime food crisis by passing the Lend-Lease Act and mobilizing agricultural production to meet Britain's needs (Endres and Endres, 2009). The Lend-Lease act authorized the president to give assistance through monetary or militaristic means to "the government of any country



whose defense the President deems vital to the defense of the United States” (History.com Staff, 2009). The ensuing increased demand for food from the United States began to decrease its surplus.

The surprise attack on Pearl Harbor in 1941 caused chaos in the wartime food system. As the United States struggled to reorient itself, it became further immersed in the War. By mid-1942, the domestic food supply tightened, forcing the United States to take measures in food allocation, rationing, and price supports (Endres and Endres, 2009). The enlarged food demand from the military, the Lend-Lease program, and increased consumer demand originating from increased employment, (and therefore income), created a severe deficit between supply and demand for food.

#### *Urban Agriculture through Victory Gardens*



**Figure 5.3** Victory Garden Propaganda  
Source: The National WWII Museum. Retrieved from [www.nationalww2museum.org](http://www.nationalww2museum.org).

Motivated by necessity and patriotism, the American urban agricultural system emerged. To supplement the food supply, which was dwindling in conjunction with the increased demand, the federal government turned to private citizens for assistance. Assistance came in the form of the Victory Garden program (Endres and Endres, 2009).

The National War Garden Commission of the First World War set precedent for Victory Gardens. The public information campaign appeal “Put all idle land to work,” energized Americans to grow and process food. The Commissions’ role was to identify idle land that was viable for agriculture, and to implement programs that educated Americans on how to grow and process food. The success

of the program, bolstered by patriotism, freed up domestic labor, transportation systems, and food for the war, while still providing food sources domestically (Endres and Endres, 2009). Faced with a second world war, the federal government turned to similar methods.

In December 1941, the National Garden Conference convened in Washington DC. In attendance at the conference were members from all sectors of the agricultural field: the USDA, the Office of Civilian Defense (OCD), the Work Projects Administration (WPA), the Federal Security Agency, garden associations, seed and horticultural trade associations, and the farm press. Upon recommendation from the conference, the OCD announced that the Local Defense Councils would start community Victory Garden Programs. The Secretaries of Agriculture and the Office of Defense, Health, and Welfare Services appointed a National Garden Advisory Committee to lead the program. Included in the appointments were members of the agricultural industry, extensions, home-making, garden clubs, and garden publications (Endres and Endres, 2009).

The policies and organizational structure of the Victory Garden program can be broken down into several components. The information for these components is adapted from Endres and Endres (2009).

### *1. Agricultural Extensions*

Agricultural extensions formed the basis of the Victory Garden program organizational structure. To commence the structuring process, extension agents held state-level conferences to set up state committees that coordinated through the county levels. Local Defense Councils at the county level appointed experienced (volunteer) gardeners to chair the garden advisory committees. The chairperson became responsible for selecting five subcommittee chairs for the following positions: land, equipment, and supplies for gardening, equipment and supplies for storage, personnel and training, publicity and information, and transportation.

The highly structured organization delegated specified roles to each level. Local committees held the majority of the responsibilities. These included creating land inventories, educating the public about gardening and food processing methods, supervising the food production process, providing media resources, surveying transportation nodes, and identifying and recruiting potential workers.

Overarching issues were handled on the national level. With the sudden increase in food supply, gardeners were worried that lack of processing (and therefore preservation) equipment would cause food to be wasted. The War Production Board responded by assuring home gardeners that sufficient pressure cookers would be provided to process the harvests. The federal government delegated the resolution of the issue to local committees by publishing guidelines on creating community food processing centers.

## 2. *Land Use*

Any unused land that was viable for agriculture was lent to those wishing to victory garden. Local committees were responsible for inventorying the land and classifying specific parcels as home, school, or community gardens.

Land designated for victory gardens became protected in many states, where laws were passed which created penalties for trespassing on or damaging victory gardens. While some local land use laws conflicted with agricultural uses, such laws were ignored or changed to accommodate the program.

## 3. *Information Campaigns*

Information campaigns were crucial to the Victory Garden program as it was based on volunteerism. The organizers, who required “publicity and information” subcommittees in every garden committee, recognized the importance of information campaigns. Patriotism was a key component of the public advertising strategy.

As the program grew, informational campaigns regarding production and processing techniques were utilized. One example is the creation of canning competitions that were set up at county fairs to publicize food production and preservation efforts. Aggressive informational campaigns allowed the victory garden program to sweep the nation within a year of its initiation.

#### *4. Limits on Victory Garden Production*

Due to the food crisis and the necessity of fueling the war effort, the federal government established allocation, food orders, price supports, and rationing systems. Through these systems the government regulated nearly every step in agricultural production and distribution. Victory gardens were not exempt. All food sales from victory gardens were regulated by the same allocation and rationing systems as large agricultural corporations. For example, home canners who sold food to third parties had to register with the national Office of Price Administration to collect ration points from purchasers. Consequently, under such a strict system, black market sale of food increased substantially.

#### *5. Additional Gardens*

The Victory Garden program was expanded to fulfill the food demand in areas beyond the home and military needs. The USDA feared the discontinuation of school lunch programs through the allocation and rationing programs. State Defense Councils coordinated efforts to establish school gardens, and thus supplement school lunch programs. The USDA recommended that parent-teacher organization members be appointed to lead special subcommittees within the existing victory garden programs to manage school gardens.

#### *Analysis of the Success of Victory Gardens*

The Victory Garden program of the Second World War had purposes related to health, education, resource management, and community spirit. Specifically, the program aimed to increase consumption of fresh fruits and vegetables among Americans, encourage safe and

proper preservation of food, provide money savings, and assist urban gardeners in obtaining communal property for agricultural purposes. Another goal of the program was to “maintain the morale and spiritual well-being of the individual, the family, and nation” (Endres and Endres, 2009). The immense feelings of patriotism and sense of the accomplishment for participation in the Victory Garden program is evidenced by the overwhelming number of Americans that contributed.

In the second year of the program (1943), half of all families contributed to a victory garden. Eighteen million gardens were planted, three-quarters of which were located in urban areas. The outcome was not only one of morale, but also of real results. Victory gardens produced 125 pounds of food for every civilian man, woman, and child in the United States. In the same year, half the supply of canned goods was allotted to the military (Endres and Endres, 2009). Victory gardens increased in popularity and success through the end of the War.



**Figure 5.4** Victory Garden Propaganda  
Source: The National WWII Museum. Retrieved from [www.nationalww2museum.org](http://www.nationalww2museum.org).

Focusing management of the program on the county level provided diversity and resiliency

in the food supply system. Biological and geographic diversity achieved by the Victory



Garden program created a resilient agricultural system that could withstand world events during the War. Nearly half a century later, Cuba adopted many of the same strategies to confront its food shortage, which was also spurred by international events.

### *Analysis of the Applicability of Victory Garden Policies in Modern Times*

Understanding the Victory Garden program in the context of today's American Society is crucial to applying its principles appropriately. Each of the five components of the program will be analyzed for its applicability to modern American practices.

#### *1. Agricultural Extensions*

The organizational structure of the Victory Garden program is one that could be successfully applied to the modern political system. The concentration of responsibilities at the local level resembles the hierarchy of current land use management. Establishing agricultural extensions with the purpose of facilitating urban gardens, educating gardeners, and managing land use and public work systems would further encourage urban agriculture.

#### *2. Land Use*

City planners would play an instrumental role in allocating land for urban gardens. With the assistance of extension agents or non-profits, land could be classified for specific agricultural uses. To make agricultural uses successful in modern cities, land use laws and restrictions need to be revisited and revised to accommodate where possible.

#### *3. Information Campaigns*

Public relations can never be overestimated. If urban agricultural systems are to be successful, information campaigns are of crucial importance to educate the public about the opportunities and benefits that are available to them. In the cases of Victory Gardens and Cuba, urban agriculture was spurred by crises. Without such disasters, information campaigns hold an even bigger role in initiating interest in urban agricultural programs.

#### 4. *Limits on Victory Garden Production*

Modern agricultural regulations would differ greatly from the war-oriented restrictions of the Victory Garden program. In a non-crisis event, the constitutionality of federally established allocation and rationing systems would be immediately called into question. However, regulations on the sale of produce would be relevant to today's society to protect the health and safety of consumers. Such regulations already exist in California through the required certification process for the sale of food in farmers' markets.

#### 5. *Additional Gardens*

As an already government-run entity, public schools are the ideal place to cultivate the popularity of urban gardens. As schools shift their lunch programs to facilitate healthy eating habits, urban agriculture could play an increasingly important role in the nourishment of students. Programs that involve students in the agricultural process will encourage an understanding of biology and teach invaluable skills.

