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Urban Horticulture: Cultivating Green Cities in India

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ABSTRACT

Urban horticulture is emerging as a transformative practice in India's urban landscapes, addressing food security, sustainability, and community well-being. By cultivating fruits, vegetables, and ornamental plants within city boundaries, this movement offers innovative solutions for healthier and greener urban environments. This movement is not just about growing plants; it's about sowing seeds of change for a healthier, greener, and more resilient urban future.

Globally and historically, urban gardening has evolved from ancient practices like the Hanging Gardens of Babylon to modern techniques such as hydroponics and vertical farming. In India, the tradition traces back to the Indus Valley Civilization and has been enriched through the Mughal and colonial eras, blending cultural, ecological, and architectural influences. The resurgence of urban horticulture addresses pressing challenges like nutritional deficiencies, environmental degradation, and climate change. Urban gardens provide access to fresh produce, mitigate the urban heat island effect, and reduce air pollution. Additionally, sustainable practices like rainwater harvesting and composting conserve resources, while biodiversity parks and green spaces foster ecological balance and community engagement. Urban horticulture also drives social and economic transformation by creating employment opportunities, promoting community building, and enhancing mental well-being. By aligning with the United Nations' Sustainable Development Goals (SDGs), it supports zero hunger, good health, quality education, and climate action, among other objectives. However, challenges like the environmental impact of infrastructure must be addressed to maximize its benefits.

As Indian cities face rapid urbanization, integrating urban horticulture into urban planning and policy frameworks presents an opportunity to build resilient, sustainable, and inclusive habitats. Investments in research, public awareness, and collaboration among stakeholders are essential to scale this movement and secure a greener future.

Keywords: Urban Horticulture, nutrition, Sustainable Development Goals, green cities, climate

INTRODUCTION

Urban horticulture contributes to urban nutrition security and provides multiple services to the urban ecosystem and can be an integral part of urban land use and planning strategies. Limited green spaces threaten biodiversity, essential for ecological balance, therefore, enhancing green spaces is crucial for maintaining sustainable urban ecosystems, improving air quality, and supporting growing urban populations.

Globally, the population is expected to reach around 9 billion by 2050, with approximately 70 per cent living in urban areas. Urbanization has surged in developing economies, particularly in Asia and Oceania, from 43.3 per cent in 2011 to 50.0 per cent in 2021. In India, the urban population has grown from 27.7 per cent to 36.4 per cent over the past 20 years and is projected to reach 52.8 per cent by 2050. This rapid urbanization has put significant pressure on urban healthcare and nutrition infrastructure.

Although urban areas face slightly fewer nutritional problems than rural areas, they still fall short of acceptable standards. According to NFHS-5, 27.3 per cent of children under five in urban areas are underweight, 30.1 per cent are stunted, and 18.5 per cent are wasted. Additionally, 13 per cent of urban men and women aged 15-49 have a low BMI (<18.5 kg/m²), while 33.2 per cent of women and 29.8 per cent of men are obese. Furthermore, 64.2 per cent of children aged 6-59 months, 53.8 per cent of women aged 15-49 years, and 20.4 per cent of men aged 15-49 years in urban areas are anaemic. Non-communicable diseases (NCDs) such as diabetes and hypertension are also more prevalent in urban populations.

Given these challenges, there is an urgent need to explore innovative agricultural practices, particularly urban horticulture, in India. Urban horticulture offers local food production, employment generation, and sustainable urban development, addressing the nutritional and health needs of the rapidly growing urban population.

Evolution of Urban Gardening: A Global and Indian Perspective

Urban gardening has a rich global history, with early examples like the Hanging Gardens of Babylon and the sacred gardens of ancient Greece emphasizing both aesthetics and well-being. In the Middle Ages, kitchen gardens flourished in monasteries, while the Industrial Revolution marked a shift towards using urban spaces for food production and stress relief. Urban agriculture gained prominence during wartime, addressing food security concerns, and in recent years, it has evolved with modern techniques like hydroponics and vertical farming. In India, urban agriculture dates back to the Indus Valley Civilization, featuring advanced irrigation and crop cultivation. Over time, gardening practices were enriched during the Mughal and colonial periods, introducing new crops, fertilizers, and public parks. Post-independence, India embraced diverse gardening styles, including Japanese and botanical gardens, while adopting sustainable practices to combat urban challenges.

