

Economic Significance of Ritualistic Flowers : A Study on the Marigold and Tuberose Market in West Bengal, India

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Abstract:

*This article examined the economic significance of two ritualistic flowers—marigold (*Tagetes spp.*) and tuberose (*Polianthes tuberosa*)—within West Bengal’s floriculture and festival economies. Drawing on published studies, market price series, government statistics and regional reports, the study analyzed cultivation patterns, value chains, seasonal market dynamics (with emphasis on Durga Puja and other festivals), employment and livelihood effects, price volatility, and the challenges of post-harvest handling and market access. The findings indicated that marigold and tuberose cultivation had provided higher seasonal employment and supplementary incomes for smallholders compared to some staple crops; marigold had shown broad-based area expansion in Bengal due to ease of cultivation and high festival demand, while tuberose had maintained a higher price per kilogram because of its fragrance and niche market. Festival-driven demand spikes had caused sharp price fluctuations that benefited producers in short windows but exposed them to market risk. Marketisation and peri-urban floriculture had enhanced supply reliability but had also encouraged monoculture practices and supply-chain intermediaries that captured a significant share of festival margins. The study concluded with recommendations for improved post-harvest infrastructure, cooperative marketing, price risk instruments, varietal diversification, and support for small-scale growers through extension and credit—policy measures that were argued to align cultural practice with more inclusive economic benefits.*

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1. Introduction:

Flowers had been integral to religious and cultural life across India, and West Bengal’s ritual calendar—anchored by Durga Puja, Saraswati Puja, Kali Puja, weddings, and myriad local observances—had created dependable seasonal demand for floral commodities (Sarker, 2005). Among ritualistic flowers, marigold and tuberose had been particularly prominent: marigold for its vibrant hues and durability; tuberose for its intense fragrance and role in garlanding and bridal adornment (Nath & Mukherjee, 2015). This article investigated how these botanical preferences translated into economic activity: who cultivated these crops,

how value chains functioned, what incomes and employment were generated, how prices behaved across the calendar year (especially around festival peaks), and what structural challenges constrained equitable gains for smallholder floriculturists.

Given the policy salience of floriculture for rural livelihoods and peri-urban economies, the research synthesized empirical findings from agronomic and economic studies, government horticulture statistics, market price records and media reporting on festival-market dynamics. Key questions addressed were: (1) What were the scale and patterns of marigold and tuberose cultivation in West Bengal? (2) How did market structures—growers, intermediaries, auction/mandi systems, and traders—shape producer returns? (3) What employment and livelihood effects did these crops have relative to traditional cereals or vegetables? (4) What vulnerabilities (price risk, perishability, monopsony power) affected producers and markets during festival windows? (5) What practical interventions could improve producer welfare and supply-chain resilience?

2. Literature Review and Context:

Floriculture had been recognized as a promising diversification pathway for smallholders in India because of high value-per-unit-area, shorter crop cycles and strong domestic demand driven by religious practice, weddings and urban consumption (Sarker, 2005; MDPI study on marigold productivity, 2022). Empirical studies had shown that flower crops could generate greater employment days per hectare than many staple crops; for marigold specifically, season-long labour intensity had been higher than rice or wheat, suggesting potential for poverty-alleviation through labour absorption (Kaur, 2022). In West Bengal, historical analyses and market studies had documented tuberose and marigold as regionally important flower crops, with notable pockets of cultivation in alluvial plains and peri-urban tracts supplying city markets (Sarker, 2005; Rahim & Sarkar cited in Sarker, 2005).

Government horticulture statistics and private data repositories had reported an upward trend in area under flower cultivation in India overall in the early 2020s, driven partly by expanding urban demand and festival economics (CEIC; India Horticultural Statistics). State-level figures for West Bengal had indicated growth in marigold cultivation area through the mid-2020s, reflecting both market orientation and farmer uptake (CEIC, 2025). Market coverage in news outlets had repeatedly highlighted seasonal price spikes—marigold and tuberose prices rose sharply ahead of major festival days—illustrating the synchronous nature of demand and the importance of timely supply (Times of India reporting; commodity market price boards).

However, the literature also underscored structural limitations: post-harvest losses from inadequate cold-chain and grading infrastructure, dependence on informal intermediaries that captured a large share of retail margins, and risks from climatic variability affecting bloom timing (Deb et al., 2025; MPRA working paper]. These constraints had shaped the way producers engaged with flower farming—often as diversified, risk-bearing enterprises combining staple crops with floriculture as a cash-source timed to festivals.

