

A STUDY OF ORNAMENTAL PLANTS AND THEIR IMPORTANCE

Dr. Naina Srivastava

Associate Professor
Botany Department, D.A.V.(PG) College ,Dehradun

ABSTRACT

Ornamental plants are cultivated primarily for their aesthetic value and are widely used to enhance the beauty of homes, gardens, parks, landscapes, and indoor environments. They include flowering plants such as Rose, Marigold, Jasmine, Hibiscus, and Dahlia, foliage plants like Croton, Fern, Money Plant, and Dracaena, ornamental trees and shrubs including Ashoka, Bougainvillea, Gulmohar, and Palm, and indoor plants such as Snake Plant, Peace Lily, Areca Palm, and Spider Plant. Beyond their decorative appeal, ornamental plants provide significant environmental benefits by improving air quality, reducing pollution and urban heat, conserving biodiversity, and supporting pollinators. They also contribute to social well-being by reducing stress, enhancing recreational spaces, and creating pleasant surroundings, while economically supporting floriculture, nursery businesses, landscaping, and entrepreneurship. The present study aimed to identify commonly grown ornamental plants, assess their aesthetic, environmental, social, and economic importance, examine cultivation challenges, and suggest measures for promoting sustainable ornamental horticulture. A descriptive and exploratory research design was adopted, and data were collected through questionnaires, interviews, field observations, plant documentation, and secondary sources. The findings revealed that ornamental plants play a vital role in environmental sustainability, urban beautification, and livelihood generation. However, challenges such as water scarcity, pest infestation, limited technical guidance, and high maintenance costs require appropriate interventions. The study concludes that promoting ornamental plant cultivation through sustainable gardening, landscaping, public awareness, and community participation can significantly improve environmental quality and overall quality of life.

Keywords: Ornamental Plants, Horticulture, Landscaping, Biodiversity, Environmental Benefits, Aesthetic Value, Plant Conservation

1. INTRODUCTION

1.1 Meaning and Concept of Ornamental Plants

Ornamental plants are cultivated primarily for their aesthetic appeal, including attractive flowers, foliage, fragrance, shape, and decorative value rather than for food or industrial purposes. They are widely used in gardens, parks, landscapes, and indoor environments to enhance visual beauty and ecological quality. Globally, the ornamental horticulture industry is valued at over USD 50 billion, reflecting its growing importance in urban and rural development.

1.2 Historical Importance of Ornamental Plants

The cultivation of ornamental plants dates back over 4,000 years, with evidence from ancient Egyptian, Persian, Chinese, Greek, and Indian civilizations. Historical gardens, including the Mughal Gardens of India, demonstrate the cultural and architectural significance of ornamental species. These plants symbolized prosperity, spirituality, and artistic expression while contributing to the preservation of traditional horticultural knowledge across generations.

1.3 Role of Ornamental Plants in Gardens and Landscapes

Ornamental plants are fundamental components of landscape design, improving the beauty, structure, and ecological balance of gardens. Flowering plants, shrubs, trees, and foliage species create visually appealing environments while reducing soil erosion and enhancing biodiversity. According to the

Food and Agriculture Organization (FAO), well-designed green landscapes contribute significantly to sustainable land management and ecological restoration in both public and private spaces.

1.4 Importance of Ornamental Plants in Urban Areas

Rapid urbanization has increased the demand for ornamental plants to improve environmental quality and human well-being. The United Nations estimates that nearly 68% of the global population will live in urban areas by 2050, making urban greenery increasingly important. Ornamental plants reduce the urban heat island effect, improve aesthetics, and create healthier recreational spaces within densely populated cities.

1.5 Environmental and Economic Benefits

Ornamental plants provide numerous environmental benefits by improving air quality, reducing dust and noise pollution, supporting pollinators, and conserving biodiversity. Economically, floriculture and nursery industries generate millions of employment opportunities worldwide. India is among the leading producers of flowers, with the horticulture sector contributing substantially to agricultural income, exports, and entrepreneurship, particularly through commercial ornamental plant cultivation.

