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# Addressing Community Food Security Through Gardening: A Review

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**ABSTRACT:** *As many residents struggle with access to fresh produce (fruits and vegetables) and continue to face food insecurity issues, community gardens can be used as a strategy in alleviating these challenges and helping families reduce pandemic-related economic losses by supplementing their diets with nutritious foods. Community gardens are a great way to increase food security, improve public health and reduce crime rates. With a variety of setups, locations, and goals, they can play an important role in making healthy, ethical, and sustainable food available to all people. Having abundant fresh produce readily available in the community reduces grocery bills for families and provides food options when they are low on groceries. Saving money and reducing food insecurity are two benefits. This was crucial during the pandemic when many people experienced financial losses due to unemployment, and it is still crucial given the rising price of food today. This paper, through a rigorous literature review, examines the contributions, and the positive impacts of community and home gardens towards addressing food insecurity and the overall well-being of household members and determines the type of gardening people practice, and common crops grown.*

**KEYWORDS:** backyard, urban farming, home gardens, food security, livelihood, community, garden.

## INTRODUCTION

Food is essential for living organisms' survival, growth, and reproduction. Recent food price increases have drawn the attention of global policymakers and the news media on food security (Pinstrup-Andersen, 2009). The current state of food production and availability demonstrates, with tragic clarity, that the crisis is far from achieving global food security and hunger alleviation (Premanandh, 2011). Originally, the term "food security" referred to whether a country had sufficient food to meet its dietary energy requirements (Pinstrup-Andersen, 2009). Food insecurity and hunger are precursors to human health and economic development issues that deprive developing countries of necessities. In 2010, approximately 870 million people were chronically undernourished, with the majority living in developing countries and relying on agriculture for a living. To meet the expected 60% increase in global food demand by 2050, agriculture production must increase by 70-100%, with most of this coming from smallholder farms (Kiptot et al., 2014).

Despite dramatic increases in food production and availability through modern technology, undernourishment, and food insecurity in developing countries remain unacceptably high (Premanandh, 2011).

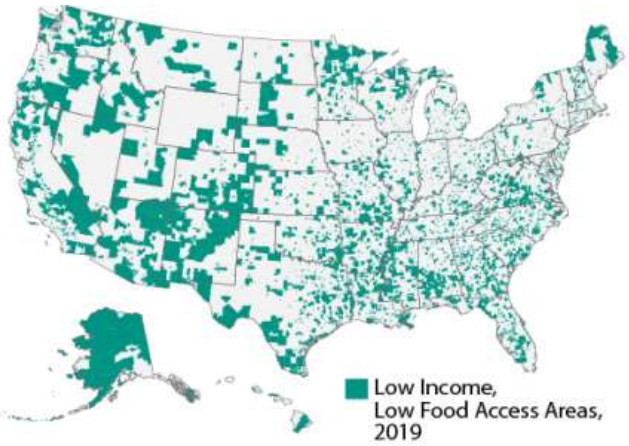
The challenge of food security necessitates the ability to deal with increasing food shortages for a growing global population. With a predicted increase in the global population of 1.7 billion between now and 2050, humanity is putting increasing strain on the finite resources used to produce food (Mc Carthy et al., 2018). Rapid urbanization is another major issue threatening food security in many countries, with more than half of the world's population now living in cities (Lahariya, 2008). People who move from rural to urban areas are less likely to produce or even see food being grown, and they are more likely to consume food that has been transported long distances, including processed food. Rapid urbanization has significantly reduced the amount of sustainable agricultural land globally, posing a food security issue (Guitart et al., 2012). Growing concerns about the scarcity of arable land in cities because of urbanization (Gregory et al., 2016), as well as food insecurity, have increased interest in adopting alternative and sustainable strategies, such as community gardens or home gardens, to meet rising food demand and prevent food insecurity and famine, which are expected to be a problem in the next 30 years (Evers & Hodgson, 2011).