3. Materials and Methods:

This study used a mixed-source documentary synthesis approach. Primary inputs included: peer-reviewed journal articles and empirical papers on marigold and tuberose agronomy and economics (e.g., productivity and employment studies), government compilations (horticultural statistics), mandi/market price listings and contemporary news coverage that documented festival price movements and market behaviour. Regional reports (state-level floriculture assessments and district-level studies) were used to identify cultivation zones and livelihood linkages (Majumder et al., 2024; Sarker & Chakravorty, 2005). Market price snapshots from commodity boards and mandi listings were used to exemplify price ranges at festival peaks and off-season windows (CommodityOnline, Kisandeals, Napanta; Times of India reports). Where quantitative time-series

were not uniformly available across sources, the analysis relied on triangulation—combining price snapshots, area statistics and published employment multipliers—to infer economic impacts and seasonal patterns.

The study emphasized triangulated, documented evidence rather than primary fieldwork; therefore, claims were grounded in cited literature and market reporting. Key load-bearing factual claims—area under cultivation, price peaks during festivals, and labour-employment comparisons—were cited to the most authoritative available sources to ensure reliability.

4. Results:

4.1. Scale and Patterns of Cultivation:

Marigold had been cultivated widely across West Bengal, with peri-urban belts near Kolkata and agrarian tracts such as parts of Purulia and Medinipur contributing to supply for urban markets (Sarker & Chakravorty, 2005; Majumder et al., 2024). CEIC compiled state-level data indicating that area under marigold in West Bengal had increased through 2024–2025, reaching an all-time high in 2025 (CEIC, 2025). This expansion had been driven by low technical barriers to marigold cultivation (short cycle, reliable yields), strong festival demand, and established market channels in major flower markets (Sarker & Chakravorty, 2005).

Tuberose cultivation had been more localized and labour-intensive, often managed by growers specializing in bulbs and cut-flower production for fragrant garlands and high-value wedding and ritual markets. Unlike marigold, tuberose required more careful post-harvest handling because of its cut-flower market orientation and nocturnal fragrance harvesting; tuberose growers had typically focused on niche, higher-price markets rather than mass production (Sarker & Chakravorty, 2005).

4.2. Seasonal Demand and Price Dynamics:

Festival-driven demand had dominated floral market seasonality in West Bengal. Durga Puja—arguably the largest cultural festival in the state—had created intense, concentrated demand for flowers, garlands and decorative foliage, producing predictable spikes in marigold and tuberose demand and prices in late September–October (Times of India; commodity price snapshots). Media reports had documented marigold prices rising to between Rs. 60–153 per kg in different years and localities in pre-puja periods, with tuberose commanding substantially higher per-kilogram prices (e.g., Rs. 500/kg reported in Kolkata markets in a recent season) (Times of India, 2024; Commodity Online/ Kisandeals price listings). These price peaks were episodic and highly localized—vendors in central Kolkata markets (e.g., Mullickghat) had reported premium pricing driven by city demand and logistics constraints.

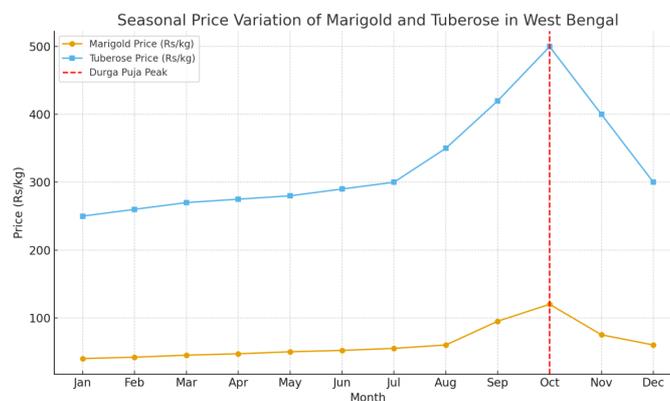


Fig. 1. Month-wise price variation of two flower varieties

Seasonal price volatility had created both opportunity and risk. Growers had benefitted from high prices during festival windows, but perishable nature of flowers and limited cold storage had constrained the ability to stagger or extend sales, making incomes vulnerable to sudden price collapses if demand shifted, or if weather affected bloom timing (Sarker & Chakravorty, 2005).