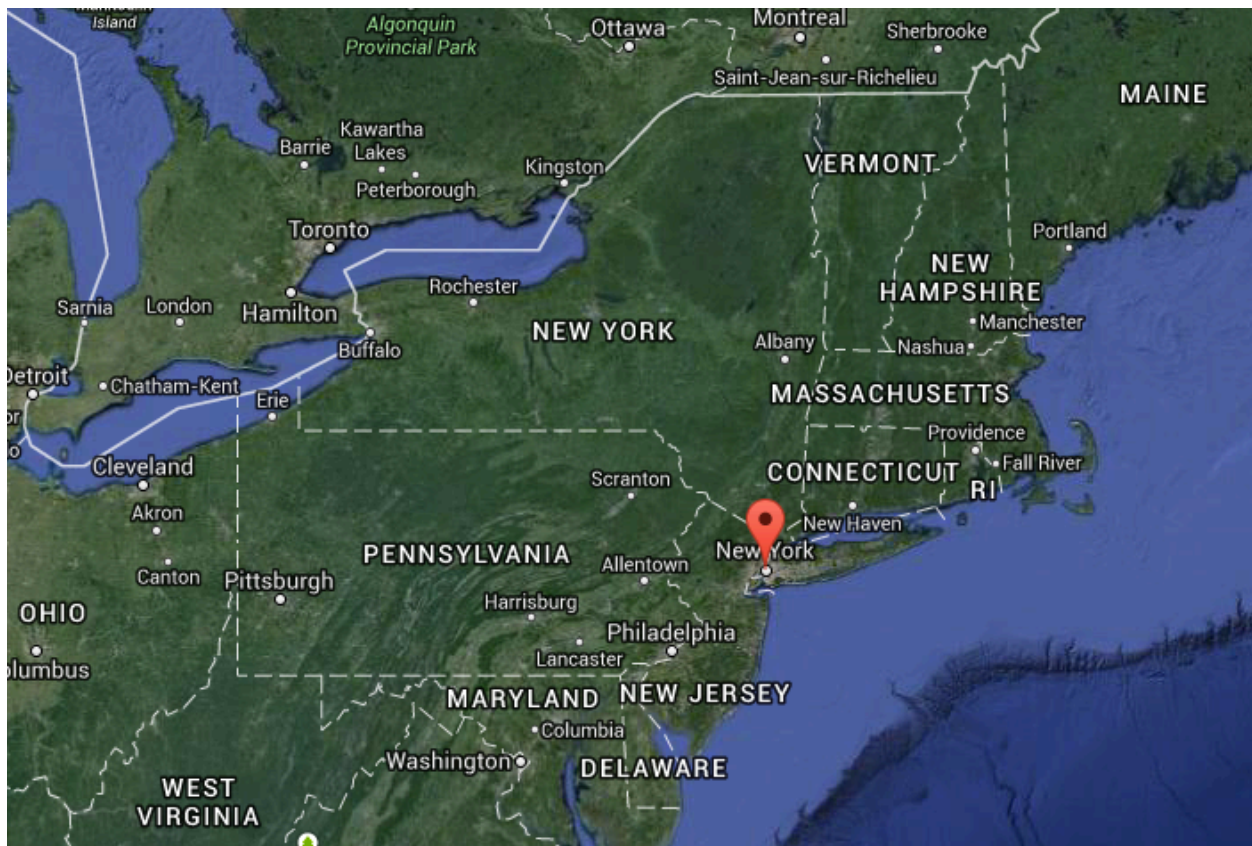
#### *Conclusion*

As a domestic example of the successful implementation of urban agriculture, the establishment of victory gardens during the Second World War provides a framework for modern programs. The organizational structure of the Victory Garden program presents a tested implementation method for urban agriculture in the United States. While the current situation differs due to the lack of an immediate and pressing food crisis, employing a framework to facilitate large-scale urban agriculture would encourage its development and bolster the country's resilience to future crises.

### 5.3 United States Modern Case Studies

Although participation in urban agriculture dwindled through the second portion of the 20<sup>th</sup> century, there have been recent efforts to revitalize it. Through grassroots endeavors and policy changes, urban agriculture has increased in popularity. According to Cohen (2011), cities have begun to address more aspects of the food system in response to environmental and resource concerns. They have begun to address food transportation, processing, and distribution issues by encouraging urban infrastructure such as farmers' markets. Other examples of recent measures allowing urban agriculture include amendments to building codes and zoning ordinances to support urban agriculture, provisions of city property for new urban farms, inclusion of urban agriculture in various citywide plans, and efforts by school districts to distribute local ingredients in their school meals (Hodgson, Campbell, & Bailkey, 2011).

#### *Urban Agriculture in New York City*



**Figure 5.5** Location of New York City  
Source: Google Maps.



Through grassroots efforts, New York City (NYC) is a model example of urban agriculture planning and policy-making (Cohen, 2011). While the popularity of urban agriculture has grown predominantly through non-governmental organizations, NYC has facilitated its growth.

The Five Borough Farm is at the forefront of the urban agriculture movement in the City. The program began when the Design Trust for Public Spaces issued an open call for a project to improve public space. The Five Borough Farm was chosen as that project. Its primary objective is to offer a roadmap to all stakeholders to recognize the benefits of urban agriculture (Cohen, Reynolds, and Sanghvi, 2012).

The success of Five Borough Farm is hinged on the involvement of a variety of stakeholders and methods. The program engages over 100 key stakeholders, ranging from urban farmers to non-profits and government officials, that work together to comprehensively address the priorities, opportunities, and challenges facing urban agriculture in New York City (Cohen, Reynolds, and Sanghvi 2012).

The Five Borough Farm operates with an understanding of the wide range of activities encompassed by urban agriculture: health, social, economic, and ecological. The following activities are adapted from the [fiveboroughfarm.org](http://fiveboroughfarm.org):

### *1. Health*

A key goal of the urban agricultural movement is to improve the health of participants. This is achieved through a variety of strategies that increase access to nutritious food, educate people about the relationship between good nutrition and health, motivate people to increase their consumption of fruits and vegetables, and encourage physical activity. These strategies are implemented through involving people in gardening and other agriculturally related activities, distributing healthy foods from urban gardens, encouraging participation through community supported agriculture, and providing cooking and nutrition classes.

The Five Borough Farm prides itself on its comprehensive approach to bettering the health of urban dwellers through involving them in the local food supply system and encouraging them to reap its benefits.

## 2. *Social*

The urban agriculture movement, including Five Borough Farm, advertises its ability to create social change. Urban farms and gardens create usable public spaces, beautify neighborhoods, and build opportunities for people to enact social and political change. Community involvement and interaction is crucial to improving the social situation of neighborhoods. Positive social activities arranged by Five Borough Farm include clearing and transforming vacant land for urban agriculture, creating social gathering spaces, encouraging intergenerational interaction through farming activities, promoting community-based research and organizing, and fostering food justice education through women-focused programs.

The extensive list of social activities offered through urban agriculture has the potential to affect many different socio-economic and geographic groups within New York City.

## 3. *Economic*

The economic activities of urban agriculture are associated with lower cost food to the farmer and the sale of food for income. Some Five Borough Farms host farmers markets where local residents can earn income by selling produce they've grown, or by helping to manage the markets. Specific programs are tailored to provide employment and job training to often-underprivileged people (including youth and women) in the growing or selling processes.

#### 4. *Ecological*

Many supporters of urban agriculture are such because of their concern for the environmental effects of industrial farming techniques. The Five Borough Farm utilizes sustainable techniques that further the ecological benefits of urban agriculture. Some of the activities facilitated in New York City are rainwater harvesting, composting, soil remediation, and environmental education. Facilitation of these activities not only provides more opportunities for interested individuals to participate, but it also reduces the amount of rainwater that floods the City's sewer and drainage systems, decreases the amount of water used from the City's existing water supply, minimizes the amount of trash in landfills, and organically provides nutrients to the soil.

#### *Analysis of Urban Agriculture in New York City*

Urban agriculture has flourished in New York City, in part due to the Five Borough Farm. Urban gardens have grown on rooftops, public land, and private spaces. As of 2014, there are over 750 producing urban farms and gardens citywide. They take the following four forms (fiveboroughfarm.org, 2015):

##### 1. *Institutional Farms and Gardens*

Currently, there are 245 food-producing gardens on New York City Housing Authority (NYCHA) land maintained by residents of public housing. Six hundred gardens are maintained on NYCHA land, but many serve purposes other than food production. Over 100 public schools in NYC are also maintaining gardens.

##### 2. *Commercial Farms*

As of 2012, there were three for-profit farms in NYC. While these farms do strive to maximize crop performance, they share many of the health and ecological goals of the urban agriculture community.

### 3. *Community Gardens*

The vast majority of the 390 community gardens in NYC are located on public land or land trusts, and are managed by resident volunteers. They provide several activities including growing vegetables and flowers and providing social gathering spaces.