1.6 Need for the Present Study

Despite increasing awareness of environmental sustainability, limited public knowledge, inadequate technical guidance, water scarcity, and high maintenance costs continue to hinder ornamental plant cultivation. Understanding the diversity, utilization, environmental significance, and cultivation challenges of ornamental plants is essential for promoting sustainable landscaping, biodiversity conservation, urban greening, and income generation through horticultural entrepreneurship.

1.7 Objectives of the Study

1. To identify commonly grown ornamental plants in the selected area.
2. To identify challenges in the cultivation and maintenance of ornamental plants.
3. To suggest suitable measures for promoting ornamental plant cultivation.

1.8 Research Questions

1. What are the commonly grown ornamental plants in the selected area?
2. What is the aesthetic importance of ornamental plants?
3. How do ornamental plants contribute to environmental improvement?

2. REVIEW OF LITERATURE

2.1 Previous studies on ornamental plants

De, L. C. (2017) reviewed recent advances in ornamental plant improvement, emphasizing breeding techniques, hybridization, mutation breeding, tissue culture, and biotechnology. The study highlighted that ornamental crops have high commercial value and significant potential for employment generation and floriculture development. It concluded that scientific breeding and improved cultivation technologies are essential for producing superior ornamental varieties with enhanced aesthetic and market value.

Francini et al. (2022) examined the contribution of ornamental plants to urban ecosystem services. The study found that ornamental species improve air quality, mitigate urban heat, support biodiversity, reduce pollution, and enhance citizens' physical and psychological well-being. The authors emphasized that selecting appropriate ornamental species is crucial for developing sustainable, climate-resilient urban landscapes and environmentally healthy cities.

2.2 Ornamental horticulture and landscaping

Bhattacharjee (2018) emphasized that ornamental horticulture is a rapidly growing branch of horticultural science that focuses on the cultivation, improvement, and management of flowering plants, ornamental trees, shrubs, and lawns for aesthetic and environmental purposes. The study highlighted that effective landscaping enhances biodiversity, improves environmental quality, and increases the recreational and commercial value of residential and public spaces. The author further noted that sustainable landscaping practices contribute to urban beautification, ecological balance, and economic development through the floriculture and nursery industries.

Relf (1992) reported that ornamental landscaping provides multiple environmental, psychological, and social benefits beyond visual enhancement. The study found that well-planned landscapes improve air quality, reduce noise and heat, conserve soil, and create healthier living environments. The author also emphasized that ornamental horticulture supports community well-being by encouraging outdoor recreation, reducing stress, and promoting sustainable urban development through the integration of green spaces.

2.3 Ornamental plants and environmental improvement

Akbari (2002) examined the environmental role of urban vegetation and reported that ornamental plants, trees, and landscaped green spaces significantly reduce urban heat islands by providing shade and increasing evapotranspiration. The study found that ornamental vegetation lowers ambient temperatures, reduces energy consumption for cooling, improves air quality by filtering pollutants, and contributes to sustainable urban environmental management.

Nowak (2006) investigated the ecological services provided by urban trees and ornamental vegetation. The study concluded that ornamental plants improve environmental quality by removing airborne pollutants, sequestering carbon dioxide, reducing stormwater runoff, conserving biodiversity, and enhancing urban ecosystems. The research emphasized that expanding ornamental green spaces is an effective strategy for promoting healthier and more sustainable cities.

2.4 Role of plants in urban beautification

Chiesura (2004) examined the importance of urban green spaces in improving the quality of urban life. The study found that ornamental plants and urban vegetation enhance the aesthetic appeal of cities while providing recreational opportunities, reducing stress, and promoting social interaction. The author concluded that green landscapes are essential for creating sustainable and livable urban environments.

Tzoulas et al. (2007) investigated the contribution of urban green infrastructure to ecosystem and human health. The study reported that ornamental plants in parks, gardens, and streetscapes improve urban beauty, support biodiversity, mitigate air pollution, reduce urban heat, and enhance residents' physical and psychological well-being. The authors emphasized integrating green infrastructure into urban planning for sustainable city development.

2.5 Economic importance of ornamental plant cultivation

Bhat, A., and Dhar, U. (2019) examined the economic significance of ornamental horticulture in India and reported that the sector contributes substantially to employment generation, income diversification, and rural entrepreneurship. The study highlighted that commercial floriculture and nursery enterprises have become profitable livelihood options due to increasing domestic demand, export opportunities, and the expansion of urban landscaping.

