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Sacred Flora of Bengal: A Study on Traditional Plant Use in Hindu Ceremonies

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Abstract:

This article examined the traditional role of sacred and ritual plants in Bengal's Hindu ceremonies, focusing on their cultural symbolism, ritual usage, and implications for biodiversity conservation. Using published ethnobotanical surveys, festival-focused studies and regional analyses of sacred groves and community practices, the study documented the recurrent use of species such as Ocimumtenuiflorum (tulsi), Aeglemarmelos (bel), Tagetes spp. (marigold), Polianthestuberosa (tuberose/rajnigandha), Nyctanthesarbortristis (shiuli), Nelumbonucifera (lotus) and others that had historically been embedded in domestic and public religious practice. The research argued that ritual plant use had functioned as a cultural mechanism for preserving particular species and ecological niches (for example, sacred groves), while simultaneously adapting to socio-economic and urbanizing pressures that altered availability, symbolism and procurement methods. Ethnographic and ecological documentation suggested that ritual practice had both conserved and commodified certain species: some plants had been maintained in home gardens and groves, whereas others had entered market chains for festival demand. The article concluded that recognition of ritual plant-culture linkages was essential for culturally informed conservation and that participatory strategies which acknowledged ritual importance had been effective levers for in-situ biodiversity protection.

Keywords: *Sacred Flora, West Bengal, Hindu Rituals, Traditional Plant Use, Marigold, Tuberose, Tulsi, Bel, Ethnobotany, Cultural Heritage, Sacred Groves, Ritual Ecology, Biodiversity Conservation.*

1. Introduction

Plants had been central to Hindu cosmology, ritual practice and everyday piety across the Indian subcontinent, and Bengal was no exception. For centuries, particular species (trees, herbs, and flowers) had been treated as sacred, had been used as offerings in temple and household rituals, and had been associated with gods, goddesses and ancestral rites (Nath & Mukherjee, 2015). In Bengal, festivals such as Durga Puja, Kali Puja, Saraswati Puja, and a range of life-cycle ceremonies had mobilized an array of plant species as material, symbolic and sensorial elements—fragrance, colour, texture and mythic associations had all played a role. This article synthesized ethnobotanical and ritual literature relevant to West Bengal and adjoining eastern regions, documented patterns of plant selection for Hindu ceremonies, and discussed how ritual practice had intersected with conservation (for instance, sacred grove protection) and commercialization (market-driven flower cultivation).

The objectives of the study were summarized as follows: (1) to document the principal plant taxa that had been used in Hindu rituals and ceremonies across Bengal; (2) to analyze the cultural meanings and ritual functions of selected emblematic species (with focused examples on marigold and tuberose); (3) to assess the ecological consequences of ritual plant use, including roles of sacred groves and home gardens in conserving ritual taxa; and (4) to discuss contemporary pressures—urbanization, marketization, and changing religious practice—that had reshaped access to and meanings of ritual plants.

2. Methodological and Documentary Basis:

This article synthesized peer-reviewed ethnobotanical and cultural studies, regionally focused survey reports, and analyses of sacred groves and festival plant use that had been published in journals, institutional reports and research compilations. Key empirical sources included: ethnobotanical surveys of forest-fringe and tribal communities in northern Bengal that had cataloged medicinal and ritual use of plants (Raj et al., 2018); focused analyses of plant use in Durga Puja and related ritual offerings from eastern India (Sahu & Panda, 2021); regional overviews of sacred groves and community conservation in West Bengal (Sen, 2020; Sen, 2019); and compilations that evaluated plant species used across Hindu mythology and festival contexts (Nath & Mukherjee, 2015). These sources had relied upon field interviews, participant observation during festival seasons, herbarium identifications, and market surveys, and therefore offered a grounded base for synthesizing patterns across religious and ecological contexts.

3. Ritual Categories and Plant Types:

Researchers had repeatedly observed that ritual plant usage clustered around recurrent categories: (a) offerings to deities (flowers, leaves, fruits); (b) material for idol construction and pandal décor (bamboo, straw, sola pith, leaves); (c) household sacred plants and guardians (e.g., tulsi in courtyards); (d) life-cycle plants used in marriage and funeral rites (banana, mango, betel, and dhupa/holy grass); and (e) festival-specific emblematic species (bel in Shiva worship; shiuli during Mahalaya/Durga Puja onset) (Sahu & Panda, 2021; Nath & Mukherjee, 2015).

Flowers had constituted the most visible class of materials during festivals. Offerings for goddess worship during Durga Puja, for instance, had included lotus (*Nelumbonucifera*), champa (*Micheliachampaca*), shiuli (*Nyctanthesarbor-tristis*), and marigold (*Tagetes* spp.)—each carrying distinct symbolic resonances and sensory attributes that had been important to devotees (Sahu & Panda, 2021). Leaves and twigs had been used as ritual implements (e.g., *Ficus* twigs), whereas certain fruits or tree parts had been included in invocation rites—*Aeglemarmelos* (bel) had been used in bel-baran, a traditional step invoking the goddess Durga (Sahu & Panda, 2021).