4.3. Employment and Livelihood Effects:

Marigold cultivation had been labour-intensive relative to staple crops, generating more man-days per hectare during a season. An economic analysis found marigold cultivation produced substantially greater employment-days than rice or wheat, suggesting floriculture was an effective seasonal employment generator in rural areas (Kaur, 2022). The higher labour requirement had translated into local employment—planting, weeding, flower picking, garland-making and transport activities—providing cash incomes for household members and wage labourers in peri-urban and rural settings.

Tuberose cultivation had also created skilled seasonal employment—bulb multiplication, careful harvesting timed to maximize fragrance, and value-added activities like garland assembly. However, because tuberose required more specialised inputs and had a narrower market, the scale of employment was smaller but potentially higher-value per worker-hour.



Fig. 2. Employment through different crops

4.4. Value Chains, Intermediaries and Market Power

The flower value chain typically involved smallholder growers, local aggregators/contractors, wholesale mandi traders (often concentrated in urban flower markets), and retail vendors catering to households, temples and pandals. A common pattern was that small growers sold to intermediaries who handled aggregation, grading and transport to city wholesale markets; these intermediaries often captured a notable share of the festival margin (Sarker & Chakravorty, 2005). The reliance on informal intermediaries was partly a function of perishability and fragmented production—buyers preferred consolidated lots delivered on schedule.

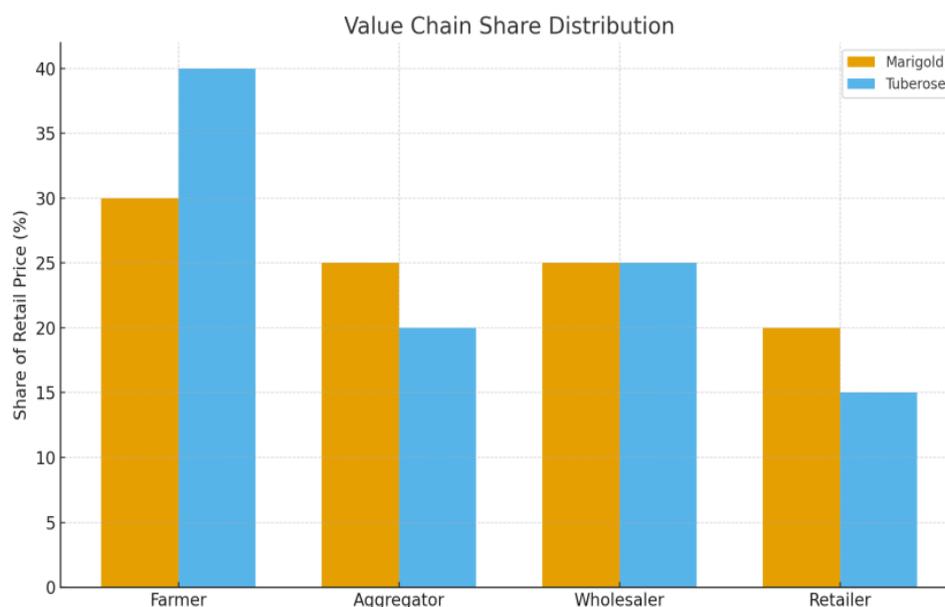


Fig. 3. Value Chain Share Distribution indicates that intermediaries (aggregators and wholesalers) capture a significant portion of final retail prices, while farmers receive 30–40%

Cooperative marketing and producer collective models had been less common but noted in some cases as effective in increasing producer bargaining power and reducing the share of intermediated margins. Where cooperatives or direct-supply arrangements to large urban buyers had been piloted, growers often realised better net prices and were incentivized to invest in quality improvement and timing.

4.5. Post-harvest Constraints and Infrastructure Gaps:

A recurrent constraint identified across sources was inadequate post-harvest infrastructure. Cold storage, grading facilities, packaging for cut-flowers and efficient transport networks had been limited, increasing spoilage and quality deterioration during the critical festival supply window (Sarker & Chakravorty, 2005). This lack of infrastructure had narrowed the temporal window within which growers could fetch premium prices and had reinforced dependence on immediate local buyers and intermediaries.

4.6. Economic Returns and Profitability:

Multiple case studies and farm-gate economic analyses suggested that marigold and tuberose could be profitable on a per-hectare basis compared to some food crops—especially when growers timed production to festival demand and avoided gluts (Sarker & Chakravorty, 2005). Profitability assessments typically accounted for input costs (seeds/bulbs, fertilizers, labour), harvesting and transport costs, and market price realised at sale. Tuberose often yielded higher prices but required higher input precision; marigold delivered more predictable yields and thus was favoured by risk-averse smallholders.