India's evolution in gardening includes contributions from cultural, spiritual, and ecological aspects across historical eras. From the religious significance of trees in the Vedic and Buddhist periods to the architectural brilliance of Mughal gardens, each period left a unique imprint. Post-independence, urban gardens have become landmarks, such as Chandigarh's Rock Garden, New Delhi's Buddha Jayanti Park, and Kashmir's Tulip Garden. These spaces now integrate cultural heritage with

biodiversity conservation, reflecting India's growing emphasis on sustainable urban living. As urban gardening continues to grow, it plays a pivotal role in food security, environmental preservation, and enhancing urban lifestyles.

Food and Nutritional Security: A Growing Necessity

India's urban areas face mounting challenges in ensuring food security. With rapidly increasing population densities and limited access to fresh produce, urban horticulture emerges as a viable solution. By turning rooftops, balconies, and vacant lots into productive green spaces, urban residents gain access to fresh, organic fruits and vegetables. These initiatives not only reduce dependence on industrialized food systems but also ensure affordability and accessibility, especially for low-income communities. In many urban neighbourhoods, community gardens have become lifelines, providing fresh produce in areas otherwise labelled as "food deserts."

Urban horticulture also addresses nutritional deficiencies. By promoting local cultivation of diverse crops like leafy greens, root vegetables, and fruits, urban farming ensures diet diversification and improved public health outcomes.

Environmental Benefits: Greening the Concrete Jungle

The environmental dividends of urban horticulture are profound. Urban green spaces mitigate the "urban heat island" effect, reducing ambient temperatures in densely populated areas. Rooftop gardens and vertical farms enhance the urban microclimate, lowering energy consumption for cooling and improving air quality. For instance, studies in Chennai have revealed that densely vegetated areas experience 20-30 per cent lower particulate matter levels compared to less green zones, underscoring the role of plants in filtering pollutants and enhancing air quality.

These spaces also support biodiversity, creating habitats for pollinators like bees and butterflies, essential for both urban and rural agriculture. Biodiversity parks in cities like Delhi have documented over 300 bird species, highlighting the ecological value of urban green initiatives.

Resource Conservation: Sustainability at its Core

Urban horticulture exemplifies efficient resource utilization. Innovative irrigation methods like drip systems and rainwater harvesting conserve water, while composting kitchen and garden waste reduces landfill contributions and enhances soil fertility. By producing food locally, urban farming minimizes the energy costs associated with transportation, refrigeration, and storage, significantly reducing the carbon footprint of food systems.

Sustainable practices such as crop rotation, organic pest control, and the use of native plant species further enhance the ecological benefits. Thus, urban horticulture not only addresses immediate needs but also contributes to long-term sustainability.

Social and Economic Transformations

Beyond its environmental and nutritional advantages, urban horticulture fosters community building and economic opportunities. Shared gardening spaces bring people together, fostering social cohesion and a sense of ownership. In cities like Mumbai, urban farming initiatives have transformed underutilized spaces into thriving hubs of activity, generating income and creating jobs.

Urban horticulture also offers therapeutic benefits. Gardening has been shown to reduce stress, improve mental health, and provide recreational opportunities in otherwise crowded and hectic urban environments. For urban residents, especially children, these green spaces double as educational platforms, teaching valuable lessons in sustainability, nutrition, and environmental stewardship.

Urban Horticulture and Climate Action

As cities grapple with the impacts of climate change, urban horticulture offers a pathway to resilience. Plants in urban gardens act as carbon sinks, sequestering CO2 and offsetting emissions. Rooftop gardens reduce energy demands for cooling, while the local production of food minimizes "food miles," the distance food travels from farm to table. By encouraging sustainable practices, urban horticulture aligns with global climate goals and promotes a circular economy.

To maximize benefits, future initiatives must prioritize eco-friendly materials and energy-efficient practices, ensuring that urban horticulture remains a net positive for the environment.

Urban Horticulture: A Pillar for Sustainable Development Goals

Urban horticulture aligns seamlessly with the United Nations' Sustainable Development Goals (SDGs).

