

Urban Farming: Here's why it is a good thing!



..."Let's start unlocking the potential of agriculture in cities"

Traditional farming methods require land, time, and manpower, so new farming methods have been developed. Nowadays, with urban farming, it is possible to achieve environmental, social and economic sustainability for buildings in urban cities^[1]. The global Covid-19 lockdown is helping to revive interest in growing at home, but one in ten city households do not have access to a garden. Urban farming offers several options such as walls and rooftops, while creatively redeveloping the urban environment. Urban farming can turn a growing number of consumers into producers. Changes in consumer behavior can contribute to environmental conservation and climate change mitigation. In addition, urban farming can produce higher quality vegetables or fruits, provide additional income for those who do it, and can expand social networks.

Social Impact

The findings prove that even on a small scale, urban farming can contribute to build social networks that provide practical and emotional support. In the context of urban farming, small backyard food garden can connect some people with neighbors, where this social network occurs at three levels: (a) creating friendships; (b) expanding the network of acquaintances with other urban farmers; and (c) increasing several influential networks in government, civil society and markets. Generally, urban farming participants come from heterogeneous group. Personal motivation for urban farming is usually related to the experience of nature, for example through the joy of gardening, pursuing a sustainable lifestyle and protecting the environment. Besides, social and ecological aspects are also found to be the main drivers of the establishment of several urban farming projects, as one of the study showed participation in social discourse as a grassroots democracy was established by 127 projects to call for more use of green public spaces in urban areas^[2].

Health Impact

The growth of urban farming can also help to change people's perspective on food products that have higher quality and are free from the use of chemical pesticides. The main health impacts associated with

urban farming include: (a) increased consumption of bio-foods; and (b) improvements in mental and physical health, e.g. mood and life satisfaction. Several studies have shown that for some urban farmers, growing their own food helps them to diversify their family's diet and to have greater access to fresh vegetables and fruit. In addition, going outside to nature can help reduce stress and their tendency to choose unhealthy foods. In fact, based on epidemiological studies, the elderly who do urban farming have better health indicator scores than those who do not^[3].

Economic Impact

The importance of agriculture is that it allows production to be a source of income and a source of food supply. In fact, increasing urban farming development in the community can help to diversify household income and increase women's agency, e.g. housewives can empower urban farming as a micro business opportunity or improve their skills. As reported by World Bank's Urban Development and Resilience Unit which conducted case studies on urban farming in four cities: Bangalore (India), Accra (Ghana), Nairobi (Kenya) and Lima (Peru). The results show that the impact of urban farming in these cities includes providing employment and income for urban farmers, as well as contributing to food security and nutrition^[4].

Challenges & Barriers

Although urban farming has many benefits, there are several challenges and barriers. A literature review identified barriers that hinder urban farming: (1) limited access to land; (2) inadequate infrastructure and supporting services; and (3) lack of skills and experience in urban farming^[5]. Furthermore, several findings indicate that urban farming activities in several big cities have not been well documented. Three out of five urban farmers have difficulty authenticating information about permitted land uses for this farming method. For this reason, it is necessary to develop a policy review by taking into account the existing policies related to urban farming guidelines, sanitation systems, and water resources. In reality, there is a gap between policy and implementation where environmentally friendly policies already exist in several places but there are challenges in their implementation in the field. In addition, the results of a study also show that there are still many urban planners who have not included urban farming in the urban development literature^[5]. Generally, the role of urban planners is quite important for the advancement of urban farming because they can assist the government in determining the area of land use and a set of regulations governing agriculture in accordance with their authority.

In reality, most urban farmers do not own their own land. Most of them only use a small area for farming. Those who want to cultivate more land should be able to own their own land or rent someone else's land. Farmers who rent land must be prepared to face the risk of sudden increases in rental costs by landowners. Long-term ownership or land leases need to be secured which is likely to encourage more land investment in the future. Vacant land is usually touted as a potential opportunity for urban farming. This land is a tantalizing option for those looking for land for cultivation, but due to the high cost of land, this poses a challenge for urban farmers. As a result, some urban farmers are exploring ways to make land more economical and ergonomic to restore land that does not cost millions of dollars. In the future, farmers must be prepared if there are restrictions on land use. Some countries such as Bangkok^[1] have land use and zoning regulations that severely limit land availability in urban environments, e.g. prohibition of building greenhouses in cities and restrictions on the height of plants grown.