Sacred groves and temple precincts had also harbored important plant assemblages. Customary protection through taboos and ritual prohibitions had conserved tree species and understory plants, thereby creating de facto refugia for biodiversity (Sen, 2020; Sen, 2019).

4. Core Species, Symbolism and Use: Selected Accounts

Below, several emblematic taxa were discussed with attention to their ritual roles, cultural meanings and ecological status.

Tulsi (*Ocimumtenuiflorum* / *Ocimum sanctum*)

Tulsi had been ubiquitous in Hindu households across Bengal and had functioned as a domestic sacred plant. It had been cultivated near home altars, used in daily puja, and had been believed to confer spiritual purification and health benefits (Nath & Mukherjee, 2015). Its presence in home gardens had been associated

with domestic ritual continuity and had acted as an in-situ conservation practice for a culturally important herb (Raj et al., 2018).

Bel / Bilva (*Aeglemarmelos*)

Bel leaves had been particularly important in Shaiva rites and had been central to invocation practices such as bel-baran during Durga Puja preparations (Sahu & Panda, 2021). The bel tree had been regarded as an abode of the goddess in some folk cosmologies, and branches/leaves had been ritually placed during early stages of deity invocation (Sahu & Panda, 2021).

Marigold (*Tagetes* spp.)

Marigold had been one of the most widely used floral species during festivals and public ceremonies in Bengal. Its bright orange and yellow inflorescences had been used to make garlands, altar decorations, and pandal adornment. Marigold flowers had been associated with auspiciousness and had provided an accessible, robust floral material that could be cultivated near settlements or purchased at markets for large-scale festival needs (Nath & Mukherjee, 2015; Sahu & Panda, 2021). Economically, marigold cultivation had become an important livelihood crop for many peri-urban growers who supplied festival markets.

Tuberose / Rajnigandha (*Polianthestuberosa*)

Tuberose had been prized for its intense fragrance and had been commonly used in weddings and ceremonies where scent and sensory ambiance were important. In Bengal, tuberose had been used to make garlands for brides and for creating fragrant arrays in ritual spaces; its delicate, night-fragrant blooms had carried connotations of purity and sensual beauty in local poetic idioms (Nath & Mukherjee, 2015). Tuberose had been cultivated specifically for cut-flower markets and for household use during rites.

Shiuli (*Nyctanthesarbortristis*)

Shiuli (night-flowering jasmine) had carried a distinct seasonal symbolism: its falling blooms had marked the heralding of Durga Puja and Mahalaya in rural Bengal. Devotees had associated shiuli's transient white blossoms with purity and the seasonal return of the goddess, and they had been incorporated in ancestor rites and Mahalaya observances (news/folk reporting has underlined shiuli's seasonal role and scholarly sources recorded its festival importance) (Sahu & Panda, 2021).

Lotus (*Nelumbonucifera*) and Champa (*Micheliachampaca*)

Lotus and champa had been quintessential temple offerings. Lotus had been emblematic of spiritual elevation (birth from the mud yet unstained), whereas champa's perfume and golden blooms had been used for deity adornment and temple rituals (Sahu & Panda, 2021; Nath & Mukherjee, 2015).

5. Ritual Process and Materiality: How Plants Were Used in Ceremonies

Rituals had involved multiple stages where plants were used differently: preparatory acts (e.g., bel-baran), idol construction and dressing (e.g., straw, bamboo, sola pith), daily puja offerings (flowers, incense, leaves), and concluding rites (immersion or return of offerings). During Durga Puja, plants had been integrated materially (idol frames, adornments), symbolically (specific plant-deity associations), and communally (collective procurement and shared offerings) (Sahu & Panda, 2021).

Field studies had shown that plant selection was influenced by accessibility, availability in home gardens, and market availability. Many commonly used species were cultivated in home gardens or nearby fields so that they were readily available during festival seasons; when local supply fell short, market purchases had substituted (Sahu & Panda, 2021; Raj et al., 2018). For instance, marigold's ease of cultivation, long shelf

life and bright color had made it a perennial choice for public mandaps and household garlands, while tuberose—valued for its scent—had been cultivated by specialized growers for cut-flower markets.

Researchers had documented that ritual practice had preserved not only species but also knowledge about phenology (timing of flowering), cultivation practices, and post-harvest handling required for ritual use (Raj et al., 2018). Local calendars and ritual calendars had intertwined: the seasonal ripening or flowering of specific taxa had synchronized with festival timing (e.g., shiuli with Mahalaya/Durga Puja).

