



CULTIVATING THE FUTURE: EXPLORING THE PROSPECTS OF URBAN FARMING IN INDIA

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INTRODUCTION

Urban agriculture is the practice of farming in the urban and peri-urban areas. Peri-urban areas constitutes those that are situated between the periphery of metropolitan and regional centres and the rural environment, shifting from rural land uses (such as agricultural or animal production) to urban ones (such as the built environment, manufacturing, services, and utilities). Urban farming connotes varied range of food and non-food products that are cultivated or grown, including rearing livestock, aquaculture and bee-keeping. The most striking feature of urban agriculture, which distinguishes it from rural agriculture, is that it gets integrated into urban economic and ecological system. The FAO defines urban and peri-urban agriculture as an industry located within (intro-urban) or on the fringe (peri urban) of a town, a city or a metropolis, which grows and raises, processes and distributes a diversity of agriculture products, using largely human, land and water resources, products and services found in and around that urban area. It plays a key part in the world's food and nutritional security, creation of livelihoods, particularly for women, the reduction of poverty, and the resilience and sustainability of cities.

WORLD SCENARIO

Small-scale agricultural operations on private and public lands have been started in many different countries by community organizations and individual urban residents with the assistance of city administrations. Around 35% of the value of the regional commodity supplies in Paris are made by

peri-urban agriculture, primarily in the form of fruits, vegetables, and flowers. 500 hectares of the 13,566 hectares of farmland in Greater London are used for growing fruits and vegetables. Moreover, market gardening is practiced on 800 hectares of public land. Urban agriculture is also practiced in numerous cities in Latin America and Africa, as well as in Russia, Spain, Portugal, the Netherlands, Israel, and Spain.

NEED FOR URBAN AGRICULTURE IN INDIA

In order to keep ahead of enormous challenge of addressing the nutritional security and sanitation demands of urban dwellers, which is predicted to increase by 400 million by 2050, India must seriously address this issue. Hence UA especially gardening of horticultural crops can play a significant role in reducing urban poverty and enhancing food, nutritional security.

Compared to rural residents, those who live in metropolitan settings have significantly less control over the availability and quality of the food they consume. Food prices, particularly those of vegetables, fruits, and pulses, which have a significant impact on how much is consumed, are frequently subject to significant fluctuations because of a variety of factors, including the whims of the monsoon, the outbreak of diseases, changes in the price of crude oil, and changes in the regulations governing the import and export of agricultural commodities. Additionally, they lack oversight of the application of fertilizers, pesticides used in food production, which has major consequences for the food's nutritional value and safety.

UA will significantly help in tackling these issues. By minimizing the length of time and

distance from farms to fork, it can supply fresh produce to urban residents without the need for expensive transportation, refrigeration, and storage facilities. Due to its labor-intensive nature, it will also provide jobs, generates revenue and help reduce poverty. It also serve as an urban lung and contribute to aesthetic value, thus playing vital role in management of urban environments.

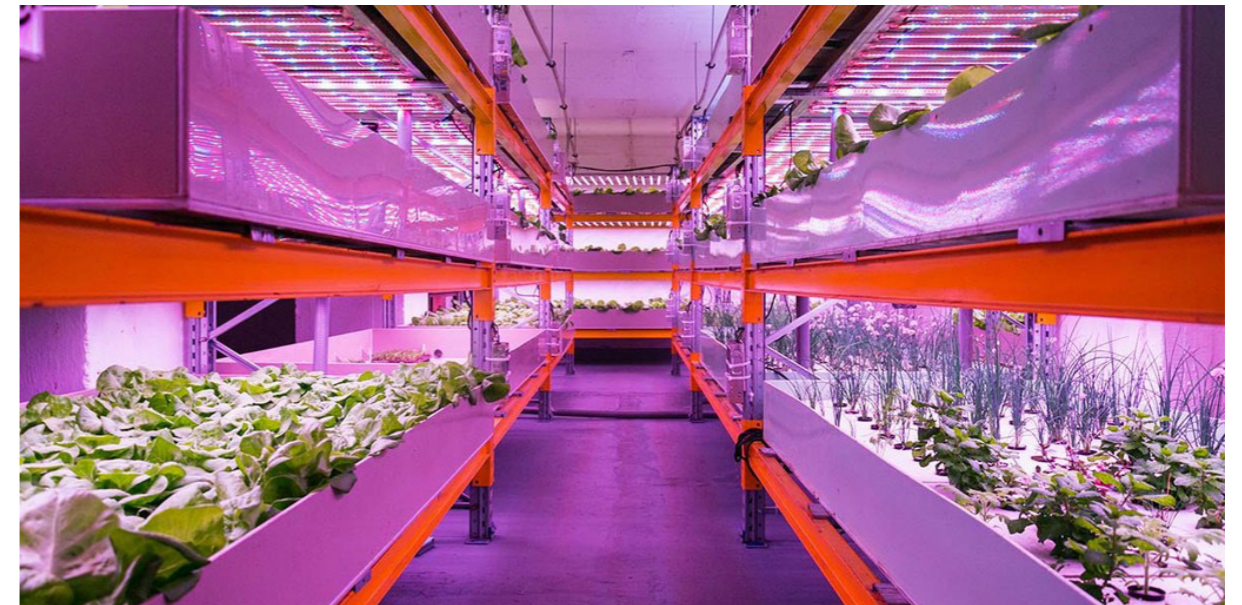
COMMON METHODS USED

- ❁ **Aquaponics:** The nitrogen and carbon cycles, two vital biological building blocks, are utilized in closed-loop Aquaponics systems. Using nutrient-rich fish water as fertilizer and irrigation, plants are grown.
- ❁ **Hydroponics:** Hydroponics is the practice of cultivating crops in nutrient solutions, regardless of whether they have a soil less base.
- ❁ **Vertical farming:** The primary goal of the vertical farming strategy is to expand the amount of agricultural land by vertically stacking numerous crop racks and building various layers on a single piece of land.



