Collegiate Research Journals

OPEN ACCESS

Journal of Humanities and Advancements
Vol 5(3) pp. 001-007 May, 2025.
https://collegiatejournals.us/ijha
Copyright © 2025 Collegiate Research Journals

Full Length Manuscript

Forestry and Horticulture in Mauritius: Integrating Native Forest Restoration, Sustainable Tree Management, and Climate-Resilient Horticulture

Samuel Kaleem

Accepted 15th April 2025

Abstract

Mauritius is a small island state whose forestry and horticulture sectors are closely connected to biodiversity conservation, water and soil protection, food production, landscape quality, tourism, and climate resilience. Forest cover is reported at about 47,159 ha, approximately 25% of the country's land area, but good-quality native forest represents only about 2% of land area (Forestry Service, 2026). The contrast between relatively substantial total forest cover and the limited extent of high-quality native forest illustrates a central management challenge: forest quantity alone does not adequately describe ecological condition. Mauritius also contains exceptionally high plant endemism, while invasive alien species, habitat fragmentation, land-use pressure, cyclones, drought, pests, and climate change continue to affect terrestrial ecosystems (Republic of Mauritius, 2026). This review synthesizes available government and international evidence to examine how forestry and horticulture can be treated as complementary components of a resilient island landscape. It discusses forest resources and ecosystem services; native-forest restoration; invasive-species management; nursery production and propagation of indigenous and endemic plants; horticultural diversification; agroforestry and urban greening; climate-resilient production; and institutional priorities. The paper argues that the strongest opportunities lie not simply in increasing tree numbers, but in improving ecological quality, genetic diversity, site suitability, nursery quality, biosecurity, water efficiency, and connectivity between forests, farms, gardens, and urban spaces. A practical framework is proposed for integrating conservation-oriented forestry with productive horticulture while maintaining Mauritius's unique biological heritage.

Keywords: Mauritius; forestry; horticulture; native forest restoration; invasive alien species; agroforestry; endemic plants; climate resilience; nurseries; biodiversity

1. Introduction

Mauritius provides a particularly useful case for examining the relationship between forestry and horticulture in a small island environment. The country has limited land resources, a highly modified terrestrial landscape, a long history of agricultural development, and globally important endemic biodiversity. Government sources report approximately 47,159 ha of forest cover, or about 25% of the land area, but only around 2% of the land area is considered good-quality native forest (Forestry Service, 2026). This distinction is critical because planted forests, shrublands, degraded forest, and native forest do not provide identical ecological functions or biodiversity outcomes.

Forests in Mauritius provide soil and water conservation, carbon sequestration, biodiversity and genetic-resource conservation, recreation, and ecotourism benefits. National policy has therefore progressively emphasized environmental and non-consumptive forest functions rather than timber production (Forestry Service, 2006; Forestry Service, 2026). At the same time, horticulture offers opportunities for food production, household gardens, ornamental plants, medicinal plants, nursery enterprises, landscape restoration, and income generation. The interface between these sectors is especially important because nurseries, tree planting, restoration, agroforestry, shelterbelts, home gardens, and urban vegetation can either strengthen or undermine ecological resilience depending on species choice, propagation material, management intensity, and biosecurity.

This review examines the current forestry and horticultural context of Mauritius and develops an integrated framework for restoration, production, and climate adaptation. The emphasis is on practical management rather than on timber production alone.

2. Materials and Methods

This manuscript is a narrative review based primarily on official sources from the Government of Mauritius, the Forestry Service, the National Parks and Conservation Service, and the Food and Agriculture Organization of the United Nations. Priority was given to official forest statistics, national policy documents, biodiversity assessments, invasive-alien-species strategies, and forestry annual reports. The latest publicly accessible government information was used where available, while older policy and historical sources were retained where they provide essential context. Because national datasets use different years and definitions, numerical values are reported with their source and year rather than treated as a single harmonized time series.