6. Sacred Groves, Temple Trees and In-situ Conservation

One of the most consistent findings across studies of West Bengal's ritual plant use was that sacred groves and temple-protected trees had functioned as community-managed biodiversity refugia. Customary rules—taboos on felling, prohibitions on grazing, and ritual protections—had allowed pockets of near-natural vegetation to persist in otherwise altered landscapes (Sen, 2020; Sen, 2019). These groves had harboured medicinal and culturally valued plants and had acted as seed sources for home gardens.

Ethnographic accounts showed that villages had historically protected a suite of species through ritualized care: certain trees such as banyan (*Ficus benghalensis*), peepal (*Ficusreligiosa*), and bel (*Aeglemarmelos*) had been specially protected as manifestations or abodes of deities (Nath & Mukherjee, 2015). In places where sacred grove protection had persisted, researchers had reported higher local plant diversity compared to non-sacred patches, and many rare or locally threatened species had been found in grove fragments (Sen, 2020; Sen, 2019).

Nevertheless, scholars had cautioned that the strength of such customary protections had been eroded in some regions by changing livelihood pressures, urban encroachment, and the weakening of taboo enforcement—thus threatening the very ecological functions that had been sustained by ritual practice (Sen, 2020).

7. Markets, Commercialization and Changing Patterns:

While ritual practice had protected many species through norms and home cultivation, large-scale festival demand had simultaneously stimulated commercial cultivation and a floriculture value chain. Marigold and tuberose cultivation had become integral to peri-urban agrarian economies, with growers timing production to festival calendars and traders functioning as intermediaries between growers and urban pandals (Sahu & Panda, 2021; Nath & Mukherjee, 2015). This process had produced mixed outcomes.

On one hand, market demand had incentivized cultivation and had therefore expanded availability and incomes for growers; on the other hand, commercial monoculture of certain species and replacement of diverse local floras with high-yield varieties had altered traditional biodiversity patterns and sometimes reduced genetic diversity of ritual taxa. Moreover, market pressure had changed ritual procurement: instead of collecting locally (from groves or home gardens), communities increasingly bought plants from specialized markets, thereby decoupling ritual meaning from local ecological stewardship in some contexts (Raj et al., 2018).

Researchers had documented additional socio-cultural shifts: urban households and pandals often preferred mass-produced floral materials for convenience; younger generations had exhibited altered knowledge about wild or less common ritual taxa; and migration had reshaped practices such that some ritual species had lost local ecological footholds (Raj et al., 2018; Sahu & Panda, 2021).

8. Knowledge Transmission, Gender and Custodianship:

Studies had indicated that ritual plant knowledge had been transmitted intergenerationally through women and elders, who had stewarded home gardens, prepared offerings, and curated ritual sequences (Raj et al.,

2018). Women had frequently been custodians of domestic ritual plant practices (such as tulsi cultivation and flower preparation for household puja), whereas men had often been responsible for procurement for public rituals and pandal building. Consequently, gendered divisions of labour had shaped who held which kinds of botanical knowledge.

Educational and livelihood transformations had affected these transmission pathways. Schooling, off-farm employment, and urban migration had reduced time available to younger caregivers to learn cultivation and identification of ritual species; several authors had noted the risk of losing niche botanical knowledge if concerted documentation and community-based transmission efforts were not sustained (Raj et al., 2018).

9. Ritual Use and Medicinal Overlap:

A recurring observation in the literature was that many ritual plants had coincided with medicinal use—folkloric pharmacopoeias overlapped substantially with ritual floras. Leaves, roots and flowers that had been used as temple offerings had often been used by communities for common ailments (Nath & Mukherjee, 2015; Raj et al., 2018). This overlap had been significant from a conservation viewpoint: plants maintained for ritual use had also provided local health resources, thereby elevating their utilitarian value and making their conservation a multifaceted local priority (Raj et al., 2018).

10. Case Studies: Durga Puja Plant Assemblages and Bonbibi in the Sundarbans

Durga Puja: Studies that focused on Durga Puja in eastern India had catalogued extensive lists of plants and plant parts used for deity worship and ritual paraphernalia. For example, a coastal-Odisha study (closely culturally linked to Bengal in ritual practice) had recorded 53 plant species across 31 families being used in Durga Puja, with parts ranging from leaves and stems to inflorescences and seeds (Sahu & Panda, 2021). This work had highlighted the integration of local botanical knowledge with festival logistics—species were selected both for symbolic suitability and ease of procurement. The ritual practice of bel-baran (invocation with *Aeglemarmelos*) had been specifically documented as a core step in invoking the goddess (Sahu & Panda, 2021).