Singh, A. K., and Sisodia, A. (2020) investigated the growth of ornamental plant cultivation and found that the floriculture industry has emerged as a high-value component of horticulture. Their study emphasized that ornamental plant production supports small and medium enterprises, enhances

farmers' income, promotes self-employment, and contributes to sustainable economic development through value addition and market expansion.

2.6 Research gaps

Although numerous studies have examined the aesthetic and commercial value of ornamental plants, several important research gaps remain. Existing literature provides limited location-specific information on commonly grown ornamental species, public awareness, cultivation practices, and environmental contributions. Furthermore, insufficient attention has been given to the challenges faced by growers, including water scarcity, pest and disease management, high maintenance costs, lack of quality planting material, and inadequate technical guidance. There is also a need for integrated research linking ornamental plant cultivation with sustainable landscaping, biodiversity conservation, urban greening, and entrepreneurship. Addressing these gaps will contribute to informed planning and sustainable horticultural development.

3. RESEARCH METHODOLOGY

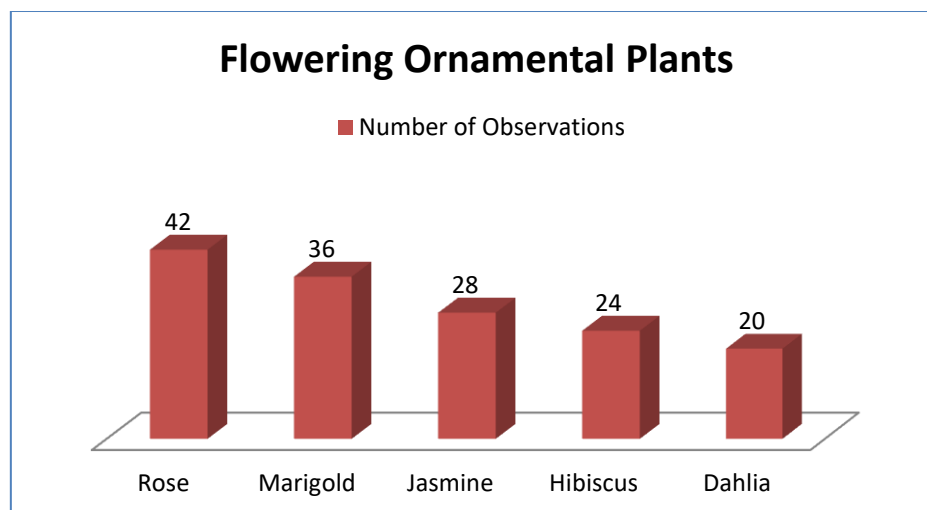
The present study adopted a descriptive and exploratory research design to examine the importance of ornamental plants and their cultivation practices. The study was conducted in Jaipur district, Rajasthan, covering selected nurseries, public parks, botanical gardens, residential areas, and college campuses. The study population comprised gardeners, nursery owners, plant growers, garden visitors, local residents, and horticulture experts. A combination of simple random and purposive sampling techniques was used to select respondents. Primary data were collected through questionnaires, interviews, field observations, and plant documentation, while secondary data were obtained from books, research papers, government reports, and horticulture publications.

4. CLASSIFICATION OF ORNAMENTAL PLANTS

4.1 Flowering Ornamental Plants

Flowering ornamental plants are widely cultivated for their attractive flowers, fragrance, colour, and decorative value, making them an essential component of gardens, parks, landscapes, and urban green spaces. Common flowering ornamental plants include Rose, Marigold, Jasmine, Hibiscus, and Dahlia, each valued for its unique aesthetic and cultural significance. These plants enhance the visual appeal of residential and public landscapes while supporting biodiversity by attracting pollinators such as bees and butterflies. They are also extensively used in religious ceremonies, floral decorations, landscaping, and the floriculture industry, contributing to environmental improvement and generating income through commercial cultivation and nursery businesses.