Today, community gardens are frequently established by volunteers in the hope that they will serve as alternatives to the current food environment, providing opportunities for food and income generation as well as outdoor physical and social activities for urban residents (Egli et al., 2016). Recently, there has been an increase in interest in encouraging urban farming and community gardens to address food insecurity in our communities (Al-Delaimy & Webb, 2017). A "community garden" is a land or a garden that is maintained by a group of people. It can be divided into separate or shared plots. Community gardens can be found on private or public land, in a community or neighborhood, or on the grounds of a church, school, city hall, or hospital. Community gardens are collaborative projects in shared open spaces in which participants contribute to the garden's maintenance and products, which include healthy and affordable fresh fruits, vegetables, and flowers (Kingsley et al., 2009). Community gardens are an essential component of our local food systems and the agricultural landscapes of most countries around the world (Gregory et al., 2016). Gardeners now make up a sizable proportion of the US population. As of 2013, forty-two million American households were involved in growing their food, either at home or in a community garden plot. Growing food in our communities and backyards can make a significant contribution to meeting daily household fruit and vegetable needs for better nutrition and health (Malberg Dyg et al., 2020). Gardening can contribute to food security at all income levels by providing access to fresh, culturally acceptable produce and encouraging a more nutritious diet. In the US, community gardens have been shown to increase gardeners' consumption of fresh vegetables (Algert et al., 2014).

**Community Garden, Food Choices, and Public Health**

Having access to healthy foods in one's immediate neighborhood, such as home gardens, stores, farmer's markets, or community gardens, influences one's food choices and what one eats. The

consumption of these nutritious foods can lower one's risk of obesity, diet-related diseases, diabetes, and cardiovascular disease (Smith & Miller, 2011; Spears et al., 2014). The Guidelines for Americans 2010, which advice consuming three or more fruits and vegetables daily, especially dark-green and red and orange vegetables, may not be easily accessible to people who live in food deserts, making it difficult for them to meet the recommendation. (USDA, 2010). Additionally, people living in food deserts who eat fast food have diets that are low in whole grains and high in sugar, fat, and sodium (John Hopkins Public Health, 2014). These diets are linked to an increased risk of obesity and weight gain, diabetes, strokes, hypertension, and cardiovascular disease, which is the leading cause of death in the United States (Spence et al., 2009; Nogueira et al., 2020) .




**Source:** CRS using *Food Access Research Atlas*. Green = low-income census tracts where urban residents live more than 1 mile or where rural residents live more than 10 miles from a supermarket.
**Note:** County-level data are at https://www.ers.usda.gov/data-products/food-access-research-atlas/download-the-data/.

**Figure 1**. Low-Income, Low-Access Areas, 2019

Community gardens are an essential component of our local food systems and the agricultural landscapes of most countries around the world. Growing food in our communities and backyards can contribute significantly to meeting daily household fruit and vegetable needs for better nutrition and health. According to a new study, growing food in community gardens can provide people with more access to fresh vegetables for a healthier food supply. Small plots of land near homes have been used for centuries to grow food to supplement family needs and income (Galhena et al., 2013). During the First and Second World Wars, contemporary community gardens spread across the United Kingdom, Europe, and North America to supplement wartime food shortages. These gardens contributed significantly to national food security by supplementing rations and providing essential nutrients that could not be obtained from the food environment at the time (Ginn, 2012).

Community gardens have been proposed to increase community capacity while also improving equity in food systems, both of which are central tenets of the food justice movement. The purpose of this review is to summarize the role of community gardens in addressing global food insecurity.

**Benefits of Backyard Gardening in the Community**

It can be difficult to obtain fresh produce regularly in many urban neighborhoods without having to travel long distances. This makes it difficult for people to eat a healthy and nutritious diet because obtaining fresh produce is both expensive and time-consuming. Only a small portion of the world's population consumes the recommended amount of fruit and vegetables, even though it is a vital part of a healthy diet and one of the most modifiable risk factors for chronic disease. (Litt et al., 2011). When there is a community garden in the neighborhood, people consume more fresh fruits and vegetables (Zhang et al., 2022). According to Litt et al., (2011), community gardeners consume fruits and vegetables 5.7 times per day more than nongardeners (3.9 times per day). Furthermore, 56% of community gardeners met national recommendations to consume fruits and vegetables at least 5 times per day, compared to 25% of nongardeners.

