

# URBAN FOOD ZONING: Health, Environmental and Economic Considerations



## A Supplement to the Urban Food Zoning Code Update's Concept Report Public Review Report, July 2011

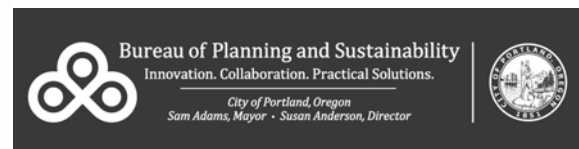
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# Summary

The **Urban Food Zoning Code Update** is the City's first broad look at how our regulations affect activities associated with growing and distributing food in our neighborhoods. The following topics are addressed in this report: market gardens, community gardens, farmers markets, food membership distribution sites as well as animals and bees.

*Market Gardens* are gardens or orchards where food is grown to be sold directly to consumers, restaurants, or other places. *Community Gardens* are where multiple households grow plants for self consumption on public land, church property, or senior meal center, for example.

*Farmers Markets* are regularly-occurring events where farmers, ranchers, and other agricultural producers sell food and related products that they have grown, raised, or processed. *Food Membership Distribution Sites* are categorized as Community Sponsored Agriculture (CSAs) or food buying clubs, where growers or distributors typically deliver weekly bulk goods or farm produce at a main distribution point to be picked up directly by customers. The *Animals/Bees* topic area includes beekeeping and raising a variety of animals in residential areas; the purpose is to harvest food such as honey, eggs, milk, and chickens.

The goal of this publication—a supplementary exhibit to the Concept Report—is to provide further analysis of how future zoning regulations for these five topic areas can benefit or negatively impact our health and the environment. Also considered is how urban food production and distribution activities can help to supplement personal income as well as benefit the overall economy.

## Health Considerations

### Background

#### *Food Environments and Population Health*

Growing more fruits and vegetables in community and market gardens, improving access to farmers markets, and designating food membership distribution sites will have many public health benefits for Portland residents. Access to healthful food is one of the most important factors in determining mental, physical, and social well-being and warding off chronic disease and poor health outcomes over a lifetime. Consistently eating fresh produce, in combination with reasonable meal portions and regular physical activity, helps in maintaining a healthy weight. Because fruits and vegetables have a high water and fiber content, fewer calories are consumed in comparison to processed foods. Moreover, individuals who are not obese or overweight are less likely to develop chronic diseases such diabetes and hypertension.<sup>1</sup>

While whole fruits and vegetables are highly recognized for providing key nutrients, many other healthful foods can support healthy eating habits. Minimally processed whole grains, legumes, nuts, seeds, eggs, dairy, meats, fish and poultry produced without added hormones or antibiotics, artificial colors or preservatives, are legitimately healthful foods.<sup>2</sup> Despite the many benefits and evidence supporting the relationship between nutrition and health outcomes, Portland and Multnomah County residents, similarly to the U.S. population, struggle to consume the recommended servings of fruits and vegetables. About 70 percent of adults in Multnomah

County fail to eat five or more fruits and vegetables per day<sup>3</sup> and only about 20 percent of 8<sup>th</sup> graders in Oregon meet this recommendation.<sup>4</sup>

Food security is also a major concern among Oregonians. About 14 percent of Oregon households were considered “food insecure” meaning one or more people in the household were hungry over the course of the year because of the inability to afford enough food.<sup>5</sup> Low-income families are quite often the most susceptible to fluctuations in household economic security. Currently, one in five Oregonians rely on Supplemental Nutrition Assistance Program (SNAP) benefits; similarly, 20 percent of children<sup>6</sup> live in poverty, which puts them at high risk for many poor health outcomes.<sup>7</sup> These trends are also reflected in chronic disease rates and health outcomes, as some studies have found that there is an association between socioeconomic status and being overweight or obese.<sup>8,9</sup> Childhood and adult obesity are the number one public health crisis of the 21<sup>st</sup> century in the United States. About one-third of U.S. adults are obese<sup>10</sup> with Blacks and Hispanics having a 51 and 21 percent higher prevalence of obesity, respectively, than their white counterparts.<sup>11</sup>