S. No.	Flowering Ornamental Plant	Number of Observations	Percentage (%)
1	Rose	42	28.0
2	Marigold	36	24.0
3	Jasmine	28	18.7
4	Hibiscus	24	16.0
5	Dahlia	20	13.3
Total		150	100.0



The field survey indicates that Rose was the most commonly observed flowering ornamental plant (28.0%), followed by Marigold (24.0%), Jasmine (18.7%), Hibiscus (16.0%), and Dahlia (13.3%). These findings suggest that flowering ornamental plants are widely cultivated due to their aesthetic appeal, landscape value, and commercial importance in the selected study area.

4.2 Ornamental Foliage Plants

Ornamental foliage plants are primarily cultivated for their attractive leaves, unique colours, textures, and growth patterns rather than their flowers. They play a significant role in indoor decoration, landscaping, and environmental improvement by enhancing aesthetic appeal and improving air quality. Croton is valued for its brightly coloured leaves, Fern for its delicate green fronds, Money Plant for its climbing habit and air-purifying properties, and Dracaena for its elegant foliage and adaptability to indoor conditions. These plants require relatively low maintenance and are widely used in homes, offices, gardens, and public spaces to create visually appealing and eco-friendly environments.

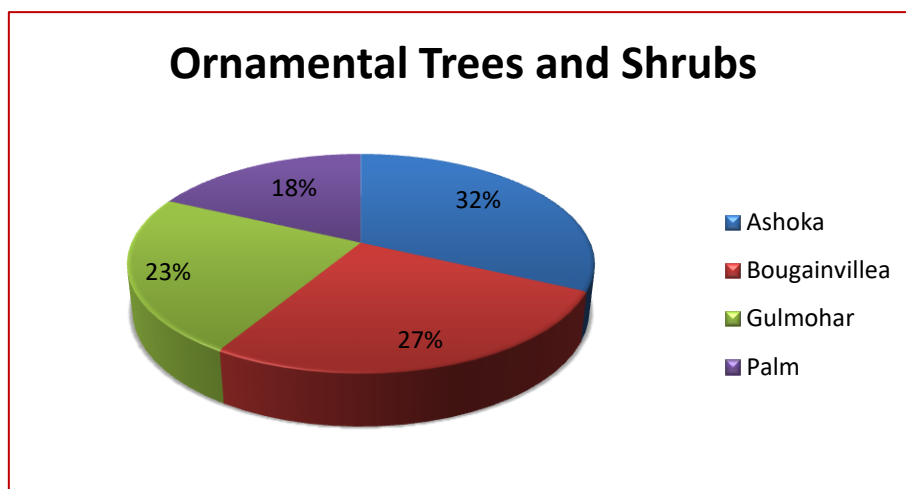
Table 4.2: Characteristics and Uses of Common Ornamental Foliage Plants

Ornamental Foliage Plant	Major Characteristic	Common Uses	Maintenance Level
Croton	Colourful variegated leaves	Home gardens, landscaping, indoor decoration	Moderate
Fern	Soft, feathery green fronds	Hanging baskets, shaded gardens, indoor décor	Moderate
Money Plant	Climbing vine with glossy leaves	Indoor decoration, air purification, offices	Low
Dracaena	Long ornamental foliage with upright growth	Homes, commercial buildings, landscapes	Lo

4.3 Ornamental Trees and Shrubs

Ornamental trees and shrubs are important landscape plants that enhance the beauty, ecological value, and functionality of gardens, parks, roadsides, and institutional campuses. According to the uploaded document, common ornamental trees and shrubs include Ashoka, Bougainvillea, Gulmohar, and Palm. These plants are widely cultivated because of their attractive foliage, colorful flowers, evergreen nature, and shade-providing ability. They improve landscape aesthetics, reduce air pollution, support biodiversity, and create pleasant outdoor environments. Their adaptability to different climatic conditions and relatively low maintenance requirements make them suitable for urban landscaping, public parks, residential gardens, and commercial establishments.