As the number of people living in cities increases, so will reliance on large-scale and distant agriculture. With rising population densities, community leaders have identified food insecurity and food deserts, or areas where there is little fresh produce. As a growing problem in inner-city neighborhoods, quality food is available for purchase. Access to healthy and affordable food can be limited in these areas. Inadequate access to fresh and nutritious food has been linked to an increase in diabetes, obesity, cardiovascular disease, certain cancers, and chronic illnesses (Aubry et al., 2012; Corrigan, 2011). Hendrickson et al., 2006, summarized the many definitions of "food desert" used by different researchers. These definitions each acknowledge that a food desert is a condition in which people living in poor urban communities have few or no options for purchasing affordable, healthy food due to a lack of money, a lack of retail outlets, or the low nutritional quality of food offerings (Lang & Rayner, 2005; (Hendrickson et al., 2006). People living in food deserts are at a higher chance of becoming ill because their diets may be inadequate (Resnicow et al., 2001).

Community gardening, as a form of exposure and connection to natural environments, emerges as a complex multi-factorial activity involving the community's collective effort to cultivate plants. Because of its direct and indirect effects on individual mental health, as well as its potential contribution to community bonding and building a sense of community, community gardening has recently received a lot more research attention (Guitart et al., 2012). Community gardens also aim to reconnect people with the land, revitalize neighborhoods, and promote a green and sustainable environment by consuming locally grown food. Community gardening allows for community involvement and hands-on learning about growing, as well as opportunities to strengthen community ties and build social capital (McCormack et al., 2010).

Recent societal shifts and research findings have revealed that community gardens have enormous potential to provide spaces for the individual and communal good, as well as to contribute to the community bonding, health, and urban-environmental balance that the world craves (Koay &

Dillon, 2020). Gardening activities may improve well-being by increasing social contact, participating in culturally valued activities, and reducing food insecurity. The benefits of community gardening are argued to extend beyond the participants themselves, resulting in more cohesive and cohesive communities, improved physical environments, and the sharing of labor products (Lovell et al., 2014). Developing and strengthening community and social ties, for example, by providing opportunities for positive social contact among community members who share common interests, may be another way that community gardening promotes better health and well-being. This promotes good health and well-being by increasing social resilience and motivating the implementation of other neighborhood improvements, particularly in deprived areas (Armstrong, 2000).

**Psychological and Cultural Aspects of Community Gardens**

Gardens, as a work of art and an expression of culture, are a purely human paradigm with intrinsic value for the gardener and can be viewed as a diagnostic artifact, reflecting the gardener's characteristics. Food plants, for example, reflect the gardener's cultural traits and culinary preferences. According to Kiesling & Manning, (2010), gardening exists at the intersection of nature and culture, personal values, and public expectation. Gardens are the result of the social, physical, and symbolic organization of private living space, and any place where people garden, whether attached to a house or a community garden, is a place of social, cultural, and religious significance. Food gardening has numerous personal and cultural benefits and applications. Local food production benefits cities by performing the following functions: 1) providing socio-educational functions, 2) contributing to urban employment, and 3) reducing social inequality (Aubry et al., 2012).

Community gardens have a long history of being used to improve psychological well-being and social relations, facilitate healing, and increase fresh food supplies (Hynes & Howe, 2004). Well-being is a multi-dimensional construct that is becoming an increasingly popular indicator of societal contentment and population progress for health promoters, government agencies, and academics. Well-being entails optimal physical and mental functioning, resilience, positive emotional experiences, and overall life satisfaction; it is more than the absence of disease (Huppert & So, 2013). While well-being may not be the intended end goal of community gardens, many of the outcomes of community garden participation have a positive influence on well-being (Egli et al., 2016). Community gardens may provide physical and mental health benefits by providing opportunities to eat healthy fresh fruits and vegetables, engage in physical activity, skill building, create green space, beautify vacant lots, revitalize communities in industrial areas, revive and beautify public parks, create green rooftops, decrease violence in some neighborhoods, and enhances community well-being through strengthening social connections (CDC, 2010).