3. Forest Resources and Ecological Context

Current government information estimates Mauritius's forest cover at 47,159 ha, comprising roughly one quarter of the island's land area. Private forests account for an estimated 25,000 ha and state forests about 22,159 ha. The Forestry Service notes that only about 2% of the land area is good-quality native forest and that much of the remaining forest estate is degraded or planted forest (Forestry Service, 2026).

Mauritius has an unusually high level of plant endemism. The national biodiversity information platform reports 691 native plant species, including 273 single-island endemics and a further 150 Mascarene endemics (Republic of Mauritius, 2026). The ecological importance of the remaining native forest therefore extends beyond its physical area. Small forest fragments can contain irreplaceable genetic resources and provide habitat for endemic plants and animals.

Indicator	Reported value	Source/context
Total forest cover	47,159 ha (~25% of land area)	Forestry Service, current government webpage

Good-quality native forest	~2% of land area	Forestry Service / national biodiversity information
Native plant species	691	Republic of Mauritius biodiversity platform
Single-island endemic plant species	273	Republic of Mauritius biodiversity platform
Mascarene endemic plant species	150	Republic of Mauritius biodiversity platform
Black River Gorges National Park	~6,754 ha (government sources vary slightly)	Government of Mauritius

4. Forest Ecosystem Services

In a densely used island landscape, the most important forest benefits may be indirect. Forest vegetation intercepts rainfall, stabilizes soil, supports infiltration, protects catchments, stores carbon, provides habitat, and contributes to recreation and tourism. The Forestry Service explicitly identifies soil and water conservation as among the most important forest functions in Mauritius (Forestry Service, 2026). These services have direct implications for agriculture and horticulture because erosion, sedimentation, water scarcity, and high runoff can reduce productivity and increase infrastructure costs.

The ecosystem-service perspective also changes how plantation and restoration decisions should be evaluated. A tree planting programme that increases canopy cover but introduces poorly adapted or invasive species may produce short-term vegetation gains while increasing long-term ecological risk. Conversely, restoration using appropriate indigenous species can provide biodiversity benefits while also supporting slope stabilization, watershed protection, pollinator habitat, and landscape connectivity.

5. Native Forest Restoration and Invasive Alien Species

Invasive alien species are among the principal threats to Mauritius's native biodiversity. Government assessments identify species such as Chinese guava (Psidium cattleianum), privet (Ligustrum robustum), traveller's palm (Ravenala madagascariensis), and Lantana camara as important invasive or problematic plants in forest environments (Republic of Mauritius, 2026). The national invasive alien species strategy emphasizes active management because invasive plants can dominate forest sites and suppress native regeneration.

Restoration should therefore be approached as an ecological process rather than simply a planting exercise. A practical sequence is: (1) map priority native-forest remnants; (2) identify invasive species and regeneration constraints; (3) establish realistic restoration targets; (4) control invasive plants in phases; (5) introduce locally appropriate native or endemic plants; (6) protect seedlings from browsing and other pressures; and (7) monitor survival, recruitment, canopy development, and species composition. Mauritius has already developed nursery and restoration capacity, including production of endangered and medicinal native plants (Forestry Service, 2018).

6. Nurseries, Propagation, and Horticultural Linkages

Nurseries are a strategic bridge between conservation and horticulture. The Forestry Service reported production of more than 26,000 native plants in 2018, including medicinal plants and critically endangered species, demonstrating that nursery systems can support both conservation and public planting (Forestry Service, 2018). For restoration purposes, nursery quality should include accurate species identification,

traceable seed or cutting sources, healthy root systems, appropriate hardening, and careful post-planting management.

Horticulture can contribute by developing production systems for indigenous ornamentals, medicinal plants, fruit trees, landscape trees, and climate-adapted species. However, horticultural expansion should be accompanied by strict biosecurity. Nursery production can become a pathway for pests, pathogens, and invasive plants if plant material is poorly screened or if species with high invasion potential are widely distributed. Consequently, horticulture policy and forest conservation policy should be coordinated rather than treated as separate domains.