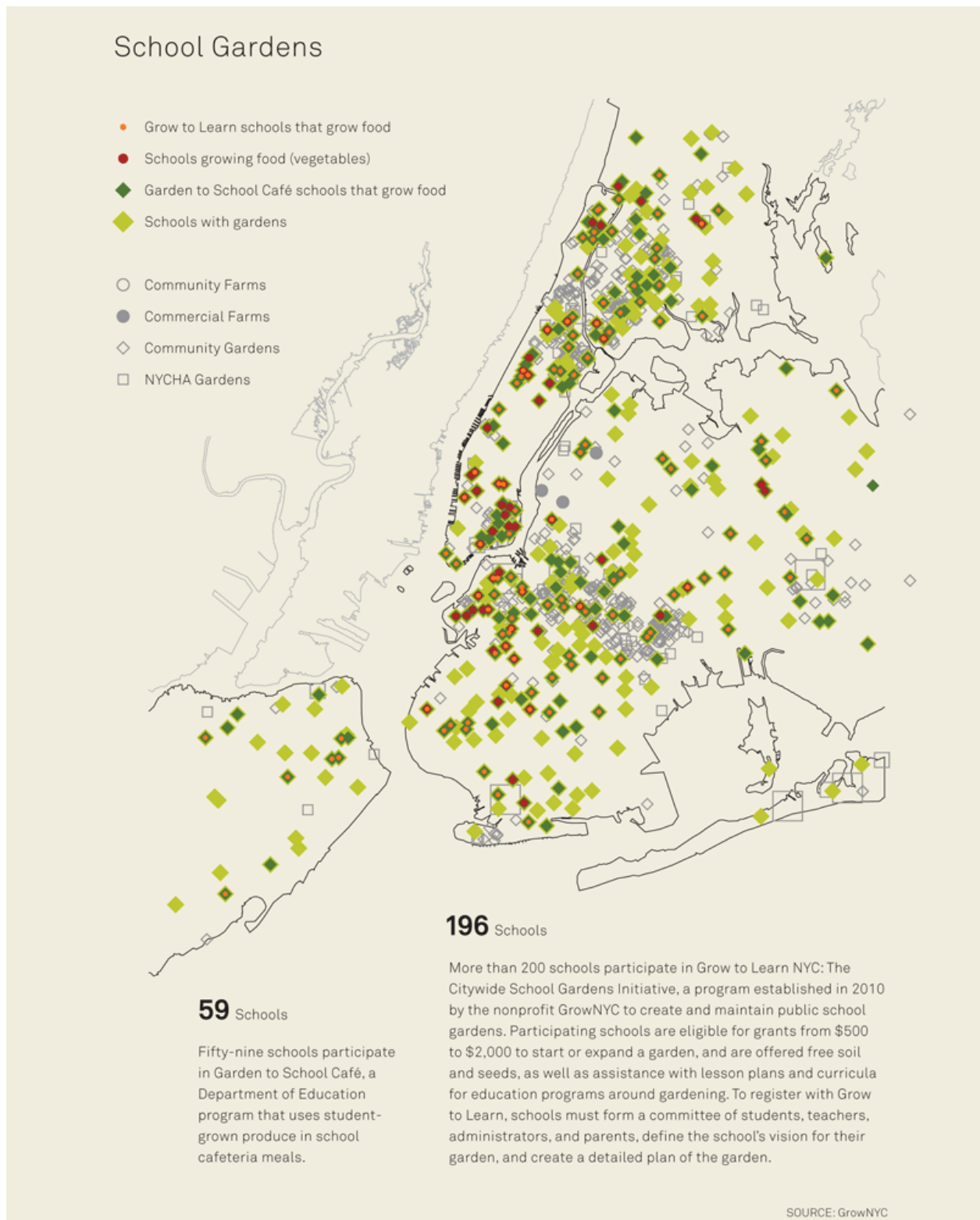
### 4. *Community Farms*

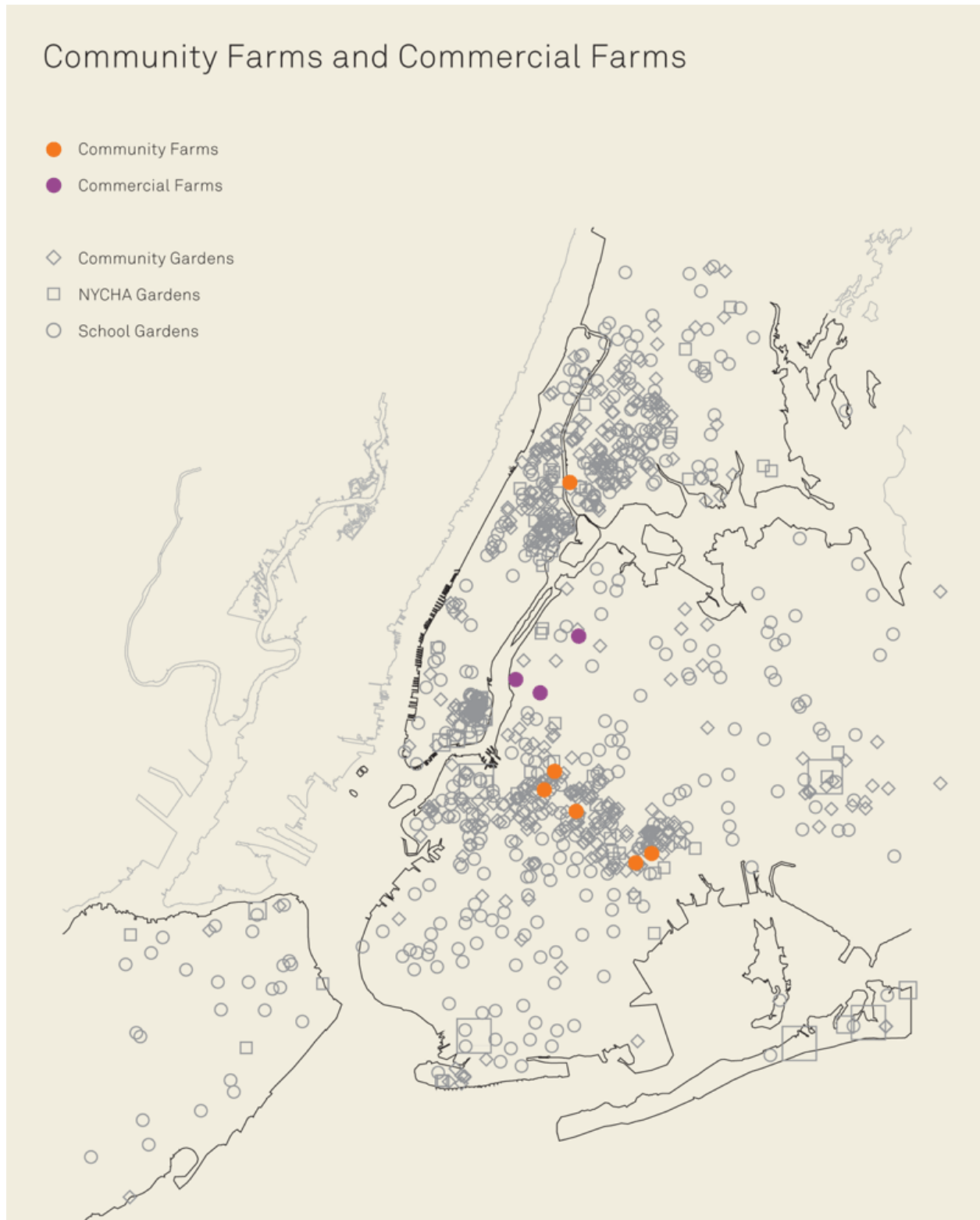
Seven community farms are located in NYC. They are operated by non-profit organizations that prioritized food production and education.

Maps of the locations of urban farms and gardens can be found in figures 5.6 to 5.9.

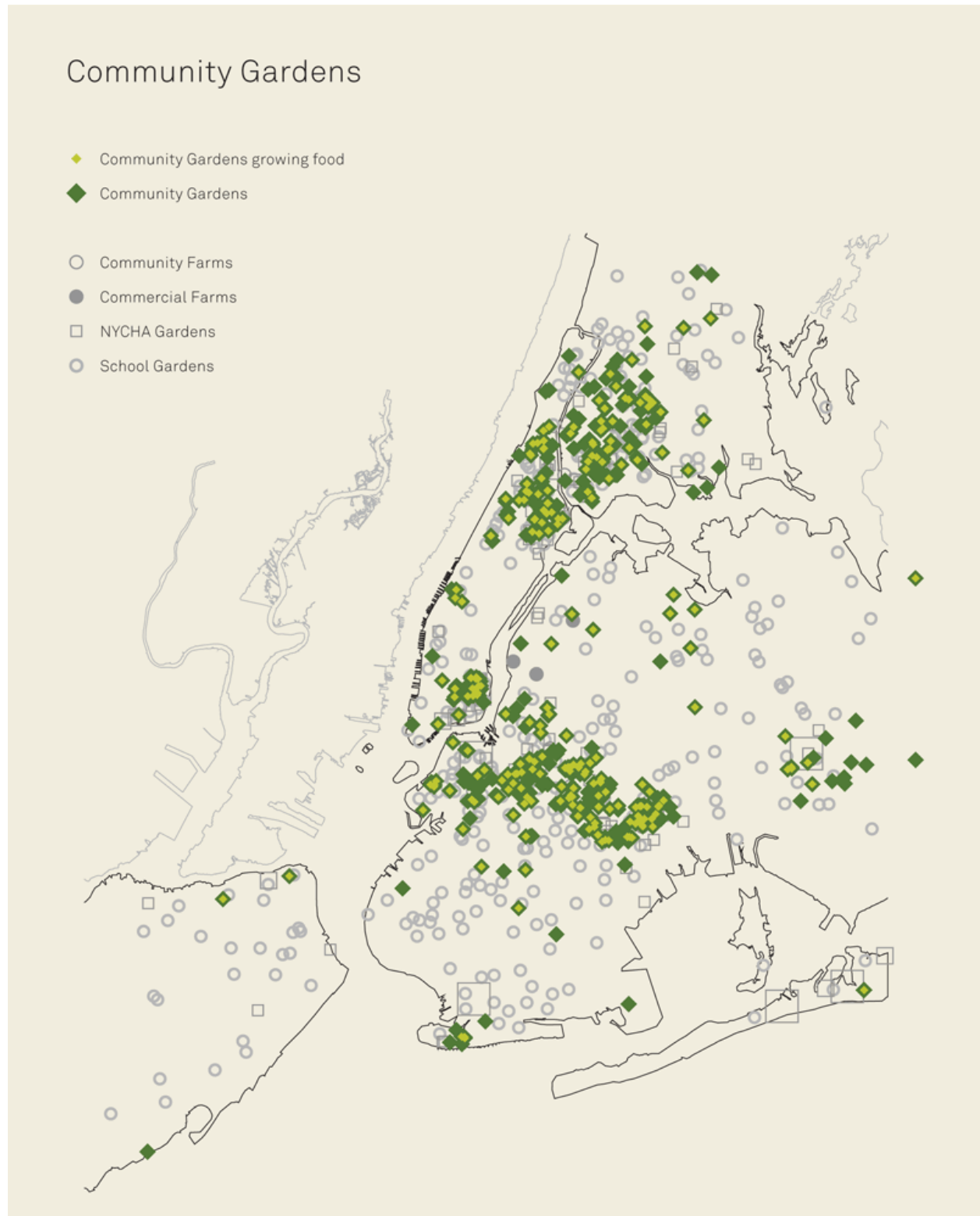
Five Borough Farm has assessed the benefits of every activity organized and promoted by the program. Figure 5.4 shows the breakdown of the benefits by health, social, economic, and ecological for each activity.