Bonbibi in the Sundarbans: Among the coastal and mangrove communities of the Sundarbans, the cult of Bonbibi—the protective spirit of the forest—had combined ritual, ecological knowledge and a cultural ethic of forest restraint that had indirectly supported mangrove conservation. Bonbibi worship had involved special rituals and seasonal celebrations that had foregrounded the sacred status of certain mangrove habitats and species; scholars had argued that Bonbibi practice had conveyed norms of respectful forest use that had complementarily supported conservation aims in these fragile ecosystems (environmental and ethnographic analyses highlighted this connection) (Sen, 2020; environmental studies).

11. Threats to Ritual Plant Systems and Conservation Responses:

Although ritual practices had historically nurtured pockets of biodiversity, contemporary pressures had undermined these systems in many locales. Key threats included:

- **Urbanization and Land-use Change:** Encroachment and loss of village commons and grove fragments had reduced the availability of locally sourced ritual plants (Sen, 2020).
- **Commercialization:** While floriculture had provided livelihoods, intensification and monoculture had reduced on-farm biodiversity and disembedded ritual plants from traditional ecological settings (Sahu & Panda, 2021).

- **Knowledge Erosion:** Intergenerational knowledge transfer had weakened as migration and modern livelihoods shifted domestic life and ritual labor (Raj et al., 2018).
- **Overharvesting:** Some wild species of ritual importance had been subject to unregulated harvest due to market demand, threatening local populations (Raj et al., 2018).

Conservation responses that had shown promise included legal recognition of sacred groves, participatory management that involved local ritual authorities and custodians, and community documentation projects that had recorded plant lists, phenology and ritual protocols (Sen, 2020; Raj et al., 2018). Scholars had emphasized that culturally informed conservation—recognizing ritual values and working through local institutions—had been more effective and equitable than top-down protectionist measures.

12. Discussion: Ritual Plants as Vectors of Cultural-Ecological Resilience

The interplay between ritual practice and plant conservation in Bengal had been complex and often contradictory. On one hand, ritual practice had been an engine of continuity: planting and protecting culturally significant species in home gardens and groves had conserved genetic resources and mediated ecological stewardship. On the other hand, commodification and urban change had altered the relationships between people and plants—marketization had often decoupled ritual use from local stewardship and had sometimes promoted ecological simplification.

A critical interpretive point was that ritual plants were not just symbolic objects; they had embodied local ecological knowledge, phenological sensibilities, and social institutions that had been central to landscape management. Policies and conservation strategies that had ignored ritual values had risked undermining these socially embedded conservation mechanisms. Conversely, approaches that had engaged ritual custodians, recognized festival calendars and integrated cultural priorities had enhanced community buy-in and effectiveness (Sen, 2020; Sahu & Panda, 2021).

13. Recommendations for Research, Policy and Practice

Based on the documented patterns, several recommendations had emerged:

- **Ethnobotanical Documentation:** Systematic documentation of ritual plant lists, vernacular names, cultivation practices and phenology should have been expanded (Raj et al., 2018; Nath & Mukherjee, 2015). Such documentation would support both cultural continuity and biodiversity monitoring.
- **Community-Led Grove Protection:** Policy support and legal recognition for sacred groves and temple-protected patches should have been strengthened, coupled with capacity building for communities to manage these spaces (Sen, 2020).
- **Sustainable Floriculture Practices:** Extension services should have promoted diversified and environmentally sensitive floriculture for festival supply—avoiding genetic bottlenecks and encouraging mixed cropping and local varietal maintenance (Sahu & Panda, 2021).
- **Gender-Sensitive Knowledge Transmission:** Interventions to revitalize ritual plant knowledge should have engaged women (who often were principal custodians of home ritual practice), incorporated school curricula and supported intergenerational transmission (Raj et al., 2018).
- **Market-Community Linkages:** Value chain interventions should have connected urban markets and floriculture producers with assurances for sustainable practices and fair pricing—thereby aligning economic incentives with conservation aims.

- **Integrative Conservation Policy:** Conservation frameworks should have recognized ritual values as a legitimate basis for in-situ protection, integrating customary institutions with formal governance.

14. Conclusion:

The sacred flora of Bengal had been both a living expression of religious meaning and a pragmatic vehicle for biodiversity conservation. Studies had shown that rituals had conserved plant taxa through household cultivation, sacred grove protection and normative taboos, while at the same time festival market dynamics and social change had introduced processes of commodification and knowledge erosion. Recognizing the dual nature of ritual plant systems—as cultural heritage and ecological asset—had been essential for designing conservation strategies that were both effective and socially resonant. Future work had needed to prioritize local voices, document intergenerational knowledge, and craft policy instruments that aligned ritual values with ecological sustainability. Such culturally informed conservation would have honoured the fragrant and living threads through which people and plants had co-shaped Bengal's ritual landscapes.

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