Many individuals have employed physiological testing to validate self-reported emotional states while watching natural scenes. Simply looking at a plant can reduce blood pressure and muscle tension, as well as stress, fear, and anger. Viewing images of nature consistently and significantly held viewers' attention and interest and induced higher alpha intensity (associated with relaxed feelings while awake) than viewing images of the urban built environment (Ulrich, 1981). The

same researcher, (Ulrich, 1984) found that post-operative patients with a view of deciduous trees recovered faster, had better progress evaluations, and required fewer analgesics than a matched group of patients with a view of a brown brick wall. Modern research has linked mental health outcomes to the physical and structural characteristics of the urban environment. Inner-city neighborhood characteristics such as crime rate, noise levels, crowding, and barren common spaces are associated with a lack of neighborhood social ties (Wandersman & Nation, 1998). Dominique, (2020), found that inmates who had a view of nature reported fewer stress symptoms and sickness than those who had views of prison yards, walls, or buildings.

**Economic Benefits of Community Gardens**

Community gardens provide economic benefits beyond food and nutritional security and subsistence, particularly for low-income families. According to Calvet-Mir et al., (2012; Trinh et al., (2003), home gardens contributed to income generation, improved livelihoods, and household economic welfare, as well as promoting entrepreneurship and rural development. Through the review of several case studies, (Mitchell & Hanstad, 2004) assert that home gardens can contribute to household economic well-being in a variety of ways, including the sale of garden products to generate additional income. Gardening activities can be developed into a small cottage industry, and earnings from the sale of home garden products, as well as savings from eating homegrown food, can result in more disposable income that can be used for other domestic purposes (Torquebiau, 1992).

Several research studies have been conducted to assess the potential or actual economic contribution to the household, local economy, and social development (Kehlenbeck & Maass, 2004). Studies from Nepal, Cambodia, and Papua New Guinea reported that the income from the sale of homegrown fruits, vegetables, and livestock products enabled households to use the proceeds to buy more food as well as for savings, education, and other services (Olney et al., 2009). Home gardening activities provided more than 22% of cash income to families in Vietnam's mountain areas (Trinh et al., 2003). Home gardens are widely promoted in many countries as a means of avoiding poverty and generating income for low-income families in developing countries. Although home gardens are considered low-production subsistence systems, they can be structured to be more efficient commercial enterprises by growing high-value crops and animal husbandry (Torquebiau, 1992).

**Factors Influencing Household Food Security**

Food availability signifies the availability of sufficient quantities of appropriate, necessary types of domestically produced food, commercial imports, or food aid to individuals consistently or within reasonable proximity to them (Khan & Shah, 2011). Food insecurity, on the other hand, is a situation in which people do not have secure access to enough safe and nutritious food for normal growth and development as well as active and healthy life. Food insecurity and economic hardship force people to consume less and settle for low-nutritional quality food (Eneyew & Bekele, 2012). Food security affects many people around the world due to a variety of factors, including differences in economic standards. These variables have a direct impact on the type and quantity of food produced (Smith et al., 2000). Climate change, land scarcity for farming, technological

barriers, insufficient irrigation water supply, declining world food stocks, price volatility in the food and energy markets, demographic growth, changing food habits, urban growth, the biofuel boom, and poverty are all factors that influence food security (European Commission, 2009). Changes in the distribution of weather patterns and their consequences have become a major source of international concern. Climate change is caused by increases in average temperature, changes in rainfall patterns, glacier thawing, and other factors. Rising temperatures cause heat stress in plants, increasing sterility and decreasing overall productivity, in addition to increasing evaporation from plants and soils and decreasing water availability. Increased global temperatures and frequent temperature extremes will pose significant challenges to agricultural and animal production in the twenty-first century. Their relative importance, however, will vary across regions and over time (Premanandh, 2011).