Urban agriculture in New York City is indeed flourishing and growing through the comprehensive efforts of Five Borough Farm and other organizations. The City government has contributed to the process by allowing urban agricultural uses, promoting urban farms and markets, creating urban gardens in schools and other institutions, and contributing public land to community farms and gardens. However, there is a lack of structure in the conversation between government and urban agricultural organizations (Cohen, Reynolds, and Sanghvi, 2012). The next goal of Five Borough Farm is to formalize the communication between urban farmers and the City to more quickly enact policies that benefit the movement.

**Figure 5.6** Locations of School Gardens in NYC



**Figure 5.7** Locations of Community Farms and Commercial Farms in NYC



**Figure 5.8** Locations of Community Gardens in NYC



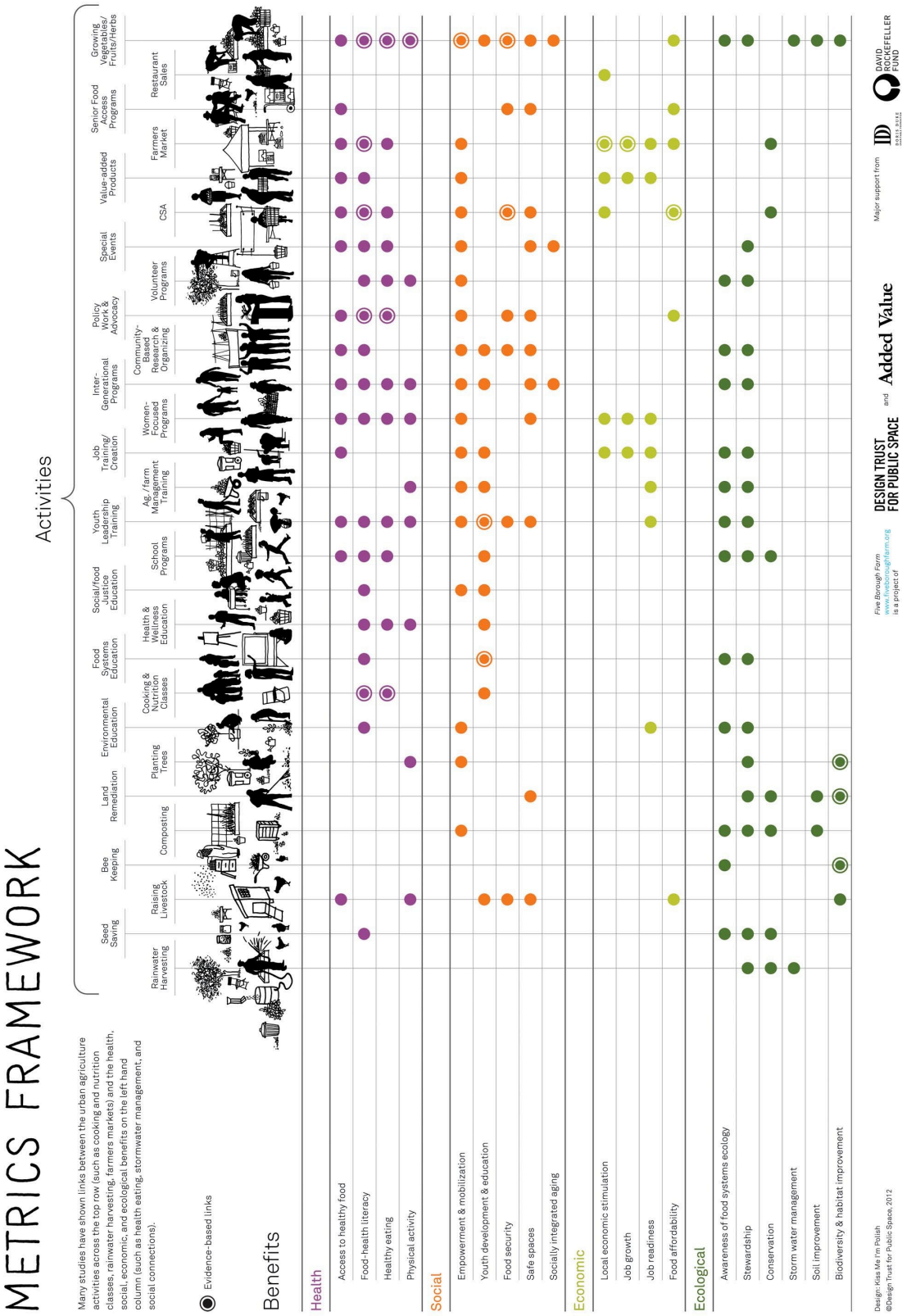
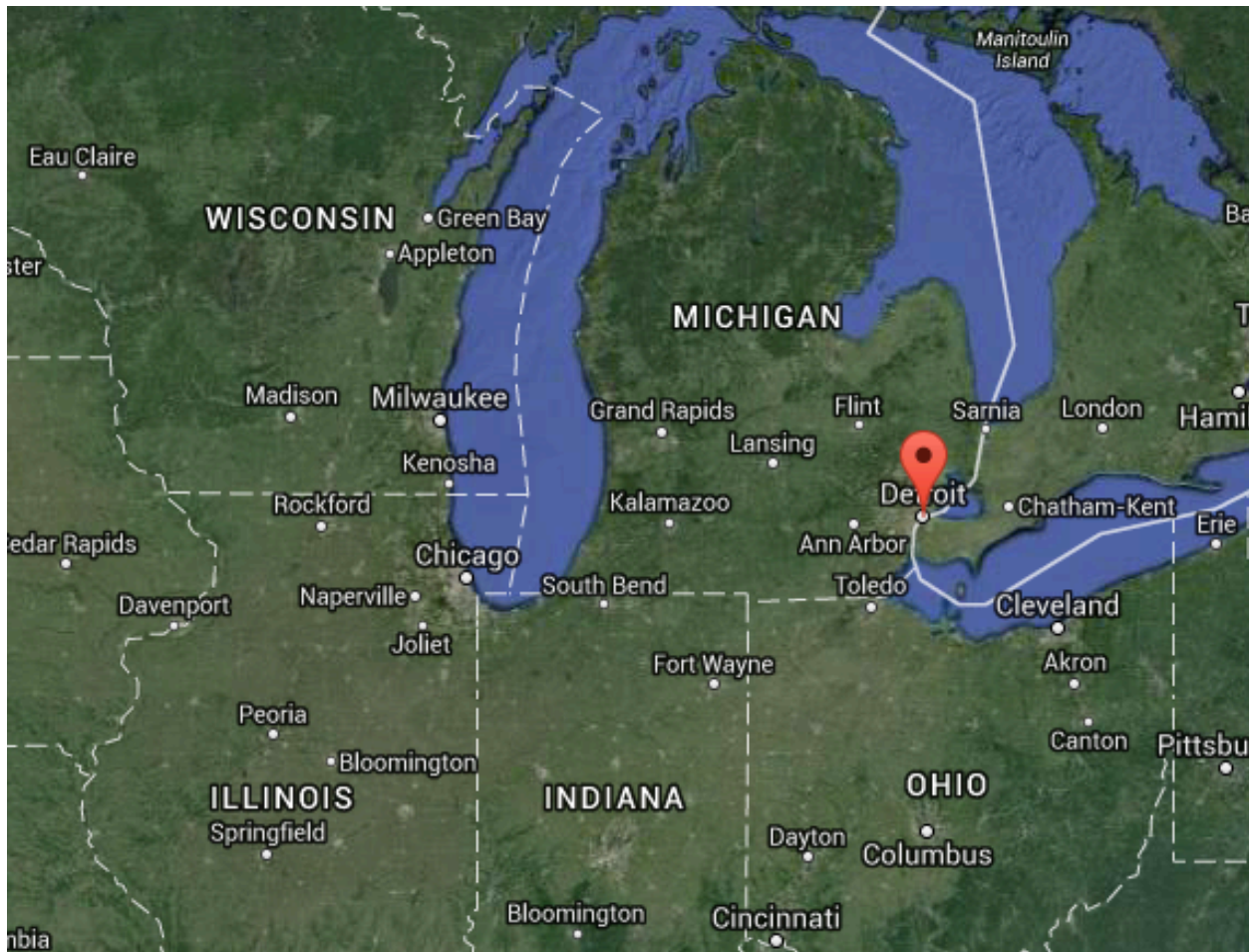


Figure 5.9 Benefits of Urban Agriculture by Category and Type in NYC



*Urban Agriculture in Detroit, Michigan*



**Figure 5.10** Location of Detroit, Michigan  
Source: Google Maps.

Detroit, Michigan houses one of the fastest growing urban agriculture movements. The economic decline of the City, accompanied by population loss and increased numbers of vacant lots, created opportunity for the urban agriculture movement to grow (greeningofdetroit.com).

Once the nation's center of automobile manufacturing, Detroit has experienced a steady decline since the mid 20<sup>th</sup> century. In the past 60 years, the City's population has decreased by 60 percent, reaching approximately 713,000 in 2010 (City of Detroit, May 2013). The outflow of residents left behind about 40,000 blighted properties, or 20 square miles of vacant land.

Seizing the opportunity created by vacant land, urban agriculture groups such as *Greening of Detroit* and *Keep Growing Detroit* began establishing urban farms. Spurred by the grassroots efforts of its residents, the City government passed ordinances to allow and regulate urban agriculture. Events that have directly affected the growth of urban agriculture in Detroit include the following.

1. *Vacant Land*

Before the urban agriculture movement was underway, the City government was looking to developers to rehabilitate the vast expanse of vacant land. However, as residents and non-profits began cultivating vacant lots - bringing beauty, health, economic, and social benefits - Detroit's government decided to facilitate the growth of urban agriculture. The City, which was in possession of 40,000 blighted lots, donated one quarter of them to the Land Bank. The Land Bank facilitated a "side lots sale" in which residents could buy a blighted lot adjacent to theirs for 100 dollars if they promised to begin rehabilitating it within 30 days (Detroit Land Bank Authority, 2014). The ability of residents to appropriate cheap land near their homes allowed to start urban farms in their neighborhoods.