7. Horticulture and Climate Resilience

Mauritius's horticultural systems operate under climatic risks that include cyclones, drought, heat, intense rainfall, pests, and changing seasonal conditions. Resilience can be improved through diversified production, soil organic-matter management, mulching, water harvesting and efficient irrigation, wind protection, shade management, integrated pest management, and selection of locally adapted planting material.

Tree-based horticulture is particularly relevant. Fruit trees, multipurpose trees, hedgerows, shelterbelts, and mixed home gardens can provide food, shade, biomass, habitat, and microclimatic regulation. Where compatible with farm objectives, agroforestry can also reduce erosion and diversify farm outputs. Nevertheless, species selection must reflect water availability, rooting behavior, storm exposure, disease risk, market demand, and the possibility of escape into natural habitats.

Management area	Recommended practice	Expected benefit	Key caution
Forest restoration	Prioritize native/endemic species and phased invasive control	Biodiversity, watershed protection, habitat recovery	Poorly planned planting can increase competition or invasive risk
Nursery production	Traceable seed, healthy seedlings, hardening and biosecurity	Reliable restoration and horticultural planting material	Pests, pathogens and invasive plants can spread
Horticulture	Diversification, efficient irrigation, mulch, IPM	Higher resilience and resource efficiency	Water demand and market dependence
Agroforestry	Integrate compatible trees with crops	Soil protection, microclimate and diversified outputs	Competition for light, water and nutrients
Urban greening	Use site-appropriate trees and native plants where suitable	Shade, amenity, biodiversity and heat mitigation	Infrastructure conflicts and maintenance requirements
Watershed management	Maintain vegetative cover on sensitive slopes and riparian areas	Reduced erosion and improved water regulation	Requires coordination across landowners

8. Agroforestry and Landscape Connectivity

Agroforestry can connect conservation objectives with agricultural production by introducing trees into farms, field margins, riparian zones, or mixed production systems. In Mauritius, the strongest applications are likely to occur where trees address a clearly identified constraint: erosion on slopes, wind exposure, shade requirements, biodiversity connectivity, soil organic matter, or diversification of farm products. The choice of species should be based on ecological compatibility rather than simply rapid growth.

Landscape connectivity is equally important. Forest fragments surrounded by agriculture or development can become increasingly isolated. Tree-based corridors, native hedgerows, riparian vegetation, and carefully designed urban green spaces can improve ecological continuity. Such interventions should avoid becoming conduits for invasive species and should be monitored for both ecological and agricultural effects.

9. Urban and Peri-Urban Horticulture

Urban and peri-urban horticulture provides an additional opportunity to extend plant conservation and ecosystem services beyond protected areas. Public gardens, school grounds, institutional landscapes, home gardens, and roadside planting can serve as demonstration sites for indigenous plants. The propagation of Mauritius's national flower, Trochetia boutoniana, has already been encouraged through public planting initiatives (Forestry Service, 2018).

Urban tree programmes should use a site-specific approach. Planting density, rooting space, mature canopy size, storm resistance, maintenance requirements, and compatibility with utilities and buildings should be considered. Native plants should be incorporated where they are appropriate to the site and available through reliable propagation systems, while invasive species should be excluded from planting programmes.

10. Policy and Institutional Considerations

Mauritius already has a policy foundation that recognizes watershed protection, biodiversity conservation, increasing tree cover, restoration, and invasive-species management as major forestry concerns. The National Forestry Policy also identified climate-related disturbances, land degradation, forest-based businesses, and institutional capacity as important sectoral issues (Forestry Service, 2006).

A stronger forestry–horticulture interface would benefit from shared planning across forestry, biodiversity conservation, agriculture, local government, research institutions, nurseries, private landowners, and communities. National forest inventories and repeated monitoring are important because sustainable forest management requires information on forest extent, composition, biodiversity, socio-economic values, and carbon (FAO, 2025).