Increasing poverty is a major contributor to the hunger crisis in many developing countries. Food is available, but it is simply out of reach for most people. Since 1981, the number of people in Sub-Saharan Africa living on less than $1 per day has more than doubled to over 310 million. A food crisis that erupted in northeast Kenya in 2005 disproportionately impacted pastoralists. While the country's harvest yield increased by 15% and GDP increased by 5% in 2005, the proportion of the population living on less than $1 per day increased by 40%. Sub-Saharan Africa has experienced "inadequate debt cancellation, declining and poor-quality development aid, flawed donor advice, conditions attached to aid that forced countries to adopt damaging agricultural policies, and unfair trade rules" over the last three decades (Mason, 2006).

As many households struggle to access enough safe and nutritious food for normal growth and development and face food insecurity, community gardens have helped fill nutritional gaps. Furthermore, people are becoming more aware of the environmental and social consequences of the food they eat and the proximity of where it is grown. The complexity of urban food systems, such as the availability of local organic produce in affluent neighborhoods and the apparent lack of healthy food options in disadvantaged neighborhoods, has fueled interest in the equity of the local food movement (Sales, 2009). Gardening is a promising and effective way to combat food insecurity by increasing access to nutritious food (Sweet et al., 2019). Community gardens have been documented as an important supplemental source contributing to food and nutritional security as well as livelihoods around the world. The oldest and most enduring form of cultivation is food production on small plots adjacent to human settlements. Community gardens have long been an important part of family farming and local food systems (Niñez, 1987).

Community gardens can help with food security by allowing people to grow some of their food, either in individually leased plots or in communally cultivated spaces. Even though community gardens contribute only a small portion of produce to our food system, their importance is growing in the modern era because they provide a reliable local food source. Community gardens can make a significant contribution to food security by establishing a variety of food security initiatives beyond the garden gate, such as food co-ops, farmers' markets, and non-profit grocers (Sales, 2009). Home gardens can be a versatile option for addressing food insecurity in a variety of

difficult situations, and as a result, they have attracted the support of numerous government and non-governmental organizations (Galhena et al., 2013).

**The State of Food insecurity in the USA**

Millions of Americans are facing serious food insecurity. Food insecurity is one of the most serious nutrition-related public health issues in the United States, owing to its prevalence and numerous documented negative health consequences (Gundersen et al., 2011). In 2009, more than 50 million people in the United States lived in food-insecure households, with more than one-third of these households experiencing a more severe level of food insecurity known as very low food security. In 2012, nearly 16 million children in the United States, or more than one in every five, were food insecure. Many government programs, such as the Supplemental Nutrition Assistance Program (SNAP), the National School Lunch Program (NSLP), the School Breakfast Program (SBP), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the Child and Adult Care Food Program (CACFP), are explicitly designed to reduce food insecurity. However, the fact that food insecurity remains so high despite the government spending more than $100 billion on various federal food-assistance programs in the fiscal year 2012 poses a significant policy challenge (Gundersen & Ziliak, 2014).

Almost 90% of US households where food secure in 2020. Food insecurity affected the remaining 10% (13.8 million households). Because of a lack of resources, food-insecure households had difficulty providing enough food for all of their members at some point during the year (USDA ERS, 2020). Almost one in every ten Americans is food insecure, which means they do not have enough food at some point during the year. People who are food insecure are also more likely to suffer from chronic diseases such as type 2 diabetes and obesity. Community resources for those in need are frequently available, but they may not provide the variety of nutritious produce recommended to promote health. Food drives and food pantry donations generally encourage donations of shelf-stable products such as dry and canned goods (Otar, 2020). While these products are important in addressing food insecurity, they may not meet the entire spectrum of human nutrition needs. Gardening is a promising and effective way to combat food insecurity by increasing access to nutritious food (Mayer et al., 2014).

**The Role of Community Gardens During the COVID-19 Pandemic**

The emergence of the COVID-19 pandemic resulted in significant changes in personal mobility around the world. While restrictions kept people at home during the first few months of the pandemic, many cities around the world saw an increase in access to green spaces such as parks and gardens. During the COVID-19 pandemic, urban green spaces such as community gardens received increased attention (Joshi & Wende, 2022). The COVID-19 pandemic has impacted food insecurity in urban areas due to disruptions in the food supply chain, aggravation of physical and economic barriers to food access, and a catastrophic increase in food waste due to labor shortages. As a result, more resilient food systems reduced food waste and strengthened local food production are required (Lal, 2020).