Overweight and obesity pose as a serious problem for over half of Multnomah County residents; in fact, one in four Oregonian youth is at risk of these conditions.<sup>12</sup> Moreover, one in 16 Multnomah County residents is at risk of developing diabetes. These statistics reflect a chronic disease ‘epidemic’ that is occurring throughout the United States and unfortunately, the numbers translate into negative health and economic consequences for a large portion of the region’s population. One significant and disturbing trend is that in Multnomah County, minority racial and ethnic groups tend to experience worse health conditions than the rest of the population. County statistics reveal that Hispanic, American Indian/Alaskan Native, and African Americans are more likely to be overweight and obese than their white counterparts. Asian/Pacific Islanders, on the other hand, have the lowest rates of overweight or obesity of any racial or ethnic group in Multnomah County. Similarly, death rates for African American and Hispanic Oregonians due to diabetes are significantly higher than for non-Hispanic Whites, with African American and Hispanic women faring the worst.<sup>13</sup>

### *Social Determinants of Health*

In recent decades, public health emphasis has shifted from a focus on individual health to the social, environmental, and political conditions in which people live, work, and recreate. These conditions are significant predictors of health outcomes and are often unevenly distributed by geographic location and follow racial and socioeconomic lines. Emerging research indicates that disparities in health outcomes between racial and ethnic groups, in part, can be attributed to a variety of factors such as employment status, education level or attainment, environmental conditions, and access to healthful food.<sup>14</sup>

### *Access to Healthful Food*

Generally, food access is described as the ability for all citizens to obtain sufficient food for their personal needs; however, determining accessibility requires understanding complex socioeconomic factors such as affordability, physical accessibility, appropriateness and awareness.<sup>15</sup> Accessibility is not a proxy for improved consumption. Food deserts—defined as “low-income communities without ready access [one mile or more] to healthy and affordable food” are gaining recognition as ways to assess food access in neighborhoods.<sup>16</sup> Many sophisticated mapping projects and community food assessments have been conducted in Portland to determine where geographic gaps in access exist. While the city may not experience extreme food deserts,<sup>17</sup> many diverse communities face challenges to purchasing healthful foods such as fruits and vegetables because the produce available in their neighborhoods is

either too costly, culturally inappropriate or of poor quality.<sup>18</sup> Community and personal gardens may help improve healthful food access because they have the potential to remove barriers associated with transportation, cost, and food preferences.

## **Benefits of Urban Food Production and Distribution**

### *Social Capital*

Social Capital is a term often used to describe the presence of formal or informal social networks, group membership, trust, reciprocity, and civic engagement in a neighborhood.<sup>19</sup> Social capital has a major impact on health, particularly on those who may experience social exclusion due to discrimination, unemployment, underemployment and stigmatization. Communities that are often socially isolated are less likely to possess organizational networks or gain access to health-supportive services and citizenship activities.<sup>14</sup> Urban gardening can help to transform urban open space from blighted vacant lots to community assets. It is an activity that is relatively accessible to most segments of the population, including people with disabilities who often have fewer opportunities for social interactions and collective activities, such as gardening. In fact, public community gardens are required by the Americans with Disabilities Act (ADA) to be wheelchair-accessible with proximity to public transportation. When gardening is accessible to diverse populations, its benefits are numerous, as it is a leisure activity, encourages food security, and lowers household food costs. Gardening can also build social capital through face-to-face interaction and community empowerment.

### *Cultural Heritage and Social Justice*

Community gardens can also be a driver for social justice. The Urban League of Portland, an organization that “helps empower African Americans and others to achieve equality in education, employment and economic security,” launched the Urban Harvest Garden in partnership with the African Women’s Coalition. The aim of the garden is to “encourage healthy eating and active living” and to “provide an intercultural, intergenerational gardening space where the African and African American community can come together and grow culturally specific produce”. This effort, among others led by the Urban League, helps instill community ownership and self-determination in broader public health issues.<sup>20</sup>

Gardening and farmers markets also provide a familiar space for recent immigrants and help them acculturate to Western growing practices, share their cultural traditions with their neighbors, and establish strong social ties. Mercy Corps Northwest promotes these activities in its New American Agriculture Project, which “educates and assists refugees and immigrants in the Portland and Vancouver, Washington area in establishing small agricultural businesses by leasing local farmland”.<sup>21</sup> Farmers markets also provide an opportunity for social interaction and engagement with family and friends. A *Project for Public Spaces* study found that farmers markets provided 15-20 social interactions per visit compared to grocery stores at one or two social interactions per visit.<sup>22</sup>