2. *Urban Agriculture Advocacy Groups*

A key component of the success of urban agriculture in Detroit is the presence of groups such as *Keep Growing Detroit* and *Greening of Detroit*. These and other groups provide seeds and sprouts, agricultural job training, food education, urban farm management, and coordination with the City. Such programs organized efforts and motivated Detroit residents to invest in their city through urban agriculture. Advocacy groups also facilitated the market for urban agriculture produce through farmers' markets and sales to local restaurants and stores.

3. *City of Detroit Urban Agriculture Ordinance*

The lack of consideration for urban agriculture in previous City plans and documents necessitated an urban agriculture ordinance as the movement grew. The ordinance, adopted in February 2013, created requirements and guidelines for the establishment of urban farms and other agricultural uses. Specifications by land use

were made for the allowance of the following agricultural uses: aquaculture, aquaponics, farmers' market, greenhouse, hoophouse, hydroponics, urban farm (including orchard and tree farm) and urban garden. The City's ordinance is comprehensive in addressing issues ranging from setback and height restrictions for each agricultural use to composting, drainage, noise, and signage. It also addressed issues of nuisance that had arisen as unregulated urban farms were created. (City of Detroit, February 2013). The creation of an urban agriculture ordinance formalized the process already being used as the primary means of rehabilitating blighted lots.

#### *Analysis of Urban Agriculture in Detroit, Michigan*

Detroit's urban agriculture movement was spurred by necessity - a necessity to rehabilitate vacant lots; a necessity to reclaim neighborhoods and communities; a necessity to create jobs; a necessity to provide healthy lifestyle choices. The economic condition of the City was such that change was welcomed and encouraged, paving the way for urban agriculture. The City government recognized the benefits of urban agriculture and facilitated it through the Land Bank and the Urban Agriculture Ordinance.

According to [greenigofdetroit.com](http://greenigofdetroit.com), there are between 1500 and 2000 urban farms in Detroit, ranging from backyard gardens to several acre green spaces. Keep Growing Detroit has registered 20,000 residents as urban farmers. Urban agriculture holds the unique position in Detroit of being the primary means of revitalization. As people recognize its benefits to their community, they have increasingly joined the movement. The personal and community-wide values of urban agriculture to Detroit residents motivate them to extend towards the goal of self-sustainment.

## Chapter 6

### State Actions to Increase Urban Agriculture, California

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While urban agriculture is on the rise in California, there has been very little government action to strengthen the movement. Grassroots efforts are the foundation of urban agriculture; however, as evidenced by the case studies discussed, government action is a key ingredient in its ultimate success. To effectively reap its benefits, the state government should facilitate and provide resources for urban agriculture. This chapter recommends state actions that would further urban agriculture, therefore improving the resiliency of its food system to crises, minimizing the environmental impacts of current agricultural practices, promoting healthy habits, and bolstering community spirit.

#### **6.1 Current Policy AB 551 Urban Agriculture Incentive Zones Act**

The aim of AB 551, which was passed in February of 2013, is to increase the use of privately owned, vacant land for urban agriculture. With approval from their county board of supervisors, cities can designate areas as “urban agriculture incentivized zones” (UAIZ). Within any given UAIZ, a landowner can register an eligible parcel for an UAIZ contract in exchange for lower property tax. Eligible parcels are those that:

- (1) Are at least 0.1 acre in size and no larger than 3 acres;
- (2) Are completely dedicated toward agricultural use;
- (3) Are free of any physical structures other than those that support the agricultural use of the site;
- (4) Have an initial term of at least five years.

Cities are able to create an UAIZ only if they are located in a US Census urban area. The following are the qualified cities in California.

**Table 6.1** UAIZ Qualified Urban Areas

US Census Urban Area Name	Population (2010)
Los Angeles – Long Beach – Anaheim	12,150,996
San Francisco – Oakland	3,281,212
San Diego	2,956,746
Riverside – San Bernardino	1,932,666
Sacramento	1,721,634
San Jose	1,664,496
Fresno	654,628
Concord	615,968
Mission Viejo – Lake Forest – San Clemente	583,681
Bakersfield	523,994
Murrieta – Temecula – Menifee	441,546
Stockton	370,583
Oxnard	367,260
Modesto	358,172
Indio – Cathedral City	345,580
Lancaster – Palmdale	341,219
Victorville – Hesperia	328,454
Santa Rosa	308,231
Antioch	277,634
Santa Clarita	258,653

Source: US Census, A National, State-Sorted List of All 2010 Urbanized Areas and Urban Clusters for the US, Puerto Rico, and Island Areas First sorted by State FIPS Code, then Sorted by UACE Code,” Retrieved from <http://www.census.gov/geo/reference/ua/urban-rural-2010.html>.

As of February 2015, San Francisco is the only city/county that has adopted an Urban Agriculture Incentivized Zone.

## **6.2 Recommended State Actions to Increase Urban Agriculture**

California State actions to promote urban agriculture must be careful to avoid placing undue burden on local governments. The following recommended state actions focus on adjusting existing practices through cost effective means, and providing incentives to increase the use of urban agriculture.

### *General Plan*

General Plans are local jurisdictions' primary policy-directing documents. They are strictly regulated by the State of California, which outlines requirements and recommendations for inclusion of specified issues. Adding discussions of urban agriculture or local food systems would significantly increase awareness of them.

Issues recommended or required to be addressed in General Plans emphasize their importance. The state should include a discussion of, and planning for, urban agriculture in all elements recommended or required to cover agriculture by the Office of Planning and Research (OPR) General Plan Guidelines. These include the Land Use, Open Space, and Conservation Elements.

Optional elements are those other than the required seven elements. The OPR General Plan Guidelines contains a list of suggested optional elements and discussions of recommendations for each. OPR should include "Local Food Systems" in the General Plan Guidelines' suggestion for optional elements of the General Plan.

### *Taxes*

Tax incentives can be used to stimulate and promote certain activities, including organic and urban food production and local purchasing. Tax incentives in California already exist for large agriculture practices. Such programs should serve as a model for incentivizing urban farming. The implementation of one or all of the following actions would increase urban farming incentives.

Property tax deductions decrease the amount a landowner pays on the value of their land if certain conditions of use are met. The State should encourage the implementation of AB 551 in local jurisdiction through information campaigns. These should be targeted toward non-profits who can lobby local governments to create UAIZ.

Income tax credits are set amounts that an eligible person can deduct from their tax bill for a specified reason. To incentivize restaurants and other food retailers to buy locally grown

produce, an income tax credit of up to 20% should be given to restaurants and other retail food markets. The tax credit amount should be determined by a graduated scale in correlation with the percentage of food purchases the company/market from local sources. Such an act would assist in awareness of urban agriculture, expand the market for urban agriculture, and increase the quality of retail food.

Income tax deductions reduce the amount of a person's taxable income. An income tax deduction for the cost of urban organic farming would assist in offsetting the initial and ongoing cost of such a business endeavor; and thus encourage it.

### *Labeling*

Labeling informs consumers of the content of the product they are purchasing. Labeling falls under the jurisdiction of the Federal Government except when the products being sold are produced and sold within state boundaries. State governments regulate intrastate commerce.

"Locally Grown" labels would increase awareness of consumers to the origin of their food. The State should direct that all locally grown produce be marked as such in retail markets to increase their competitiveness with other options.

### *School Food and Education*

The school system affects the lives of the majority of California residents. Actions that encourage education and use of urban agriculture in schools have the potential to quickly change the landscape of urban farms. Not only can such actions provide business to local farms and nutritious food to schools, but they also demonstrate to children the benefits of eating fresh, local foods.

Legislative resolutions are free, non-binding statements from the legislature expressing support for certain causes or programs. Passing a legislative resolution in support of urban agriculture and health and nutrition education programs would raise awareness and encourage local decision makers to explore establishing such programs.



Financial incentives for schools to create and maintain school gardens for educational and food production purposes would create feasible methods for school districts to teach and promote urban agriculture. Students and faculty should maintain the garden through a class or club offered at the school. Food produced by the school should be provided to the school cafeteria. School garden programs offer students skills, healthy habits, and healthy food options. Financial incentives could include grants for low-income schools to build a school garden, or reimbursements for the initial costs of a school garden.

#### *Farm to State Institutions*

Farm to Institution programs focus on increasing the relationship between food production and consumers. State institutions are a great place to start urban agriculture programs as they are directly within state jurisdiction. As the programs grow in state institutions they will spread awareness to other markets.

Allow community gardens on all state land with the following uses: universities, junior colleges, state agency offices, hospitals, and prisons. Community gardens on state land may be organized through two methods. A portion of the land may be leased to an urban farmer or community who will maintain it for the production of food; or the current occupants may maintain the land for food production. The person or group maintaining the garden or farm has the right to consume or sell the produce. Urban farming on state land supplies opportunities to learn skills, provide healthy food, and raise awareness of the benefits of urban agriculture.

Geographic preference laws for food produced locally provide increased healthy options, as well as increases in the market demand for local agriculture. Geographic preference laws do not significantly increase the cost of food to institutions, but do increase the amount of monies that stay in the local economy. The state should mandate that a minimum of 20 percent of all food costs in any state institution be awarded to local farmers within five years of the procurement guideline's enactment. Food raised on the land of the state institution



will be included in the 20 percent at fair market price. The suitability of the percentage can be assessed and adjusted as urban agriculture programs increase.