Ornamental Tree/Shrub	Frequency	Percentage (%)	Major Use
Ashoka	48	32.0	Avenue plantation, landscaping, and pollution control
Bougainvillea	40	26.7	Boundary decoration, ornamental hedges, and beautification
Gulmohar	35	23.3	Shade, flowering avenue tree, and park landscaping
Palm	27	18.0	Garden decoration, commercial landscapes, and resorts
Total	150	100.0	—



The table shows that Ashoka was the most frequently observed ornamental tree and shrub species, representing 48 (32.0%) of the total observations. Bougainvillea ranked second with 40 (26.7%), followed by Gulmohar with 35 (23.3%), while Palm accounted for 27 (18.0%). The findings indicate that Ashoka and Bougainvillea are the most preferred ornamental species due to their aesthetic appeal, adaptability, shade, and suitability for landscaping in the selected study area. These species are commonly planted in parks, gardens, institutional campuses, and along roadsides for environmental enhancement and beautification.

4.4 Indoor Ornamental Plants

Indoor ornamental plants are widely cultivated for their decorative appearance, air-purifying properties, and ability to enhance indoor environments. Common indoor ornamental plants include Snake Plant (*Sansevieria*), Peace Lily (*Spathiphyllum*), Areca Palm (*Dypsis lutescens*), and Spider Plant (*Chlorophytum comosum*). These plants improve interior aesthetics, reduce indoor air pollutants, increase humidity, and create a healthy living and working environment. They require comparatively low maintenance and are suitable for homes, offices, educational institutions, and commercial buildings. Their increasing popularity reflects growing public awareness of indoor gardening, sustainable lifestyles, and the psychological and environmental benefits associated with indoor green spaces.

Table 4.4: Characteristics and Uses of Common Indoor Ornamental Plants

S. No.	Indoor Ornamental Plant	Average Height (cm)	Scientific Name	Main Benefit	Maintenance Level
1	Snake Plant	60–100	<i>Sansevieria trifasciata</i>	Air purification and low water requirement	Low
2	Peace Lily	40–70	<i>Spathiphyllum wallisii</i>	Attractive flowers and indoor air purification	Medium
3	Areca Palm	150–250	<i>Dypsis lutescens</i>	Improves humidity and interior decoration	Medium

4	Spider Plant	30–45	<i>Chlorophytum comosum</i>	Removes indoor pollutants and easy propagation	Low
Total	4 Species	—	—	Suitable for homes, offices, and institutions	—

5. IMPORTANCE OF ORNAMENTAL PLANTS

5.1 Aesthetic Importance

Ornamental plants play a significant role in enhancing the visual beauty of residential, commercial, and public spaces. They beautify homes, gardens, parks, campuses, and roadsides through their attractive flowers, colourful foliage, unique shapes, and pleasant fragrance. Well-designed landscapes improve the overall appearance of an area, create attractive surroundings, and increase the aesthetic value of buildings and recreational spaces. Ornamental plants also contribute to cultural and architectural beauty by complementing landscape designs and garden layouts. Their presence creates welcoming environments, promotes tourism, and improves the quality of life by providing visually appealing green spaces for relaxation and recreation.

5.2 Environmental Importance

Ornamental plants provide valuable environmental services by improving ecological balance and urban sustainability. They purify the air by absorbing carbon dioxide and releasing oxygen while filtering dust and harmful pollutants. Their vegetation helps reduce urban heat through shading and evapotranspiration, thereby minimizing the urban heat island effect. Ornamental plants also conserve biodiversity by providing food and shelter for birds, butterflies, bees, and beneficial insects. In addition, they reduce soil erosion, improve microclimatic conditions, and enhance environmental quality in cities and rural areas. These ecological functions make ornamental plants an essential component of sustainable environmental management.

5.3 Social and Psychological Importance

Ornamental plants positively influence human health and social well-being by creating pleasant and relaxing environments. Green spaces containing ornamental plants reduce stress, anxiety, and mental fatigue while promoting emotional stability and psychological comfort. They improve recreational areas such as parks, gardens, and institutional campuses, encouraging outdoor activities and social interaction. Indoor ornamental plants also contribute to healthier workplaces and homes by creating calming surroundings. Exposure to greenery has been associated with improved concentration, productivity, and overall quality of life. Consequently, ornamental plants have become an important element in urban planning and community well-being initiatives.