One study in New York City researched community gardens visited by Latinos, focusing on the history of the spaces, a description of the members, the plants chosen as well as activities and problems associated with the gardens. It was discovered that the gardens were considered “participatory landscapes” that promoted community development by providing a safe place to gather, reducing household food costs and providing a connection between immigrants and their cultural heritage.<sup>23</sup>

Community gardens managed and operated by faith-based organizations may be more likely to improve nutrition and physical activity among congregants as their approach to garden-based education is rooted in the spiritual and emotional perspectives of their congregation members. A faith-based health promotion project was successful in improving fruit and vegetable consumption among community garden members of a predominantly African American congregation.<sup>24</sup> In Portland, many faith-based efforts exist that are engaged in healthful eating promotion, such as the Interfaith Food and Farms Project of Ecumenical Ministries of Oregon. The project collaborates with various congregations to launch buying clubs, cooking classes, community gardens, farm stands, wellness assessments, policies and advocacy.<sup>25</sup>

### *Fruit and Vegetable Consumption*

Multiple studies on community gardens found they enhance positive dietary habits, such as increased fruit and vegetable consumption and preference among participants, regardless of population.<sup>26</sup> Small community garden plots can yield enough vegetables to meet most of a household's nutritional requirements for Vitamins A, C, B complex, and iron.<sup>27 28</sup> In one study, fruit and vegetable intake, measured in recommended servings per day, was higher among gardeners than among non-gardeners.<sup>29</sup> In a survey of adults (more than half were African American) with a household member who participated in a community garden, the adults consumed fruits and vegetables 1.4 more times per day than those who did not participate, and they were 3.5 times more likely to consume fruits and vegetables at least five times daily.<sup>30</sup>

Farmers markets, too, have been shown to improve fruit and vegetable consumption among customers. Farmers markets have proliferated over the past twenty years and are one the fastest growing venues for selling regional produce and products.<sup>31</sup> Many farmers markets in the Portland area are equipped to accept SNAP benefits and provide a welcoming atmosphere; however, studies have revealed common barriers low-income families face to shopping at farmers market such as inconvenient location, lack of transportation, and hours of operation.<sup>32</sup> Women Infants and Children, Farm Direct Nutrition Program (WIC FDNP) recipients sustained increase in fruit and vegetable consumption after the farmers market season ended.<sup>33</sup> In a study of New York City residents, farmers market shoppers ate three-quarters to one serving more of fruits and vegetables than those who shopped at grocery stores.<sup>34</sup>

### *Physical Activity*

Physical activity is critical to maintain a healthy weight throughout life and reduce the risk of developing chronic diseases such as heart disease, stroke, type II diabetes, and some cancers. Physical activity that is integrated into routine activities—such as walking or taking public transit to work, and gardening—is likely to contribute to positive health impacts over a lifetime. Self-reported survey results demonstrated that nearly 340 community gardeners increased their physical activity sessions by six percent per week and increased their consumption of fruits and vegetables by 10 percent.<sup>35</sup> In a separate study, it was found that farmers markets can help foster pedestrian-scale development thereby promoting walkable neighborhoods and may increase walking, irrespective of whether such walking is associated with trips to the market. Farmers markets can also have a positive impact on walkability, bikeability, and transit use when they are in close proximity to safe residential neighborhoods that have comfortable and accessible pedestrian infrastructure, and have aesthetically appealing characteristics of value to residents.<sup>36</sup>

### *Mental Health*

Spending time outdoors in natural settings has been associated with many positive mental health benefits. Gardening, in particular, has been shown to be restorative and therapeutic for patients in rehabilitation facilities.<sup>37</sup> In a field experiment, gardening led to a greater decrease in cortisol levels—which indicates reduced stress—than in the control group. Participants also reported that their moods were restored after gardening.<sup>38</sup> Mexican-American males with diabetes engaged in gardening more frequently than other activities not because it was viewed as physical activity but rather as a source of relaxation, satisfaction, and beauty.<sup>39</sup>

### *Crime and Personal Safety*

The presence of urban vegetable gardens has been positively correlated with decreases in crime and vandalizing.<sup>29</sup> Gardens also create space for social exchanges and interactions, which can affect the perception of crime among gardeners as well as neighborhoods.<sup>40</sup> Places that are aesthetically pleasant such as community gardens or farmers markets can offer community gathering spaces that people feel safe visiting. Well maintained natural areas and green space within urban neighborhoods are often monitored and tended by neighbors creating a sense of well-being and trust within neighborhoods. Community gardens have also been shown to increase collective efficacy as they can be a, “link between mutual trust and shared willingness to intervene for the community good of the neighborhood”.<sup>41</sup>