#### *Food Assistance Programs*

While the funds for food assistance programs come predominantly from the federal government, state governments are responsible for administering the programs. The USDA has authorized states to allow certain government food assistance funds to be used in direct transactions with farmers, (for instance, at farmers' markets). One third of states, including California, authorize farmers to accept Cash Value Vouchers (CVV) - a monthly supplement per participant of federal food assistance programs to buy fresh fruits and vegetables. However, due to limited staff and resources to train farmers to accept CVV, lack of agency coordination to do so, and deficiency of education about the availability of CVV, their use in farmers' markets is low.

An information campaign by the state should be organized to educate farmers, farmers' market organizers, and CVV recipients. The campaign should focus on motivating farmers to learn how to accept CVV, as well as informing CVV recipients of the importance of healthy food choices. A successful information campaign would allow the program already implemented in California to be exercised, benefitting both local farmers and low-income residents.

## **Chapter 7**

### **Local Actions to Increase Urban Agriculture, California**

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Local governments direct the majority of city planning and growth management. As exemplified by the case studies, urban agriculture has grown as a local and grassroots movement wherever it originates. While there are some requirements and recommended best practices from state and federal governments, growth patterns are determined by local governments. The variations in existing and future city needs make movements like urban agriculture best managed and encouraged by local governments. This chapter outlines local government actions that will significantly increase the use of urban agriculture and assist in managing its growth.

#### ***7.1 Current Urban Agriculture Policies in California Cities / Counties***

With California's progressive views of sustainable practices, urban agriculture and local food systems have begun to develop. This is evidenced by the emergence of urban farms in all of California's biggest cities and the continual establishment of new farmers' markets. However, the vast majority of California cities do not have policies or plans that specifically address urban agriculture. For the purpose of the following action recommendations that are designed to apply to any California city, existing policies of individual cities will not be discussed.

#### ***7.2 Recommended City / County Actions to Increase Urban Agriculture***

##### ***General Plan***

General Plans are required in all California cities and counties. State law requires that every General Plan contain the following components or "elements": Land Use, Conservation, Noise, Circulation, Open Space, Safety and Housing. In addition, state law allows for the adoption of additional or optional elements of a General Plan. These elements may address any other subjects that, in the judgment of the legislative body, relate to the physical development of the county (Office of Planning and Research, 2003). Discussing urban

agriculture in the General Plan, whether it be within a required element or its own, would prioritize and help organize the movement.

Discuss and plan for urban agriculture within the General Plan. Irrespective of the inclusion or exclusion of urban agriculture in the OPR General Plan Guidelines, local governments who wish to increase urban agriculture in their jurisdictions should include its discussion in their General Plans. As the primary policy-directing document in local governments, issues mentioned in the General Plan are given primary attention over those excluded. If local governments earnestly desire to increase urban agriculture, it must be planned for in the General Plan.

### *Taxes*

Tax incentives can be used to stimulate and promote certain activities, including organic and urban food production and local purchasing. However, local governments only have (limited) jurisdiction in adjusting sales tax. The state and federal governments manage property, income, and other taxes.

AB 551 allows cities and counties to create UAIZ. Within this zone, land that is used for urban agriculture and meets specified conditions will be taxed at a lower rate. Local governments should create UAIZ within their jurisdictions to provide property tax deductions, and therefore incentivize those wishing to practice urban agriculture.

### *School Food and Education*

The public school system is primarily within the jurisdiction of local governments. Local government actions that encourage education and use of urban agriculture in schools have the potential to quickly change the landscape of urban farms. Not only can such actions provide business to local farms and nutritious food to schools, but they also demonstrate to children the benefits of eating fresh, local foods.

School gardens are those located on school grounds and maintained by students and staff of the school. Food produced by the school should be provided to the school cafeteria.

School garden programs offer students skills, healthy habits, and healthy food options. Local governments should direct all public schools within their jurisdiction to develop a school garden program in which students are educated in agriculture, practice urban and organic farming techniques, and consume the food produced.

Nutrition classes, including those pertaining to cooking and agriculture, should be offered at public schools to inform students of all ages about the importance of healthy eating. These classes should emphasize cooking and consuming fresh produce, such as those the students can grow in their school garden.

#### *Farm to Public Institutions*

Farm to Institution programs focus on increasing the relationship between food production and consumers. Public institutions are an ideal place to implement urban agriculture programs as they are directly within the local government's jurisdiction. As the programs grow in public institutions they will spread awareness to other markets.

Allow community gardens / farms on all public land with the following uses: schools, local government offices, and parks. Community gardens on public land may be organized through several methods. A portion of the land may be leased to an urban farmer who will maintain it for the production of food, the land may be donated for a community garden, or the current occupants may maintain the land for food production. The person or group maintaining the garden or farm has the right to consume or sell the produce.

Geographic preference laws for food produced locally provide increased healthy options, as well as increases in the market demand for local agriculture. Geographic preference laws do not significantly increase the cost of food to institutions, but do increase the amount of monies that stay in the local economy. The local government should mandate that a minimum of 20 percent of all food costs in any public institution be awarded to local farmers within five years of the procurement guideline's enactment. Food raised on the land of the state institution will be included in the 20 percent at fair market price. The suitability of the percentage can be assessed and adjusted as urban agriculture programs increase.

### *Information and Resources*

Through providing information and resources to their constituents, local governments can make the process of urban agriculture more convenient. The combination of increased awareness and convenience that information and resources creates will encourage communities and individuals to participate in urban agriculture activities. All information and resources should be easily accessible to the public.

A Local Food Systems Assessment will provide key information to a community as to its food production and consumption patterns, as well as reveal ways in which it can be improved. With a focus on urban agriculture, this assessment would raise awareness of the importance of local food systems through its existence, and inform interested persons of how they can contribute to it.

A land inventory of lots available and eligible for urban agriculture will assist interested persons in finding land and accelerate the process of approving lots for urban agriculture uses. Local governments should inventory and track lots that are eligible for urban agriculture based on use, soil condition, and location. These lots should be pre-approved for urban agriculture use should a landowner, investor, or community choose to do so.

Information campaigns to publicize urban agriculture would assist in growing the movement. The information campaign should include the benefits of urban agriculture, how to establish an urban garden, and resources available to those interested.

Financial resource information will make urban agriculture more feasible for those who seek financial assistance. Local governments should provide easily accessible information about financial resources from state, federal, or non-profit organizations for the creation or maintenance of an urban garden or farm.

General resources needed by urban farmers can be provided through for-profit companies, non-profits, or government organizations. Local government should encourage the

emergence of garden markets that sell resources, including seed banks, farming tools, and organic agriculture education.

### *Farmers' Markets*

The popularity of farmer's markets is quickly growing in California, with 764 registered markets as of February 2015. As a key mode for selling local produce, the expansion of farmers' market programs will bolster the market for urban agriculture.

Encourage the establishment of more farmers' markets within local jurisdictions. Increases in farmers' markets size and/or occurrence must happen should urban agriculture significantly increase. Cities and counties should prepare for this increase by establishing an efficient and effective process of certifying urban farms for farmers' markets.

Food deserts are areas in which fresh produce is not available in retail options. Cities and counties should actively encourage farmers' markets to open in food deserts existing within their jurisdictions.

### *Waste Management*

Composting is an often-overlooked activity that is central to organic farming. To avoid unnecessary waste, local governments should establish a city- or region- wide composting system. Cities in the Bay Area have already established composting facilities.

Composting initiatives that establish or expand waste management for agriculture proceedings should be encouraged by local governments. Composted material should be made available to urban farmers to be used as organic fertilizer. Composting programs will mitigate waste management problems that may arise should significant growth of urban agriculture occur.

### *Water Resource Management*

In California's dry climate, water resources are of paramount importance. To mitigate possible water shortages, the local governments should encourage alternative means of attaining water for irrigation of urban gardens.

Rainwater harvesting is the collection of rainwater for reuse on-site, rather than allowing it to run off. Cities should revise their regulations to allow rainwater harvesting for irrigation of crops and encourage such practices where possible

### *Land Use*

A primary responsibility of local governments in California is to establish land use laws, regulations, and patterns within their jurisdiction. The following are land use measures that would facilitate and incentivize urban agriculture:

- ⇒ Allow organic urban farms and gardens in all land use designations.
- ⇒ Allow rooftop gardens in all commercial zones.
- ⇒ Award a height bonus to new commercial developments that will provide and maintain a food-producing rooftop garden.
- ⇒ Award a density bonus to new residential developments that will designate and maintained a specified percentage of its landscape for food production. A gradated scale of increased percentage should correlate to an increased density bonus.

### *Urban Agriculture Guidelines*

Local governments should adopt ordinances that both facilitate and manage urban agriculture. Many cities and counties have policies that make establishing urban agriculture difficult. There is also a dearth of policies to manage urban agriculture when it begins. Local jurisdictions can prevent problems associated with urban agriculture, such as nuisance complaints and design incompatibility, through adopting an urban agriculture ordinance that includes design guidelines and management regulations.

Chapter 8 contains a sample Urban Agriculture Ordinance that could be applied in a California city.

## Chapter 8

### Sample Urban Agriculture Ordinance<sup>1</sup>

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Detroit, Michigan provides one of the only examples in the United States of a comprehensive urban agriculture ordinance. Due to the quickly growing popularity of urban agriculture, Detroit's City Government adopted an Urban Agriculture Ordinance to manage its growth. The following sample urban agriculture ordinance is adapted from that of Detroit.

#### **8.1 Definitions**

Backyard Garden: Land that is cultivated for agricultural production, but on which agriculture is not its primary use. A backyard garden is not a zoning designation and no permits or approvals are needed to build one. The products of a backyard garden may or may not be for commercial purposes.

Compost: Relatively stable decomposed organic matter for use in agriculture and other growing practices, usually consisting of materials such as grass, leaves, yard waste, worms, and also including raw and uncooked kitchen food wastes, but specifically excluding bones, meat, fat, grease, oil, raw manure, and milk products.