- ❁ **Shipping Container Farms:** It is the practice of growing plants in containers as opposed to in the ground. With container farming, weeds are eradicated and soil-borne illnesses are less of a problem. By growing in this fashion moisture, temperature and sunlight can be easily managed.
- ❁ **Rooftop Plant Production:** The practice of raising crops on building roofs is known as "rooftop farming." It maximizes the cultivation area. Crops that require more vertical space and more powerful lighting can be grown with RPP.
- ❁ **Backyard gardens:** It is a typical practice to plant and grow fresh fruits and vegetables in any backyard space that is available.
- ❁ **Street landscaping:** Vegetable gardening can be done in the open space next to the roadways. Like the neighborhood's garden streets, the open space next to the public roadways, etc., these places are developed primarily for leisure and educational purposes.
- ❁ **Green house gardening:** Large empty areas in and around the locality can be covered with the greenhouse for production of high value crops. These can be managed by an individual or community or commercial owners.

- ❁ **Wasteland utilization:** Farmers who are interested in growing fruits, vegetables are given access to unoccupied and abandoned government lands.
- ❁ **Small scale animal husbandry:** Cities that let citizens to raise a certain number of chickens for meat and eggs, as well as cows and buffaloes for milk, are two examples.
- ❁ **Mushroom cultivation:** Fungus mushroom can produce valuable commodities suited for human use while growing on organic waste. It is a fantastic source of proteins, vitamins, minerals, folic acid, and iron, mushrooms have gained popularity in recent years.



BEST URBAN FARMING PRACTICES IN INDIAN CITIES

Urban agriculture is practiced in several Indian cities, including Mumbai, Delhi, Kolkata, Bengaluru, Chennai, etc., under the direction of public authorities, private organizations, or even individual residents. Since the practice has begun to acquire some traction across states, governments in India have started making small efforts to promote it.

- **Pune:** Pune's local government created a city farming project in 2008 to train and encourage residents to begin urban farming on designated land.
- **Kerala:** In order to encourage gardening in homes, schools, government buildings, and other public, private organizations state government launched a vegetable improvement campaign.
- **Bihar:** In order to encourage terrace gardening, Bihar started paying input expenses in five smart cities in 2021.
- **Tamil Nadu:** As part of its Urban Horticulture Development Scheme, government created a "do-it-yourself" kit in 2014 to make it possible for city dwellers to grow vegetables on their rooftops, houses and apartment buildings.

ADVANTAGES OF URBAN FARMING



❁ Nutritious and quality food:

Vitamins and minerals are abundant in fruits and vegetables. Urban farming delivers fresh, high-quality product right to customers' doorsteps because there is essentially little time lost throughout the processes of shipping, storage, packing, and processing.

❁ Good physical health:

Because urban gardens' vegetables are less exposed to pesticides, contaminants such as heavy metals, and solid waste, there is less food contamination, which benefits the well-being of humanity.

❁ Protection to environment:

Urban farming is an excellent strategy to protect the the natural world in the face of climate change because urban areas are so resilient. Some of the beneficial environmental effects of urban farming include a decrease in plastic pollution due to reuse and recycle of waste plastic containers, a decrease in air pollution, water pollution and more.

❁ Efficient utilization of land and resources:

Vacant, unused land in metropolitan areas can be used for agriculture by giving it to motivated and underprivileged farmers, who would then be able to support themselves. Urban green waste can be used as manure and biodegradable trash can be composted.

❁ Economic benefits:

Poverty-stricken women and other marginalized groups can find work, living through urban agriculture. Urban farming eliminates need for middlemen in long-distance shipping, storage, and processing, ensuring that all production profits go directly to the grower.



PROBLEMS IN URBAN AGRICULTURE

The lack of cultivable land is the fundamental problem with urban agriculture. Setting aside area for use in agriculture is not a practical option in rapidly expanding major cities when there exists no more available open space. Even where there is some land for free available, the cost might be extremely high. Urban agriculture poses both health and environmental dangers, including the use of potentially polluted water and soil

and the incorrect application of pesticides, fertilizers, and raw organic manure, all of which have the ability of leaching into water supply systems. Another significant barrier to urban agriculture is the high water need for crop cultivation. Cities in India struggle to provide citizens with enough fresh water for their daily needs. Uncontrolled use of ground water for agriculture may cause water tables to drop, which will jeopardize the city's water security.



The majority of tanks and ponds in urban areas have begun to dry up as a result of water redirection and tank, pond intrusion. Others are completely uninhabitable due to heavy sewage and waste contamination. Pesticides and fertilizers used improperly in farming can contaminate the soil and water in metropolitan areas. The majority of homes in cities today do not have a lot of open space around. Even homes and housing societies with some arable land engage in landscaping with non-edible plants that prioritize aesthetics over functionality.

CONCLUSION

Accelerated population growth, excessive immigration into metropolitan areas, and increasing consumer demand for vegetables and fruits have all contributed to regular food shortages, price inflation, and even food crises in Indian markets. The phrase "agriculture is a gamble with the climate" is appropriate given the erratic nature of rural production and productivity. Knowing these gaps would point to "urban farming" as a significant alternative.

There are several components that are favorable for the development of urban farming in India, from the thorough study and recommendations offered by the FAO to the broad institutional structure in India in the agricultural and horticultural sector and various NGOs. It is necessary for streamlining the infrastructure and knowledge already accessible to make urban farming in India a practical idea. We anticipate a very promising future for urban agriculture in the nation once this is completed.