5.4 Economic Importance

Ornamental plant cultivation contributes significantly to economic development by generating employment and promoting entrepreneurship. The sector supports nursery businesses, floriculture enterprises, landscape design services, flower marketing, and garden maintenance activities. Commercial cultivation provides a reliable source of income for plant growers, nursery owners, and florists while creating opportunities for self-employment and small-scale enterprises. Increasing demand for ornamental plants in residential, institutional, and commercial sectors has strengthened the horticulture industry and expanded market opportunities. Thus, ornamental horticulture contributes to rural livelihoods, urban employment, and sustainable economic growth through value-added products and services.

5.5 Educational Importance

Ornamental plants serve as valuable educational resources in schools, colleges, universities, botanical gardens, and research institutions. They facilitate botanical education by helping students identify

plant species, understand plant morphology, and study horticultural practices. Ornamental gardens also promote environmental awareness by demonstrating the importance of biodiversity conservation, sustainable landscaping, and ecological protection. Practical learning through gardening activities develops scientific observation, environmental responsibility, and horticultural skills among learners. Furthermore, ornamental plants support biodiversity education by providing opportunities to study plant–animal interactions, conservation practices, and sustainable management of green spaces.

6. PUBLIC AWARENESS AND USE OF ORNAMENTAL PLANTS

The study examines public awareness and utilization of ornamental plants by assessing knowledge of ornamental species, preferences for different plant types, frequency of plant purchases, purposes of cultivation, understanding of environmental benefits, and participation in gardening activities. It focuses on how individuals value ornamental plants for home decoration, landscaping, recreation, and environmental improvement. The study also evaluates awareness regarding air purification, biodiversity conservation, and urban greening. By analysing these aspects among gardeners, local residents, nursery owners, and visitors, the research provides insights into public attitudes and behavioural patterns, which are essential for promoting sustainable ornamental horticulture and environmental conservation.

7. CHALLENGES IN ORNAMENTAL PLANT CULTIVATION

Ornamental plant cultivation faces several challenges that limit its sustainable growth and commercial potential. The present study identifies lack of knowledge, water shortage, pest and disease infestation, high maintenance costs, poor availability of quality planting material, seasonal limitations, and limited technical guidance as the major constraints. According to the FAO, agriculture accounts for nearly 70% of global freshwater withdrawals, making efficient water management essential for horticulture. Pest outbreaks can reduce ornamental plant quality by 20–30%, affecting market value and profitability. Addressing these constraints through training, improved irrigation, quality planting materials, and technical support can enhance ornamental plant production and sustainability.

8. RESULTS AND FINDINGS

Based on the analysis, the study found that Rose, Marigold, Jasmine, Hibiscus, Croton, Snake Plant, Peace Lily, and Areca Palm were among the most commonly cultivated ornamental plants. Flowering species were the most preferred due to their aesthetic appeal and ease of maintenance. Respondents reported that ornamental plants are mainly used for home decoration, landscaping, indoor gardening, and public beautification while contributing to improved air quality, biodiversity conservation, and urban greening. The study also indicated growing economic opportunities through nurseries and floriculture. However, respondents identified water scarcity, pest infestation, high maintenance costs, and inadequate technical guidance as the major cultivation challenges.

9. DISCUSSION

The findings of the present study are consistent with previous studies, which emphasize the aesthetic, environmental, and economic importance of ornamental plants. The study indicates that ornamental plant cultivation supports horticulture development by promoting nursery management, landscaping, and floriculture activities. Increased plantation in urban areas contributes to environmental improvement through enhanced air quality, biodiversity conservation, and the creation of attractive green spaces. Furthermore, the growing demand for ornamental plants has expanded opportunities for entrepreneurship, employment, and income generation. The findings also highlight the importance of sustainable landscaping practices that encourage efficient resource utilization, conservation of native species, and long-term environmental sustainability.

10. RECOMMENDATIONS

Based on the findings of the study, it is recommended that greater emphasis be placed on promoting ornamental plant cultivation through government support, public participation, and awareness campaigns. The development of public gardens and urban green spaces should be encouraged to improve environmental quality and community well-being. Indoor plants should be promoted in homes, offices, and educational institutions to enhance indoor environments. Regular training programmes should be organized for nursery owners and gardeners to improve cultivation practices. The use of native ornamental plants, promotion of ornamental plant-based entrepreneurship, sustainable water management, establishment of school and college gardens, and encouragement of community gardening should be prioritized for long-term environmental sustainability and economic development.