11. Proposed Integrated Framework

Based on the reviewed evidence, an integrated Mauritius framework can be organized around six linked priorities:

- Protect the remaining high-quality native forest and maintain ecological integrity of priority sites.
- Restore degraded native forest using site-matched indigenous and endemic species, with invasive control as a continuing activity.
- Strengthen nurseries as conservation infrastructure through seed-source documentation, propagation expertise, quality control, and biosecurity.
- Promote climate-resilient horticulture and agroforestry using efficient water management, diversified systems, and locally appropriate planting material.
- Connect forests, farms, wetlands, riparian areas, gardens, and urban green spaces through ecological planning and native-plant use where appropriate.
- Establish monitoring indicators that measure ecological condition and survival—not only the number of trees planted.

12. Suggested Monitoring Indicators

Indicator	Measurement example	Management value
Native forest condition	Native canopy, regeneration and invasive-species cover	Measures restoration quality
Seedling survival	Survival after 6, 12, 24 and 36 months	Identifies site/species problems
Invasive-species pressure	Percent cover or density by priority invasive species	Guides control effort
Nursery quality	Mortality, root quality, disease incidence and source traceability	Improves planting success
Water efficiency	Water used per unit of horticultural output	Supports drought resilience
Landscape connectivity	Connected habitat/vegetated corridor extent	Assesses fragmentation reduction
Socio-economic outcomes	Jobs, nursery sales, farm income or community participation	Links conservation with livelihoods

13. Research Priorities

Several research gaps merit attention. First, long-term trials are needed to identify native and horticultural species combinations that perform well under different soil, rainfall, altitude, and disturbance conditions. Second, provenance and genetic diversity should be considered in restoration planting so that conservation programmes do not unintentionally narrow genetic variation. Third, improved data are needed on the effects of climate change on flowering, fruiting, pollination, seed production, pest dynamics, and plant establishment. Fourth, economic studies could quantify the costs and benefits of restoration, urban greening, agroforestry, and climate-resilient horticulture. Finally, national monitoring should integrate forest condition with agricultural and urban land-use change.

14. Conclusion

Mauritius demonstrates why forestry and horticulture should be considered components of one landscape-management system. The country retains substantial forest cover in area terms, yet only a small proportion is good-quality native forest. At the same time, the island supports a highly distinctive flora with a large number of endemic species and faces continuing pressure from invasive species, habitat modification, climate-related disturbances, and limited land resources.

The central management opportunity is therefore to improve the quality, diversity, resilience, and connectivity of vegetation rather than pursuing tree numbers alone. Native-forest restoration, high-quality nurseries, biosecure horticulture, agroforestry, urban greening, watershed protection, and community participation can reinforce one another when planned at landscape scale. For Mauritius, an integrated approach offers a pathway in which horticultural production contributes to environmental restoration while forestry conservation strengthens the ecological foundations on which agriculture, water security, tourism, and human well-being depend.

References

Food and Agriculture Organization of the United Nations (FAO). (2025). Global Forest Resources Assessment 2025. Rome: FAO.

Forestry Service, Republic of Mauritius. (2006). National Forestry Policy. Ministry responsible for agriculture and forestry, Government of Mauritius.

Forestry Service, Republic of Mauritius. (2018). Annual Report of the Forestry Service. Government of Mauritius.

Forestry Service, Republic of Mauritius. (2026). Forests in Mauritius. Government of Mauritius.

Government of Mauritius. (2026). Agriculture and Forestry: Forestry. Republic of Mauritius.

National Parks and Conservation Service, Republic of Mauritius. (2013). A National Invasive Alien Species Strategy for the Republic of Mauritius.

Republic of Mauritius. (2026). Terrestrial biodiversity. National Biodiversity Clearing-House Mechanism.

Republic of Mauritius. (2026). Flora: Mauritius. Office of Development and Economic Board / Government of Mauritius.