## **Potential Negative Health Impacts**

Although urban food production, food membership distribution points, urban animal husbandry and beekeeping all have many health benefits, it is important to consider the potential negative health impacts. The impacts should be analyzed around growing food on vacant urban land in different zoning districts; the indirect and direct impacts of traffic, or of nuisances such as noise, odor, and air quality need to be weighted when transporting and distributing food. Children, pregnant women, seniors and those who have compromised immune systems have the highest susceptible risk to environmental exposures.<sup>42</sup> Risks should also be considered and if necessary, mitigated for market gardeners, residents, food processors, distributors, food handlers, and consumers.

### *Soil Quality*

Gardening in spaces on or near former toxic land use sites (such as dry cleaners or gasoline stations) can typically contain toxic levels of heavy metals such as lead, mercury, and copper as well as organic compounds, pathogens, asbestos fibers and other substances.<sup>43</sup> The major source of lead exposure is from older properties where people ingest leaded paint, either as a dust or when children have “hand to mouth” activity with contaminated soil.<sup>44</sup> Emerson Garden in Northeast Portland is one local example of a former city lot with high levels of lead paint residue from a demolished house.<sup>45</sup> Additionally, motor vehicles are a major contributor of particulate matter that can be deposited in soils, such as polycyclic aromatic hydrocarbons (PAHs), a known carcinogen.<sup>29</sup>

### *Water Quality*

Rainwater runoff can carry hazardous chemicals to neighboring properties and surrounding sewers and waterways, eventually contaminating the municipal water table. If non-potable grey

water is used in gardens, it adds an increased risk of spreading harmful microorganisms and chemicals on vegetables.

### *Air Pollution*

Increased traffic associated with urban food production and distribution activities can pollute the air, affect traffic safety, and increase noise; all of which have negative health effects. Gardens proximate to highways and high volume roadways can increase exposure to hazardous air toxins, dust, and allergens in residential neighborhoods. Long-term exposure to air pollution can create many adverse health outcomes such as cardiovascular disease, lung disease, asthma, and some cancers.<sup>43</sup>

### *Noise*

Traffic also contributes noise to a community and in some cases can cause sleep disturbances, negatively affect children's reading comprehension, and attention. Noise from traffic has also been shown to negatively impact physical activity.<sup>46</sup>

### *Fertilizers and Pesticides*

Fertilizers, herbicides, pesticides and other products—which contain chemicals that are harmful to human health—can runoff from gardens into storm drains to eventually contaminate private wells or public water tables. They can also become vaporized in the air and have been linked to some cancers and associated health problems in agricultural workers or neighboring residents.<sup>47 43</sup>

### *Urban Animal Husbandry*

Additionally, animals—whether domesticated or pests—pose risks to human health. Backyard animals such as chickens can ingest chemicals and cause egg products, for example, to pose a risk for human consumption. Raising domesticated animals such as fowl, goats or pigs can jeopardize human health if they become diseased or spread germs through their manure; similarly, keeping bees can harm those with severe allergies to bee stings.<sup>48</sup>

### *Vector Control*

Improperly maintained compost or water catchment systems can attract rats, mice, opossums, mosquitoes, flies and other pests which often are hosts to various diseases.<sup>47</sup> These pests may be attracted to pens housing domestic animals or grain storage areas if food products are improperly stored. In the city, disease transmission may be a greater threat since population density is higher than in rural areas.<sup>49</sup>

### *Food Safety*

Lastly, food safety is a potential negative impact that should be considered. Some risks include animal manure coming into contact with urban food as well as self-produced meat and dairy products that can become contaminated. Food that is not handled properly, not rinsed in clean water, or stored appropriately has the potential to spread foodborne illnesses.<sup>50 51</sup>

### *Conclusions*

It is uncertain the degree to which these activities will have negative health impacts on Portland residents, although overall, it is anticipated to be minimal. Land use decisions to improve access to healthful food, urban animal husbandry, and beekeeping should consider the broader

neighborhood and human impacts when planning for a healthy community. Emerging research and local experiences demonstrate that there are numerous health benefits of growing and distributing food within the urban landscape.