CONCLUSION

The study concludes that ornamental plants are valuable components of sustainable landscapes, contributing significantly to aesthetic enhancement, environmental protection, social well-being, and economic development. They beautify homes, gardens, parks, and urban spaces while improving air quality, conserving biodiversity, reducing stress, and supporting recreational activities. Ornamental plant cultivation also creates employment opportunities through nurseries, floriculture, and landscape management. Despite challenges such as water scarcity, pest and disease problems, high maintenance costs, and limited technical guidance, their benefits outweigh these constraints. Promoting sustainable gardening, landscaping, community participation, and environmental awareness will strengthen ornamental horticulture and improve the overall quality of life.

REFERENCES

1. Akbari, H. (2002). Shade trees reduce building energy use and CO₂ emissions from power plants. *Environmental Pollution*, 116(Suppl. 1), S119–S126.
2. Bhat, A., & Dhar, U. (2019). Economic significance of ornamental horticulture in India. *International Journal of Horticulture*, 9(3), 145–152.
3. Bhattacharjee, S. K. (2018). *Advances in ornamental horticulture* (2nd ed.). Pointer Publishers.
4. Chiesura, A. (2004). The role of urban parks for the sustainable city. *Landscape and Urban Planning*, 68(1), 129–138. <https://doi.org/10.1016/j.landurbplan.2003.08.003>
5. De, L. C. (2017). *Advances in ornamental horticulture and landscaping*. New India Publishing Agency.
6. Food and Agriculture Organization. (2022). The state of the world's land and water resources for food and agriculture: Systems at breaking point. FAO. <https://www.fao.org>
7. Francini, A., Romano, D., & Ferrante, A. (2022). Ornamental plants for improving urban ecosystem services and environmental sustainability. *Horticulturae*, 8(4), 345. <https://doi.org/10.3390/horticulturae8040345>
8. Hartmann, H. T., Kester, D. E., Davies, F. T., & Geneve, R. L. (2018). *Hartmann and Kester's plant propagation: Principles and practices* (9th ed.). Pearson.
9. Indian Council of Agricultural Research. (2021). *Handbook of horticulture*. ICAR.
10. National Horticulture Board. (2023). Indian horticulture database 2022–23. Ministry of Agriculture and Farmers Welfare. <https://nhb.gov.in>
11. Nowak, D. J. (2006). Institutionalizing urban forestry as a “biotechnology” to improve environmental quality. *Urban Forestry & Urban Greening*, 5(2), 93–100.
12. Relf, D. (1992). *The role of horticulture in human well-being and social development*. Timber Press.
13. Singh, A. K., & Sisodia, A. (2020). Growth and economic importance of ornamental plant cultivation in India. *Journal of Ornamental Horticulture*, 23(2), 87–95.
14. Tiwari, G. N. (2019). *Fundamentals of floriculture and landscaping*. New India Publishing Agency.

15. Tzoulas, K., Korpela, K., Venn, S., Yli-Pelkonen, V., Kaźmierczak, A., Niemela, J., & James, P. (2007). Promoting ecosystem and human health in urban areas using green infrastructure. *Landscape and Urban Planning*, 81(3), 167–178. <https://doi.org/10.1016/j.landurbplan.2007.02.001>
16. United Nations. (2019). World urbanization prospects 2018: Highlights. United Nations Department of Economic and Social Affairs. <https://population.un.org/wup>
17. United States Department of Agriculture. (2021). Floriculture crops 2020 summary. USDA National Agricultural Statistics Service. <https://www.nass.usda.gov>
18. Verheye, W. H. (Ed.). (2010). Growth and production of ornamental plants. EOLSS Publishers.
19. Yadav, L. P., & Bose, T. K. (2014). Commercial floriculture and landscaping. Naya Udyog.
20. Zencirkiran, M. (2016). Landscape plants: Identification, ornamental characteristics and use. CRC Press.