



## Urban and Peri-Urban Horticulture: A Green Response to Urban Challenges

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Due to the effects of climate change, increasing urbanisation, and worldwide food insecurity, urban and peri-urban horticulture (UPH) is more than just a trend. UPH has the potential to make cities greener, healthier, and more resilient through careful policy, investment, and community engagement.

### Introduction

Food insecurity, environmental degradation, and social inequality are just a few of the many issues that cities are facing as the world becomes more urbanised. Urban and Peri-Urban Horticulture (UPH), the practice of cultivating fruits, vegetables, herbs, and decorative plants in and around cities, is one increasingly important alternative. UPH is becoming a potent instrument for community well-being, climate resilience, and sustainable development in addition to being a method for food production. Growing horticultural crops (vegetables, fruits, herbs, ornamentals, medicinal plants, etc.) on rooftops, balconies, community gardens, vertical farms, and other urban areas is known as urban horticulture. Peri-urban horticulture describes the practice of growing horticultural crops in the transitional zones surrounding cities, which are areas situated between rural and urban areas. These locations are frequently sufficiently close to metropolitan markets, but they still have more land, less density, and occasionally better access to soil and water. These methods, which concentrate on high-value crops that require less land yet provide high nutritional and financial benefits, collectively constitute an essential part of urban agriculture.

### Importance and Benefits

**1. Food and Nutritional Security:** By delivering nutrient-dense, seasonal, and fresh produce straight to urban marketplaces, UPH supports regional food systems. This is essential for improving urban diets, especially for low-income groups, and lessening reliance on long-distance food supply chains.

**2. Economic Opportunities and Livelihoods:** Particularly for marginalised populations like women, young people, and immigrants, small-scale gardening provides jobs and income creation. In order to reduce transportation expenses and increase income, urban farmers frequently sell their produce directly to local marketplaces.

**3. Environmental Sustainability:** UPH enhances biodiversity, lessens the impact of the urban heat island, and encourages green spaces. Ecological benefits are further enhanced by practices like rainwater collection and organic waste composting.

**4. Climate Resilience and Sustainability:** UPH lowers greenhouse gas emissions associated with packing and shipping by localising food production. Peri-urban green belts can assist in controlling stormwater runoff and serve as carbon sinks. Increased local control over the food supply promotes resilience, particularly during pandemics, supply chain failures, and harsh weather occurrences.

**5. Social Cohesion and Mental Health:** Community gardens promote cooperation, pride in the community, and social contact. Urban residents' stress, anxiety, and depression have all been shown to decrease when they interact with green places. Rooftop greening and community gardens support mental health and leisure. Community cohesion can be promoted through urban agriculture.

### Challenges and Constraints

While UPH has many benefits, there are some significant difficulties, and it is crucial to understand these.

- **Land Scarcity & Land Tenure:** The demand for real estate and infrastructure is high in urban and peri-urban areas. Farmers may lack guaranteed tenure, making investment riskier.
- **Pollution & Food Safety:** There are health dangers associated with using untreated wastewater, as these are contaminated with heavy metals, industrial pollutants, and other hazardous substances, while misuse of pesticides can make things worse.
- **Resource Competition:** Space, rich land, and water are all scarce, so the urban growth typically cuts off agricultural land.
- **High Costs:** Greenhouses, vertical systems, lighting, climate control, and other infrastructure can be costly. It can be expensive to use energy for temperature control and lighting.
- **Policy and Regulatory Barriers:** UPH may be hampered by zoning laws, building codes, water use limitations, hygienic regulations, waste disposal, etc.
- **Market and Supply-Chain Issues:** Logistics, post-harvest handling, satisfying consumer preferences, and achieving consistency and quality can all be challenging.
- **Environmental Trade-Offs:** Artificial lighting, significant energy use, waste from nutrient solutions etc., if not managed effectively, may lead to carbon footprints, pollution.

### Policy and Planning Perspectives

The potential of UPH is being more widely acknowledged by governments and urban planners. Supportive institutions, planning frameworks, and policies are necessary for UPH to grow and be sustainable.

- **Zoning and Land Use Planning:** Cities must incorporate agricultural land into their development, allowing for rooftop and vertical farming in construction rules and setting aside peri-urban green belts.
- **Land Tenure Security:** Ensuring farmers in peri-urban regions have solid rights, leases, or access to land so they can invest.
- **Food Safety and Environmental Regulations:** Maintaining the health of the soil and water, using pesticides safely, and controlling waste and nutrient runoff.
- **Incentives and Support Mechanisms:** To provide grants or subsidies for public-private partnerships, tax breaks, technology support, infrastructure, training, and inputs.

- **Extension and Capacity Building:** Instruction in post-harvest handling, marketing, commercial skills, and innovative production systems.
- **Access to Finance:** Loans, investment plans, and microcredit specifically designed for small farmers, particularly women and young people.
- **Market Access & Value Chains:** To assist with cold chains, retail connections, certification for safe or organic products, aggregation, and consumer education.

## Recommendations for Implementation

Based on the research and difficulties, the following concrete suggestions are offered:

- **Assess Local Resources:** Determine the high-demand horticulture crops in the area, map the available peri-urban/fall land, water supplies, and pollution sources, and evaluate the soil quality.
- **Pilot Projects:** To demonstrate viability and inform stakeholders, start with demonstration farms (vertical, hydroponic, roof, garden) in urban and peri-urban regions.
- **Strengthen Governance and Regulations:** Create criteria for urban horticulture like soil safety, pesticide use, water reuse and include them in city master plans.
- **Financial Support & Incentives:** Tax incentives for rooftop or indoor farming, low-interest loans, grants, and subsidies for infrastructures like greenhouses, hydroponic systems, lighting, etc.
- **Market Linkages and Consumer Awareness:** Increase consumer trust by connecting growers to regional markets, retail chains, safe and organic certifications, and the advantages of locally grown produce.
- **Resource Management:** Promote water collection, effective irrigation, nutrient solution recycling, and, whenever feasible, the use of renewable energy.
- **Monitoring and Research:** Monitor yields and environmental effects on a regular basis, investigate locally suited technology, and examine cost-benefit in various circumstances.

## Conclusion

Urban and peri-urban horticulture is an essential part of creating resilient, sustainable cities and food systems, not just a speciality or fringe activity. Food and nutrition security, income creation, environmental health, social inclusion, and increased resilience to market and climate shocks are just a few of the co-benefits that UPH can provide when properly planned and funded. However, achieving these advantages necessitates overcoming actual limitations, such as pressure on land and resources, risk of pollution, expense, knowledge gaps, and governmental barriers. If integrated into urban planning and backed by suitable technology, regulations, funding, and community involvement, UPH can play a revolutionary role for many cities, particularly in India, where urbanisation is happening at a rapid pace.