## Environmental Considerations

### *Background*

The production of food on residential properties, community and market gardens, as well as the transport and retail of food products through community food membership sites and farmers markets have numerous “green” benefits. From environmental stewardship, land restoration and remediation, as well as decreasing fossil fuel usage and carbon emissions, many cities—including Portland—are promoting urban agriculture to address their “ecological footprint.”

Although the environmental benefits associated with urban agriculture activities appear to outweigh the potential negative impacts, it is important to consider both sides of the situation. Growing food on a small-scale level within the urban landscape exemplifies good land stewardship as it is aligned with two important principals of sustainable agriculture: biological diversity and environmental stewardship.<sup>52</sup>

### *Reducing Carbon Emissions*

The process of producing, distributing and consuming food accounts for more than 10 percent of U.S. carbon emissions.<sup>53</sup> Growing food at home or in nearby gardens and buying locally-produced goods through farmers markets and community food membership sites can reduce carbon emission that contributes to climate change.<sup>53</sup> A recent report by the Environmental Working Group found that the amount of greenhouse gas emissions (GHG) related to producing a four ounce serving of grass-fed beef is equivalent to driving a car for more than six miles. In comparison, growing the same serving size of tomatoes, broccoli, beans, or milk has a smaller GHG impact, equal to driving less than a half mile.<sup>54</sup>

### *Cooling the Urban Environment*

Increased green spaces that incorporate community and market gardens also contribute to the cooling of the urban environment, where the “urban heat island effect” is reduced. Places with more plants are cooler since they contain more surface area that absorbs heat, whereas urbanized areas, in contrast, have less natural places and more roads and other development. This results in an increase of the air temperature and creation of “heat islands.”

This phenomenon increases demand for energy use by burning fossil fuels to cool buildings. The U.S. Environmental Protection Agency states that urban forestry practices such as increasing trees and other vegetation—which includes gardens—is an effective mitigation strategy for urban heat islands. Expanding such vegetation increases shade and tree canopy, which can make temperatures 20-45°F cooler than unshaded areas.<sup>55</sup>

In Portland, the Urban Forestry Management Plan describes policy goals related to expanding the citywide tree canopy coverage from 26 to 33 percent. Although fruit-bearing trees and gardens are not classified as canopy due to their lower height, this effort highlighted how trees cool the urban landscape as well as have many other environmental benefits.<sup>56</sup>



### *Storm Water Run-off*

Vegetation associated with home, community and market gardens aids in reducing storm water runoff. Greenroofs—called ‘ecoroofs’ in Portland—serve as locations to host gardens on rooftops of buildings, and offer an innovative urban space to grow food.<sup>57</sup> Studies on greenroofs show they can absorb significant portions of rainwater and later release it after peak runoff times. In a 2006 Pennsylvania study during a storm, 40 gallons of storm rainwater was measured from a traditional roof, whereas only about 10 gallons fell from greenroofs. Thus, greenroofs—and other urban gardens that host vegetation—effectively serve as a tool to reduce impact of urban development on municipal storm water systems.<sup>57</sup> Ultimately, this helps to reduce pollution in surrounding watersheds and supports fish habitat.<sup>58</sup>

### *Animal Habitat*

Green areas that include gardens provide a healthy habitat for animals, birds and insects. Urban sprawl and industrial farming practices have been steadily reducing wildlife habitat, so the presence of such green spaces that incorporate mixed plantings with native vegetation can support healthy animal populations. Additionally, beekeeping in urban areas increases the pollination of other crops and flowers, which is a much needed support. For example, on Vancouver Island, where the bee population has declined by over 80 percent in recent years, the growing number of urban farms in the area is expected to, “provide long-term habitat for these and other insects”. Moreover, it supports surrounding rural farms which rely on bees for pollinating crops, thus benefiting the larger regional agricultural system.<sup>59</sup>

### *Negative Impacts*

The evidence that urban food production and distribution are associated with environmental benefits is overwhelmingly positive, yet it is also important to consider the potential negative impacts. Due to the increased use of utility water, increased runoff can occur. Greenhouses that utilize heat and light during the winter months to keep plants alive lead to elevated energy consumption, thus increasing reliance on the burning of fossil fuels.<sup>60</sup>

### *Conclusions*

The environmental benefits of urban food production and distribution have been documented on the micro as well as macro levels—such as providing new insect habitat to offsetting global climate change. It is important to recognize that increased tree and vegetation coverage not only provides environmental benefits but also contributes to better respiratory health for urban residents. Overall, the benefits of gardening, animal husbandry, farmers markets, and food membership distribution outweigh the negative environmental impacts.