Another challenge for urban farming is gaining access to water and dealing with water runoff as reported by 20% of urban farmers and 23% of urban planners in Chicago^[5]. For many urban farmers, a water source is important for watering crops. Access to water means finding land equipped with pipes and taps for water which is reportedly quite difficult in some places^[4]. If the land area does not have good drainage, it means that other water sources are needed which will likely cost a lot of money. In most developing countries, the use of wastewater for agriculture, in both urban and rural areas, is a common practice especially in water-scarce areas. In some countries, standards for the use of wastewater for agriculture have been set, but in the field, there is still misunderstanding about the use of wastewater where untreated wastewater is still found. It should be noted that the use of untreated wastewater may pose a risk to human health as it may contain toxic chemicals, sewage-related pathogens, and other hazardous residues. For this reason, in the development of urban farming, it is recommended to use good water sources such as treated wastewater. Basically, if the wastewater is managed properly, it can be safely used to support crop production through direct irrigation or by filling aquifers. However, to do this requires the development of good wastewater treatment indicators.

Urban agricultural crops will generally be affected by changes in atmospheric conditions and microclimate in urban ecosystems^[6]. Urban cities face the challenges of microclimate change due to urban heat island (UHI). Vegetation reforestation activities such as urban farming turned out to be a very effective adaptation tool to cool UHI, but in reality urban farming also has to face the impact of UHI. The urban atmospheric environment and microclimate are affected by a complex set of anthropogenic factors with temperature, CO₂, relative humidity, and wind which differ from the rural environment. Essentially, UHI can contribute to higher day time temperatures, reduced night time cooling and higher levels of air pollution. This situation can affect the plant growth cycle in urban areas, so that it becomes one of the challenges for urban farming. Some findings analyze that the problem of UHI lies in the magnitude of the increase in recent decades due to global warming. Therefore, it is urgent to reduce the magnitude to an acceptable level, but doing this can be tricky. Based on this, it is very necessary to develop technology and planting techniques that can be adapted to the microclimate of an area. Fundamentally, knowledge of how urban microclimates can affect crop production is still limited. More studies on the adaptation of plants and cultivars to the urban environment will provide practical recommendations for urban farmers, especially in advancing the understanding of plant physiological responses to complex urban ecosystems^[4]. In addition, the characterization of urban microclimates can help in development of plant hardiness zones in urban areas and knowing what planting calendars can be used in urban areas^[6]. In the long term, information on plant physiological responses in urban environments can be used for the development of adaptive and more competitive fruit and vegetable cultivars in urban ecosystems.

References

- [1] S.C.M. Hui. 2011. Green roof urban farming for buildings in high-density urban cities. Researchgate.net. *Hainan China World Green Roof Conference 2011*. 18-21 March 2011, Hainan, China.
- [2] B. Winkler, A. Maier, & I. Lewandowski. 2019. Urban gardening in Germany: Cultivating a sustainable lifestyle for the societal transition to a bioeconomy. *Sustainability*. 11(801). p.1-22. Doi: 10.3390/su11030801
- [3] K. Harada, K. Hino, A. Iida, T. Yamazaki, H. Usui, Y. Asami, & M. Yokohari. 2021. How does urban farming benefit participants' health? A case study of allotments and experience farms in Tokyo. *International Journal of Environmental Research and Public Health*. 18(542). p.1-13. Doi: 10.3390/ijerph18020542
- [4] I. Bisaga, P. Parikh, & C. Loggia. 2019. Challenges and opportunities for sustainable urban farming in South African low-income settlements: A case study in Durban. *Sustainability*. 11(5660). p.1-26. Doi: 10.3390/su11205660
- [5] S.R. Castillo, C.R. Winkle, S. Krauss, A. Turkewitz, C. Silva, & E.S. Heinemann. 2013. Regulatory and other barriers to urban and peri-urban agriculture: a case study of urban planners and urban farmers from the greater Chicago metropolitan area. *Journal of Agriculture, Food System, and Community Development*. 3(3). p.155-166. Doi: 10.5304/jafscd.2013.033.001
- [6] S.E. Wortman & S.T. Lovell. 2013. Environmental challenges threatening the growth of urban agriculture in the United States. *Journal of Environmental Quality*. 42(5). p.1283-1295. Doi: 10.2134/jeq2013.01.0031