Home gardening and urban agriculture are important strategies for increasing the availability of the household in urban areas (Lal, 2020). Food production in cities includes small-scale agriculture in households, community gardens, indoor and rooftop gardens, and vertical farming. Home gardening can help advance food and nutritional security during and after the COVID-19 pandemic, while also improving the provision of numerous ecosystem services such as plant biodiversity, microclimate, water runoff, water quality, and human health. (Khan et al., 2020). The pandemic has exacerbated the long-standing problem of food insecurity in American households by disrupting access to fresh and nutritious foods at affordable prices for growing urban populations, exposing the true fragility of our nation's food system (Mercado, 2021). Household food insecurity was the most reported hardship, affecting lower-income families as well as Black and Hispanic communities nearly twice as much as white adults.

Community gardens have helped bridge nutritional gaps as many urban residents continue to struggle with access to fresh fruits and vegetables and experience food insecurity (McSwain, 2018; Robbins, 2021). Community gardens assist families in reducing pandemic-related economic losses by supplementing their diets with nutritious foods. Community gardens are more than just great places to grow fruits and vegetables. They also serve as places to foster social support and emotional well-being. Joining a community garden allows one to increase social interactions and gain a sense of social connectedness and commitment to the community (Mansaray, 2021). According to a study conducted in Denver, gardeners valued the social connections they made at the garden, and mutual trust was established through the sharing of tools and vegetables (Mercado, 2021). Participating in community gardens has also been shown to give people a greater sense of control and agency over the type and quantity of food they grow (Teig et al., 2009)

Community gardens played an important role in improving mental health among individuals who were experiencing a loss of connection and increased isolation because of COVID-19 stay-at-home orders. Community gardens, such as The Village in Rochester, Minnesota, allowed residents to connect and socialize during the COVID-19 lockdown. Although interactions were socially distant, participation in the community garden has provided individuals with a much-needed outlet for social and emotional support during the pandemic (Zhang et al., 2021; Mercado, 2021). The COVID-19 pandemic has provided an opportunity for city dwellers to reconsider and rebuild their relationship with the urban green spaces that surround them. The lessons learned from the COVID-19 pandemic are critical as cities and their residents prepare for the unknown. With limited or no access to indoor public spaces, the COVID-19 pandemic provided an opportunity for many people, particularly urban residents, to rediscover nature (Elmqvist et al., 2021)

## CONCLUSION

Living in a community that doesn't have conveniently located full-service grocery stores, makes it difficult to have access to fresh and healthy fruits and vegetables. Starting a community garden will help provide fresh produce as well as promote a healthier lifestyle and a safer, more attractive place to live. Residents, especially those who live in food desert areas, can easily access nutritious food thanks to community gardens. In the human diet, fresh produce offers vital vitamins,

minerals, fiber, and even hydration. This lowers blood pressure, lowers the risk of heart disease and stroke, strengthens skin, hair, nails, and teeth, helps to reduce obesity, improves digestive and immune health, and prevents some types of cancer. Although community gardens are excellent locations for growing fruits and vegetables, they also have other uses. They are also places where people can develop their emotional stability and social support. One has the chance to have more social interactions, feel more as part of the community, and increase their sense of social connectedness by participating in a community garden. According to a study conducted in Denver, gardeners value the friendships they make there and the mutual trust that results from sharing tools and produce. It has also been demonstrated that taking part in community gardens gives people a greater sense of agency and control over the kind and quantity of food they decide to grow.

As various nations, including the United States, begin to develop a post-pandemic recovery plan to establish a new way of addressing food insecurity issues, community gardens must be assessed and recognized as contributors to community development, health, and social wellbeing. Local government leaders can support the role of community gardens in enhancing access to fresh fruits and vegetables and encouraging a communal space for social interactions by working with community-level organizations, funding agencies, and community advocates. Community gardens have the potential to strengthen and nurture a space for collective action and play a significant role in the reimagining of health and social well-being for communities during a time of crisis.

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