# Economic Considerations

## *Background*

Currently, small-scale urban farming projects—such as market and community gardens, aquaculture or animal husbandry—do not overwhelmingly fuel the local economy or create numerous jobs. However, some direct and indirect economic benefits of these activities are worthwhile to recognize. In regards to selling and distributing food such as through farmers markets, more considerable economic impacts exist and have successfully been measured quantitatively. Overall, growing and distributing food within the urban landscape has positive economic impacts that can be characterized on both the individual and greater community level.

## *Supplementing Household Income and Saving on Food Costs*

Maintaining a backyard garden or tending a community garden plot can reduce food costs and supplement low wages earned by families. It is estimated that a well-tended 400-square foot garden in Portland can produce between 300 and 500 pounds of food, potentially saving hundreds of dollars annually. Growing Gardens—a local nonprofit that supports home scale gardening for low income families—reflected that in 2007, almost all of their members saved money as a result of growing their own food.<sup>61</sup> Other studies conducted in New Jersey and Maine found that community gardeners saved between \$100 and \$2550 per year in food-related costs.<sup>62 63</sup> Raising backyard animals or bees can also yield benefits. Three chickens can produce from 6-18 eggs per week during peak seasons.<sup>64</sup>

Beekeeping during the first year typically produces around 15 pounds of honey per hive; starting the second year and after, the average yield estimate is around 100 pounds per hive.<sup>65</sup> Pygmy goat owners find that they collect at least two gallons of milk per week an average.<sup>66</sup> Moreover, savings can be found in household food costs by participating in food buying clubs. These groups of people buy bulk food from wholesale sources to successfully offer lower product costs to their members.<sup>67</sup> Framing personal gardening, animal husbandry and food buying clubs as ways to save on monthly household costs demonstrates that these activities can potentially outweigh initial start-up costs and inconveniences.<sup>68</sup>

## *Spillover Effect of Farmers Markets*

Farmers markets have been shown to support a localized economy and minimize distribution costs since food produced regionally requires less travel, packaging and refrigeration.<sup>69</sup> The direct and indirect economic impact of these venues has also been measured. In Portland, one report highlighted that in 2007, farmers markets had an impact of over \$17.1 million on the regional economy.<sup>70</sup>

Direct benefits associated with potential economic impacts of farmers markets include “profits to business owners in the market, job creation, sales and real estate tax revenues” while indirect benefits are related to stimulating downtown development, enhancing parks and public spaces, and farmland preservation.<sup>71</sup> One reason why farmers markets can impact on a city’s economy is that the majority of such customers tend to also patronize other stores on their way or upon visiting a market.<sup>71</sup> One local example of this “spillover” effect is in 2008, Portland’s Hollywood Farmers Market was estimated to generate \$16,000 per day for surrounding businesses. Since then, more stores such as Grocery Outlet have opened in the area and seen increased sales on market days.<sup>70</sup> On the west side of Portland, other groceries and local businesses surrounding the farmers market have reported up to double their normal sales on market days, while banks

also see an increase in ATM traffic.<sup>72</sup> By highlighting these concrete impacts, it is clear that urban food production and retail venues can have a multiplier effect on the local economy.

### *Market Gardens: For-Profit Business Ventures*

Operations that grow food products exclusively for retail—known as market gardens—are a growing trend, particularly in Portland. SPIN farming, an inexpensive, intensive vegetable growing method for areas under one acre, has been found to be profitable for many successful practitioners. It is calculated that a half acre lot (20,000 square feet) has the gross revenue potential between \$24,000 and \$72,000, depending on the farming method and the crop variety.<sup>73</sup>

Portland ventures such as Blue House Greenhouse Farm, Victory Garden Farms or the 47<sup>th</sup> Avenue Farm are growing a large number of vegetables on various city lots and selling the produce either at on-site farmstands, through farmers markets or to local restaurants, groceries, or directly to individual customers via Community Supported Agriculture (CSA) shares. The nonprofit program model demonstrated by Mercy Corps Northwest—called New American Agriculture Project (NAAP)—stands out as an inspiring effort that will benefit from updated zoning rules that promote market gardening. NAAP helps recent refugees and immigrants work on small-scale farming projects, some of which are located on vacant public lands in the greater Portland area.<sup>21</sup>