Table 1 Contribution of Urban Horticulture to the Sustainable Development Goals (SDGs)

SDGs		**Explanation**
Goal 2	Zero hunger	Availability of healthy food regardless of where they live or what they earn and reducing the potential impacts of future shocks that could impact food availability
Goal 3	Good health and well-being	Through the consumption of nutrient-rich fruit and vegetables and workers physically tending the farm
Goal 4	Quality education	Through employment in urban farms – education in agriculture and education for consumers to grow small-scale produce at home
Goal 8	Decent work and economic growth	Encouraging employment through workers for the farms and the multiplier effect on economic growth result from increasing employment
Goal 9	Industry innovation and infrastructure	Urban farms promote innovation through sustainable infrastructure that supports economic development and well-being
Goal 11	Sustainable cities and communities	Through Green Design and Ecovillages using urban farms and reduced carbon footprint. Make cities and human settlements inclusive, safe, resilient and sustainable (SDG Target 11.3)

Goal 12	Responsible consumption and production	Reducing ecological footprint by efficiently growing produce with minimal waste or pollutants
Goal 13	Climate change	Reducing consumption of imported food. Space efficient whilst minimizing damage to the environment and natural habitats

Source: *Adapted from Nicholls et.al, (2020), Manila Standard 2021.*

A Vision for Greener Cities

The potential of urban horticulture in India is immense. By integrating it into urban planning and policy, cities can transform into greener, more sustainable habitats. Initiatives like community gardens, rooftop farms, and biodiversity parks are more than just urban trends; they are blueprints for the future of urban living.

To harness its full potential, urban horticulture must be supported by investment in research, public awareness campaigns, and policy frameworks that encourage participation and innovation. Collaboration among urban planners, local governments, and communities will be key to scaling these efforts and ensuring their long-term success. As India urbanizes, the need for sustainable solutions becomes increasingly urgent. Urban horticulture offers a path forward, turning concrete jungles into thriving ecosystems. By nurturing this movement, we can create cities that are not only liveable but also resilient, ensuring a healthier and greener future for all.

REFERENCES

1. Bhat, Chaitra and Paschapur Amit (2020). Urban Agriculture: The Saviour of Rapid Urbanization. Indian Farmer 7(01):01-09.
2. Deka Prerna and Choudhury Nibir Pratim (2024). "Growing Sustainably: Navigating Challenges and Opportunities in Urban Horticulture in India". *Asian Journal of Agricultural Extension, Economics & Sociology* 42 (3):85-91. https://doi.org/10.9734/ajaees/2024/v42i32380. Volume 42, Issue 3, Page 85-91. DOI: 10.9734/AJAEES/2024/v42i32380.
3. Etukudo, O,O and Olajide Kolawole (2022). Urban Horticulture as a Food Security Strategy: A Review, Int'l Journal of Agric. and Rural Dev. https://www.researchgate.net/publication/366739357
4. E. Nicholls, A. Ely, L. Birkin, P. Basu, D. Goulson (2020). The contribution of small-scale food production in urban areas to the sustainable development goals: a review and case study.
5. FAO, Rikolto and RUAF (2022). Urban and peri-urban agriculture sourcebook – From production to food systems. Rome, FAO and Rikolto. https://doi.org/10.4060/cb9722en
6. Filippini, R., Lardon, S., Bonari, E. & Marraccin, E. (2018). Unravelling the contribution of peri urban farming systems to urban food security in developed countries. Agronomy for Sustainable Development, 38: 21. https://doi.org/10.1007/s13593-018-0499-1

7. Singh HP, Sumangla HP, Chowdappa S and Singh Babita (2013). Proceedings of National Workshop on Urban and Peri urban Horticulture. Confederation of Horticulture Associations of India.
8. Pal Krishan, Khanna Richa and Saini Abhay (2022), Urban Horticulture an Overview, Research Gate, Pp: 411-416. https://www.researchgate.net/publication/363055987
9. Manila Standard (2021). Veggies for 36,000 poor families. Manila Standard. https://manilastandard.net/lgu/ncr/349647/veggies-for-36-000-poor-families.html
10. National Family Health Survey (NFHS-5), 2019-21. Ministry of Health and Family Welfare, Govt. of India.
11. Urban and Peri-urban Agriculture (2013).National Academy of Agricultural Sciences, New Delhi. Policy Paper 67.