Farmers' Market: A pre-designated non-municipally owned or operated area, with or without temporary structures, where vendors and individuals who have raised the vegetables and produce or have taken the same on consignment for retail sale, sell vegetables or produce, flowers, orchard products, locally-produced packaged food products and/or animal agricultural products.

Farm Stand: A temporary structure, accessory to an urban garden or urban farm for the display and sale of vegetables or produce, flowers, orchard products, locally produced packaged food products and similar non-animal agricultural products grown or produced on the general property of the urban garden or urban farm upon which the stand is located.

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<sup>1</sup> Adapted from Detroit, Michigan's Urban Agriculture Ordinance (February 2013). Case study begins on page 57.



Garden Center: Garden centers, which may include a nursery or greenhouse as an accessory use, import most of the sold-items such as plants, potting soil, and garden equipment. Garden centers shall be considered “retail stores” for regulatory purposes.

Greenhouse: A building or structure whose roof and sides are made largely of glass or other transparent or translucent material and in which the temperature and humidity can be regulated for the cultivation of plants for personal and/or for subsequent sale. A greenhouse may or may not be a permanent structure.

Hoophouse: An unheated structure whose roof and sides are made largely of transparent or translucent material (not glass) for the purpose of the cultivation of plants for personal use and/or for subsequent sale.

Hydroponics: A method of growing plants without soil, using mineral nutrient solutions or water, or in an inert medium such as perlite, gravel, or mineral wool.

Orchard: The establishment, care, and harvesting of a group of a substantial number of fruit or nut bearing trees. The products of an orchard may or may not be for commercial purposes. An orchard as a principal use is considered an urban farm.

Rainwater Catchment System: A method of catching rainwater runoff from the roof of a structure into rain gutters that channel into a rain barrel, drum, or cistern to be used for agricultural purposes.

Tree Farm: Any parcel of land predominantly used to raise or harvest trees for wood products or Christmas trees, or for transplant, where forest products are sold on-site or transported to market. A tree farm as a principal use is considered an urban farm.

Urban Farm: A zoning lot, as defined in this article, over one acre, used to grow and harvest food crops and/or non-food crops for personal or group use. An orchard or tree farm that is

a principal use is considered an urban farm. An urban farm may be divided into plots for cultivation by one or more individuals and/or groups or may be cultivated by individuals and/or groups collectively. The products of an urban farm may or may not be for commercial purposes.

**Urban Garden:** A zoning lot, as defined in this article, up to one acre of land, used to grow and harvest food or non-food crops for personal or group use. The products of an urban garden may or may not be for commercial purposes.

## 8.2 Allowable Urban Agriculture Uses in Specified Land Uses

Use Category	Specific Land Use	Residential			Commercial			Industrial			Public		
	Density	Low	Medium	High	Low	Medium	High	Light	Medium	Heavy	Office	Education	Park
Agricultural Uses	Farmers' Market			x	x	x	x	x	x	x	x	x	x
	Farm Stand			x	x	x	x	x	x	x	x	x	x
	Greenhouse	x	x	x	x	x	x	x	x	x	x	x	
	Hoophouse						x	x	x	x			x
	Urban Farm	x	x	x	x	x	x	x	x	x	x	x	x
	Urban Garden	x	x	x	x	x	x	x	x	x	x	x	x
	Backyard Garden	x	x	x	x	x	x	x	x	x	x	x	x

*Note:* All agricultural uses must still comply with existing building regulations; including but not limited to the permitting process, accessory unit, height, and setback regulations.

## 8.3 Review and Approval Procedures

### Site Plan Review

#### 8.3.1 Applicability

Applications for proposed developments that meet any of the applicability criteria in this section shall be reviewed through the site plan review process. Developments that do not meet any of the applicability criteria in this section shall be reviewed by the Planning and Development Department *[or other appropriate department]* through its permitting process.

**Applicability Criteria:** Urban farms and other agricultural uses specified as a conditional use in the municipal code.

## *Submission Requirements*

### 8.3.2 Applicability; expedited review

(a) Urban farms and other agricultural uses specified as a conditional use in the municipal code.

(b) Plans that are subject to review solely by section 8.3.1 of this code may be expedited by review limited to the Planning and Development Department and the Building Department, *[or other appropriate departments]*, with the exception of urban farms and other agricultural uses specified as a conditional use, which shall always include Planning Commission Approval. The submittal requirements are stipulated below. The appropriate review body is authorized to tailor the information that is required by this subdivision to the site under consideration.

### 8.3.3 Submittal requirements for urban farms and other agricultural uses

Plans for urban farms and other agricultural uses shall include the following:

- (1) Name, address, and telephone number of the applicant.
- (2) Project name.
- (3) Project address.
- (4) Gross site area.
- (5) Legal description with land area in square feet or acres.
- (6) Location map showing:
  - (a) Site location.
  - (b) Current zoning designation of project area and properties adjacent and across any alley.
  - (c) Site location relative to UAIZ (pursuant to AB 551).
  - (d) Major roads and railroads.
- (7) Existing conditions description indicating:
  - (a) Delineated locations and boundaries of wetlands.
  - (b) Locations of all lakes, streams, rivers, creeks, brooks, ponds.
  - (c) Location of all existing structures on subject parcel and all structures within one hundred (100) feet of subject parcel.

- (d) Delineated locations of sensitive land uses such as residences, schools, churches, hospitals, convalescent homes, child care centers or child caring institutions, hotels, or motels, public parks, and similar community facilities within one hundred (100) feet of the subject parcel.
- (8) A site plan that depicts or discloses the following specific information where applicable:
- (a) Crop areas and general descriptions of proposed crops.
  - (b) Location, description, and dimensions of proposed structures.
  - (c) Setbacks.
  - (d) Fencing or walls.
  - (e) Location of compost piles.
  - (f) Ingress and egress.
  - (g) Location of loading areas.
  - (h) Location of trash containers and/or dumpsters.
  - (i) Location of storage structures and items to be stored.
- (9) A narrative that describes the following as applicable
- (a) The types, methods of application, and storage of proposed pesticides, herbicides, fertilizers, and any other chemical that will be used as part of the operation and processes.
  - (b) The type of machinery and equipment proposed or any other facet of the proposed operation, especially as regards external emissions, such as noise, vibration, smoke, odor, dust, dirt, or other externality that may be a nuisance to adjacent surrounding land uses.
  - (c) Pursuant to CEQA, environmental impact of the proposed operation, especially with regard to air quality, water quality, soil erosion, and sedimentation.
  - (d) Types of vehicles, hours, frequency of use, and the proposed access routes.
  - (e) Waste-handling and disposal procedures for such as manure, organic and non-organic matter, and wastewater.
  - (f) The use of a stormwater management plan, dust management plan, soil erosion plan, and other necessary plans and procedures.

- (g) Evaluation of existing soil conditions and plants to mitigate soil issues as necessary, and/or demonstration of house methods of cultivation and crops are protected from possible negative impacts.
- (h) The applicant's compliance with any existing land use grants at other locations, and the operation's compliance with environmental, zoning, General Plan, specific plan, and any other applicable regulations, plans and policies.

#### *Authority to Review and Approve Site Plans*

##### 8.3.4 Planning and Development Department

Within the following zoning districts, the Planning and Development Department *[or other appropriate department]* shall have the power to review and approve preliminary and final site plans: all residential, low to medium density commercial, and light industrial uses with less than three (3) acres. The Building Department *[or other appropriate department]* is authorized to participate in the review of all site plans. The Planning and Development Department shall involve other such departments as deemed necessary for proper site plan review. Review of agricultural uses shall also include the Planning Commission, the Department of Public Works, the Water and Sewerage Department, and other departments and agencies as necessary.

##### 8.3.5 City Council / Board of Supervisors

Within the following zoning districts, the City Council / Board of Supervisors shall have the power to review and approve site plans, after recommendation from the Planning Commission: high density commercial, medium to heavy industrial, all public uses and any proposal with three (3) acres or more. The Planning Commission shall involve other such departments, as deemed necessary, for proper site plan review. Review of agricultural uses shall also include the Planning Commission, the Department of Public Works, the Water and Sewerage Department, and other departments and agencies as necessary. Any preliminary site plan approval by City Council / Board of Supervisors shall be indicated by the adoption of a resolution or the passing of an ordinance, depending on which is applicable in the zone.

The City Council / Board of Supervisors may delegate final site plan approval to the Planning Commission.

## **8.4 Specific Use Standards for Urban Agriculture**

### **8.4.1 Farm products and uses; prohibited**

The following farm products are prohibited from being use, maintain, and/or produce in an urban garden or urban farm:

- (1) Farm animals, as described in the municipal code.
- (2) Prohibited tree and plant species stipulated in the municipal code or otherwise deemed injurious or invasive by the State.
- (3) Plant species used for illegal drug use.
- (4) Chemical pesticides, fertilizers, or herbicides near sensitive land uses, including, but not limited to, residences, hospitals, and school.
- (5) Excessive use of chemical pesticides, fertilizers, or herbicides.

### **8.4.2 Sale of farm products**

Sale of farm products grown or produced in urban gardens and urban farms is allowed as an accessory use at a farm stand located on the property of the urban garden or urban farm from which the farm product is grown or produced, excepting those located in low and medium density residential zones. Sale of farm products grown or produced in urban gardens and urban farms is also allowed at farmers' markets provided they meet certification requirements, or directly to public or private entities, retail or wholesale.

### **8.4.3 Trash storage**

Trash containers shall be located to the rear of the property unless the Department of Public Works *[or other appropriate department]* determines that another location creates less impact on the adjacent properties.

### **8.4.4 Setbacks and height requirements**

- (a) Buildings and structures related to agricultural uses must comply with the accessory structure setback and height requirements stipulated in the municipal code.

