



Ornamental Plant Diversity and Sustainable Landscape Utilization in the Marathwada Region of Maharashtra, India

Rathod VS*, Shukla SY and Patil TV 

Department of Botany, Deogiri College, Chhatrapati Sambhaji Nagar, Maharashtra, India

*Corresponding author Email: vijayarathodrane@gmail.com

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ABSTRACT

Ornamental plants are an integral component of urban and rural landscapes, contributing to aesthetic value, environmental sustainability, and biodiversity conservation. The Marathwada region of Maharashtra is characterized by semi-arid climatic conditions, recurrent droughts, and limited water resources, making sustainable landscaping a major challenge. The present study aimed to document the diversity of ornamental plants and evaluate their potential for sustainable landscape utilization in the Marathwada region. Field surveys were conducted in public parks, institutional campuses, private gardens, nurseries, and roadside plantations across eight districts of Marathwada. A total of 125 ornamental plant species belonging to 58 families were recorded. Asteraceae, Fabaceae, Apocynaceae, Euphorbiaceae, and Lamiaceae were the dominant families. Ornamental plants were categorized into trees (32 species), shrubs (41 species), herbs (36 species), and climbers (16 species). Several drought-tolerant and native ornamental species such as *Bougainvillea glabra*, *Nerium oleander*, *Adenium obesum*, and *Portulaca grandiflora* were identified as suitable for sustainable landscaping. The study highlights the importance of native ornamental plant species in reducing irrigation demand, enhancing ecosystem services, and promoting sustainable urban and rural landscapes in semi-arid regions.

Keywords: Ornamental plants, Biodiversity, Sustainable landscaping, Marathwada, Semi-arid region,

INTRODUCTION

Ornamental plants are cultivated primarily for their aesthetic characteristics such as flowers, foliage, fragrance, and plant architecture. They play a significant role in landscape design, urban greening, and ecological restoration. In recent years, sustainable landscaping has gained global importance due to increasing urbanization, climate change, and water scarcity. The Marathwada region of Maharashtra is known for its harsh climatic conditions, low and erratic rainfall, high temperature, and frequent droughts. Despite these constraints, the region supports a wide diversity of ornamental plants grown in gardens, parks, educational institutions, and roadside plantations. Ornamental horticulture contributes to environment-tal improvement by reducing air pollution, enhancing microclimatic conditions, supporting pollinators, and

improving human well-being. Sustainable landscape utilization involves the selection of drought-tolerant, native, and low-maintenance ornamental plants that minimize water consumption and maintenance costs while maximizing ecological benefits. Documentation of ornamental plant diversity is essential for landscape planning, biodiversity conservation, and sustainable development strategies.

The present study aims to (i) document ornamental plant diversity in the Marathwada region, (ii) analyze their growth habits and family-wise distribution, and (iii) evaluate their potential for sustainable landscape utilization in semi-arid conditions.

MATERIAL AND METHODS

Study Area

The study was conducted in the Marathwada region of Maharashtra, India, which comprises eight districts: Chhatrapati Sambhajnagar (Aurangabad), Jalna, Beed, Dharashiv (Osmanabad), Latur, Nanded, Parbhani, and Hingoli. The region lies between 17°35' to 20°40' N latitude and 75°10' to 78°15' E longitude. The climate is semi-arid tropical with an average annual rainfall of 600–800 mm and temperature ranging from 10°C to 45°C.

Field Survey and Plant Collection

Field surveys were carried out during 2023–2025 in public parks, gardens, institutional campuses, nurseries, and roadside plantations. Ornamental plants were recorded through direct observation. Specimens were photographed and identified using standard floras such as *Flora of Maharashtra State* and other botanical literature.

Classification and Documentation

The recorded ornamental plants were classified based on growth habit into trees, shrubs, herbs, and climbers. Family-wise distribution, flowering period, and landscape utility (hedges, lawns, avenues, vertical gardens, and pots) were documented.

Assessment of Sustainable Landscape Potential

Sustainable landscape potential was assessed based on criteria such as drought tolerance, native status, irrigation requirement, maintenance level, and ecological benefits such as pollinator attraction and soil stabilization.

RESULT AND DISCUSSION

3.1 Diversity of Ornamental Plants

A total of 125 ornamental plant species belonging to 58 families were recorded from the Marathwada region. The dominant families were Asteraceae (12 species), Fabaceae (10 species), Apocynaceae (9 species), Euphorbiaceae (8 species), and Lamiaceae (7 species). The high representation of these families indicates their adaptability to semi-arid climatic conditions.

3.2 Growth Habit Distribution

The ornamental plants were categorized into four major growth forms:

Growth Habit	Number of Species	Percentage (%)
Trees	32	25.6
Shrubs	41	32.8
Herbs	36	28.8
Climbers	16	12.8

Shrubs and herbs dominated the ornamental flora, reflecting their widespread use in gardens and landscape designs.

3.3 Common Ornamental Plant Species

Prominent ornamental trees included *Delonix regia*, *Cassia fistula*, *Polyalthia longifolia*, *Azadirachta indica*, and *Jacaranda mimosifolia*. Shrubs such as *Hibiscus rosa-sinensis*, *Ixora coccinea*, *Nerium oleander*, and *Gardenia jasminoides* were widely cultivated. Herbaceous ornamentals included *Tagetes erecta*, *Petunia hybrida*, *Chrysanthemum indicum*, and *Portulaca grandiflora*. Climbers such as *Bougainvillea glabra*, *Quisqualis indica*, and *Clitoria ternatea* were commonly used for fences and pergolas.

3.4 Sustainable Landscape Utilization

Several ornamental species exhibited high drought tolerance and low maintenance requirements, making them suitable for sustainable landscaping in Marathwada. *Bougainvillea glabra*, *Nerium oleander*, *Adenium obesum*, *Portulaca grandiflora*, and *Euphorbia milii* were identified as ideal species for xeriscaping. Native ornamental species contribute to biodiversity conservation and support local pollinators such as bees and butterflies.



A. *Delonix regia* (Gulmohar) B. *Cassia fistula* (Amaltas) C. *Azadirachta indica* (Neem)
D. *Polyalthia longifolia* (Ashoka) E. *Bauhinia variegata* (Kachnar) F. *Hibiscus rosa-sinensis* (China rose)
G. *Bougainvillea spectabilis* (Kagadi ful) H. *Nerium oleander* (Rosebay) I. *Ixora coccinea* (Jungle-geranium)
J. *Duranta erecta* (Pigeon berry) K. *Quisqualis indica* (Maadhumaleti) L. *Allamanda cathartica*
M. *Clitoria ternatea* N. *Petunia* spp. O. *Tagetes* spp.

The integration of ornamental plants in urban landscapes helps in reducing urban heat island effects, improving air quality, and enhancing aesthetic and recreational value. Sustainable landscaping practices such as mulching, drip irrigation, and selection of native species can significantly reduce water consumption in semi-arid regions.

CONCLUSION

The present study documents significant ornamental plant diversity in the Marathwada region of Maharashtra. The dominance of shrubs and herbs indicates their importance in landscape design. Sustainable landscaping in semi-arid regions can be achieved by promoting drought-tolerant and native ornamental plant species. The study provides baseline data for urban planners, horticulturists, and policymakers for sustainable landscape development and biodiversity conservation in the Marathwada region.

Conflict of interest

The authors declare no competing interests.

Data Availability Statement: Not applicable.

Correspondence and requests for materials should be addressed to **Rathod V.S.**

Author ORCID

[Tanmaykumar Vijayrao Patil \(0009-0006-9881-4986\)](https://orcid.org/0009-0006-9881-4986)

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