### *Job Creation and Skills Development*

One of the greatest questions pertaining to the economic development of urban food activities, however, is whether they actually create jobs. There is no uniform model that describes existing efforts, yet more evidence is showing that there is employment growth for diverse communities in central city areas where vacant land is available for food production. Various initiatives have been launched, mostly started by nonprofits organizations, which have resulted in some new jobs. They include: “community garden groups, community development corporations, social service providers, food-based organizations, coalitions for the homeless, neighborhood organizations, school- and university-based groups, animal husbandry organizations, and individuals with farm backgrounds who become committed to growing and marketing food in the inner city”.<sup>74</sup>

One example of a local effort to support economic development through urban agriculture is Food Works program. Janus Youth hires and trains youth to manage a 7500-square foot community garden at the St. Johns Woods housing project and other neighborhood areas where part of the harvest is sold at farmers markets and other retail food outlets.<sup>68</sup> Although one success indicator of Food Works and other similar organizations around the country is that they provide immediate jobs, more importantly, they help build capacity for individuals to develop job experience and skills for future employment.<sup>74</sup>

Farmers markets in particular have demonstrated that they are associated with a growing number of jobs. Over 300 jobs are directly reliant on farmers markets in Iowa, and overall, there are 1,000 jobs associated with them in Oklahoma. Moreover, as markets become more established around the country, the number of farmers has increased as well. In Alabama, the number of registered farmers markets and participating farmers was only 17 and 234 respectively in 1999. Ten years later, there were 102 farmers markets and 1,064 farmers. Such growth signifies that as viable retail food venues increase, more farmers may be able to “stay in agriculture over another profession, thereby helping preserve...farmland and rural traditions”.<sup>75</sup>

In Portland, many vendors at local farmers markets have “graduated” to selling products to other restaurants and stores, while individuals have eventually opened their own businesses.<sup>72</sup>

### *Supporting Gardening-Related Businesses*

Although there are fewer examples in existence to draw on, a growing number of businesses are being launched to support urban food production and sales. Some operations involve gardening for both self consumption and selling surplus products; and then there are non-farming companies such as Your Backyard Farmer in Portland that provide consultation and supplies to practitioners.<sup>68</sup> Other operations are chartered as nonprofits, while others are informal collections of neighbors and a fewer number consist of small businesses. Locally, one example is Urban Farm Collective, which sells community-supported agriculture shares to its membership and produces the food on plots in residential yards via arrangements with private landowners.<sup>76</sup> It is these types of groups who may especially benefit from zoning clarification around market gardens, as they would be more able to engage in the retail sales of food grown in various areas within the city.

### *Conclusions*

There is growing evidence that urban food production, localized markets and distribution systems are economically beneficial and hold untapped potential. However, particularly with entrepreneurial urban agriculture projects, many city or county-funded initiatives have not achieved economic self-sufficiency. For instance, even after factoring in food product sales, many projects rely on supplemental grants or donations in order to break even in their annual budgets, and overall, “most operations produce only modest revenues, even when subsidized”.<sup>68 74</sup> However, many cities, including Portland, continue to be supportive of these efforts in order to promote economic vitality and encourage entrepreneurship.

## **Conclusions and Recommendations**

Gardening, raising animals, beekeeping as well as distributing urban food through farmers markets, community supported agriculture or buying clubs have been found to have numerous health, environmental, economic-related benefits. Some notable impacts include: promoting reduced chronic disease through increased physical activity and consuming more fruits and vegetables; expanded social interaction and social capital; improving neighborhood aesthetics; reducing carbon emissions; cooling the urban environment; preventing storm water run-off; helping to supplement household income and food supply; creating some jobs; and causing a “spillover effect” throughout the local economy.

However, some negative impacts—mostly pertaining to human health risks—of urban food production and distribution should be considered, such as soil, water and air quality; improper fertilizer and pesticide use; vector control; and food safety. Neighborhood-level concerns include traffic and noise. Unfortunately, the benefits and consequences of these activities are not uniformly distributed across all areas and populations. Communities of color and/or low social economic status often experience less of the benefits and sometimes more of the negative impacts. It is important that we continue to protect the environment and encourage economic development, but future policies related to urban food must strive to ensure equitable outcomes in the health and wellbeing for all Portland residents.

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