(b) Cultivation must comply with the following additional setback requirements:

- (1) Crop areas must be set back at least five (5) feet from all property lines. The required setback visible from a public right-of-way must be covered with ground plants, which may include drought tolerant plants and native species
- (2) Orchards and tree farms shall be set back at least fifteen (15) feet from the lot line of any developed lot.

#### 8.4.5 Lighting

Lighting, if provided, shall be shielded so that all directly emitted light falls within the property.

#### 8.4.6 Signage

All signs are subject to the municipal code.

#### 8.4.7 Notice to abutting property owners and / or occupants

All urban gardens permitted on a conditional use basis and all urban farms shall provide each abutting property owner or occupant, and/or the first nearest property owner or occupant of an occupied dwelling or business, written notice of the garden or farm owner's name, address, and telephone number for the urban garden or urban farm, no less than thirty (30) days prior to the start of any agricultural development or site preparation. The notice shall include a description of the planned agricultural use. Should a public hearing occur, the City / County shall notify each abutting property owner or occupant, and /or the first nearest property owner or occupant of an occupied dwelling or business within to statutory time requirements.

#### 8.4.8 Property maintenance

- (a) The property shall be maintained free of high grass (with the exception of purposely-cultivated native species), weeds, or debris. Dead garden plants shall be removed regularly.
- (b) Plants from cultivated areas shall be prevented from encroaching onto adjacent properties or onto the public right-of-way.
- (c) The property shall generally be maintained in an orderly and neat condition.

#### 8.4.9 Drainage

The property shall be maintained so as to prevent the free flow of stormwater, irrigation water, chemicals, dirt, or mud across or onto adjacent lots, properties, public streets or alleys.

#### 8.4.10 Nuisance; general

Agricultural uses shall not be detrimental to the physical environment or to public health and general welfare by reason of excessive production of noise, smoke, fumes, vibrations, or odors.

#### 8.4.11 Motorized and other equipment; storage; noise; hours of operation

(a) Tools, supplies, and machinery shall be stored in an enclosed structure or removed from the property daily. All chemicals and fuels shall be stored off the ground, in an enclosed, locked structure when the site is unattended.

(b) Motorized equipment within a residential zoning district shall be restricted to hours beginning at 8:00 am and ending at 8:00 pm. Heavy machinery shall not be permitted within a residential zoning district. Equipment, such as fans, necessary for the operation of greenhouses is exempted from this provision.

#### 8.4.12 Restroom facilities

If temporary restroom facilities are provided on site, they shall be screened on at least three (3) sides from public view by an opaque fence of sufficient height to screen the facility.

#### 8.4.13 Compost

Compost, as defined in section 7.1, must be located as close as is practical to the rear crop setback and at least twenty (20) feet from the nearest principal residential structure. Private composting for backyard gardens is exempt.



#### 8.4.14 Water Usage

Water usage shall be done in compliance with the California Water Code and any local measures implemented to conserve water. Farmers and gardeners should prioritize species with low water requirements.

#### 8.4.15 Compliance with other regulations

Agricultural uses shall comply with all applicable local, state, and federal regulations.

### **8.5 Accessory Uses and Structures**

#### 8.5.1 Farmers' markets

Farmers' markets are permitted as a temporary or an accessory use. They are to be operated in accordance with regulations established in the California Administrative Code (Title 3, Chapter 3, Group 4, Article 6.5, Section 1392).

#### 8.5.2 Urban garden

Only the following accessory uses and structures are permitted on an urban garden. All accessory structures are subject to the provisions of municipal code, and also require a building permit where applicable.

- (1) Greenhouses.
- (2) Farm stands.
- (3) Hoophouses and similar structures used to extend the growing season.
- (4) Signs; subject to the provisions of the municipal code.
- (5) Benches, bike racks, raised / accessible planting beds, compost bins, picnic tables, garden art, rainwater catchment system.
- (6) Tool shed sheds and shade pavilions.
- (7) Garages.

#### 8.5.3 Urban Farm

Only the following accessory uses and structures are permitted on an urban farm. All accessory structures are subject to the provisions of municipal code, and also require a building permit where applicable.

- (1) All uses and structures permitted on an urban garden.
- (2) Hydroponics.
- (3) Barn and /or other buildings for storage.
- (4) Structures for cold storage and processing.

## **8.6 Nonconformities**

### **8.6.1 Pre-existing agricultural operations**

(a) An agricultural operation that was present prior to the adoption of this provision and does not conform to this chapter's development standards for urban agriculture shall be considered a legal non-conforming use for the purposes of scale and type of agricultural use and are subject to the following provisions:

- (1) Scale shall be measured by the total square footage of the agricultural operations, including the square footage of structures.
  - (2) Type is defined by the variety of crop(s) produced.
  - (3) Requests for non-conforming use status will be reviewed and granted by the Planning Commission. Requests may be made by the owners of the subject property, the owner's authorized agent, or a person with a legal interest in the subject property, such as a purchaser under contract. The Planning Commission will confirm the presence, scale, and type of agricultural operation on the subject property before granting non-conforming use status.
  - (4) Any change in scale or type will cause the non-conforming agricultural operation to close its legal non-conforming status.
  - (5) Agricultural uses that are expressly prohibited elsewhere in the municipal code will not be given legal non-conforming status.
- (b) Agricultural uses that conform to this chapter's development standards for urban agriculture shall be considered conforming uses and are not subject to this section.

## Chapter 9

### Conclusion

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The food system affects every person's daily life. It affects what we eat, how much we spend money, the air we breathe, the water we drink; the list goes on and on. With recent world environmental and political events, new emphasis has been placed on reconnecting the American people with their food supply. Urban agriculture movements have sprung up across the country. They promote social, economic, and environmental benefits that have already been made evident through the current applications of urban agriculture nationally. As modern society develops and the population continues to increase exponentially, the advantages that urban agriculture produces are becoming more crucial to the maintenance of human and ecological health.

As demonstrated through this Senior Project Report, the current food system causes many problems, specifically for food access and nutrition, sustainability, and resilience. Although the American agricultural industry produces a food surplus, an increasing number of persons within the country suffer from malnutrition and food insecurity. A combination of factors has led to this rise, including certain economic and zoning policies, which have inhibited access to healthy and affordable foods.

Due to its inherent nature, food systems are tied to biological systems. As is now largely known, the introduction of several technological advancements in agricultural practices generated a series of negative reactions from Nature. Climate change, pollution, loss of biodiversity, water use, and waste are all impacts compounded by industrialized agriculture and result in an increasingly unsustainable future, particularly for the food system. Agriculture is a necessary function in maintaining civilization, however, the current food system fails to adequately provide food access, is vulnerable to the environment, can negatively affect the environment, and perpetrates excessive waste.

The globalization of the food system increases its vulnerability to world crises and events. As exemplified by Cuba and the United States during World War II, localization of food systems through urban agriculture is an effective way of overcoming crises. The methods used in urban agriculture are more organic, produce less green house gas emissions, and promote greater diversity in comparison with industrial farming. The environmentally sustainable methods used bring health benefits to the planet. Economic benefits of urban agriculture were exemplified through skill and job training, and land revitalization. In a similar way to an economic stimulus, urban agriculture is linked to increased equity. The promotion of self-sufficiency, neighborhood ownership and pride, and access to healthy foods creates opportunities for people of all economic statuses. Cuba and the Victory Gardens are particularly poignant examples of the link between urban agriculture and national security. Localizing agriculture to an urban setting makes the system resistant to foreign powers and global events.

Although participation in urban agriculture dwindled through the second portion of the 20th century, there have been recent efforts to revitalize it. Through grassroots endeavors and policy changes, urban agriculture has increased in popularity. New York City and Detroit provide examples of how local governments and communities can encourage the development of urban agriculture, bringing with it many benefits.

Modern examples of urban agriculture focus on policy and land use changes at the local level of government, principally through planning methods. Planning is particularly suited to address food systems because of its established diversity, encompassing nearly all the fields that are involved in food systems. Urban agriculture falls perfectly within the realm of planning, as the predominant policies that affect it are local land use policies.

Public planning has an important role in supporting urban agriculture and its expansion towards more sustainable urban areas. This Senior Project's action recommendations focus on the State of California and its local governments. The majority of the recommendations are for local governments, who have greater impacts on land use and can more effectively tailor policies to the unique needs of their community.

In developing recommendations for state actions to increase urban agriculture, it is important to focus on policies that will not place undue burden on local governments or the private sector. These actions include revising the General Plan Guidelines, creating tax incentives, requiring “locally grown” labels, encouraging school food and education programs, and promoting the use of food assistance program funds on locally grown food. While these recommendations may seem small or insignificant on their own, they have the potential to greatly change the landscape of California’s food system by sending a clear message to State residents and local governments that urban agriculture is a priority. The state government’s involvement in promoting urban agriculture not only urges comprehensive action throughout California, but also establishes a system in which further measures could be taken should a food crisis occur.

The variations in existing and future city needs make movements like urban agriculture best managed and encouraged by local governments. The local actions recommended in Chapter 7 address a wide breadth of topics that directly relate to urban agriculture. Among these are the inclusion of urban agriculture in the General Plan, the establishment of Urban Agriculture Incentivized Zones, the adoption of school gardens and nutrition classes, the permission of community gardens on public land, the convenient provision of information and resources to the public, and the initiation of composting programs. Also of paramount importance to the cultivation of urban agriculture is the alteration of land use policies to allow and manage it.

While many California cities have begun adjusting policies to facilitate and encourage urban agriculture, few have adopted comprehensive urban agriculture ordinances. For urban agriculture to fully thrive in cities, methods of reviewing and approving proposals and specific use standards must be addressed. Chapter 8 provided a sample Urban Agriculture Ordinance that holistically addresses the management of urban agriculture as its use grows.

Reweaving agriculture through the fabric of today's society will take generations to accomplish. However, the benefits brought about by urban agriculture will fortify future generations from the actual and potential dangers of the industrialized food system.

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