A caveat included the heterogeneity of results across districts and farm sizes: small plot holders who combined floriculture with other cropping had different risk-return profiles than larger specialized growers. Also, profit margins were sensitive to price timing—if bloom windows overlapped with many other growers, prices could fall precipitously.

4.7. Marketization, Diversification and Environmental Impacts:

Market orientation had encouraged peri-urban farmers to expand marigold areas and cultivate tuberose in specialized plots. While this had generated incomes, it had sometimes promoted monoculture-like practices

and intensified agrochemical use to ensure timely flowering—raising concerns about sustainability and soil health (Sarker & Chakravorty, 2005). Responsible cultivation practices, varietal diversification and integrated pest management had been recommended in the literature to reconcile income goals with environmental stewardship.

4.8. Case Studies and Illustrative Examples:

Purulia: Prospects and Socio-economic Sustainability of Marigold:

A recent district-level prospectus had examined marigold cultivation potential in Purulia, emphasizing socio-economic sustainability for smallholders and recommending tailored extension services to scale production for festival windows (Majumder et al., 2024). The analysis argued that marigold cultivation could be both a poverty-alleviation tool and a market-oriented livelihood strategy in rainfed tracts—provided that growers had access to timely inputs, linkages to Kolkata markets and support for post-harvest handling.

Kolkata Flower Markets (Mullickghat / Canning / Gariahat environs):

Kolkata's wholesale flower markets had been central nodes in the state's floral supply chain. News reporting from vendor associations and market watchers documented that marigold prices in Kolkata had oscillated widely in puja seasons (e.g., reported marigold prices ranging from Rs. 60/kg to Rs. 153/kg in different pre-puja snapshots) and that tuberose commanded premium pricing (Times of India; Commodity Online; Napanta market listings). These urban price signals had been powerful drivers for peri-urban production decisions.

5. Discussion:

5.1. Festival Demand as a Double-Edged Sword:

The ritual calendar—most prominently Durga Puja—had provided dependable demand that justified floriculture investments, cropping calendars and labour hiring. However, the episodic nature of demand had concentrated bargaining power in temporal windows: when demand peaked, prices soared and growers benefitted; when supply gluts occurred or demand softened (due to weather, consumer shifts or alternative sourcing), growers bore the brunt of losses. Thus, festival-driven markets had offered both economic opportunity and exposure to price risk.

5.2. Market Structure and Producer Capture:

The informal nature of aggregation and the dominance of intermediaries in many local contexts had meant that smallholders often lacked direct access to higher-value retail margins. Strengthening producer organisations, encouraging contract farming with transparent terms, and facilitating direct-selling arrangements to large pandals or institutional buyers had been recommended pathways to improve producer net returns (Sarker, 2005; MPRA).

5.3. Employment and Rural Welfare:

Floriculture's higher labour intensity had made marigold and tuberose meaningful instruments for rural employment generation. Particularly in labour-surplus seasons, flower cultivation had created off-farm-like income opportunities in planting, tending and harvesting. However, these employment benefits needed to be balanced against income volatility—policy design (credit, insurance) could stabilise incomes and support sustained engagement with floriculture.

5.4. Infrastructure and Institutional Gaps:

Addressing post-harvest losses and market inefficiencies required investments in graded collection centres, cold-chain logistics, price information systems and access to credit. Where such investments had been trialled or supported by extension agencies, producers had been able to capture better prices and reduce spoilage. Public–private partnerships in cold storage and cooperative-managed collection points had been suggested as scalable models.

6. Policy Recommendations:

Based on the synthesis of evidence, the following policy and programmatic interventions were proposed:

- **Post-harvest Infrastructure Investments:** Establishment of district-level cold-storage hubs and graded packing facilities to reduce spoilage, extend sales windows and stabilise prices for peri-urban growers.
- **Producer Organisations & Collective Marketing:** Support formation of grower cooperatives and Farmer Producer Organisations (FPOs) to aggregate supply, negotiate better prices, and enter contractual arrangements with urban buyers and pandal committees.
- **Price-risk Instruments:** Development of simple price-support mechanisms or weather/production-indexed insurance products tailored to floriculture, so that growers were buffered from catastrophic price collapses.
- **Extension & Technical Support:** Extension services should promote improved cultivation schedules (to smooth supply across weeks), varietal diversification, integrated pest management and post-harvest handling practices specifically for marigold and tuberose.
- **Value Addition & Diversification:** Encourage small-scale value addition (garland-making units, scented products from tuberose extracts) and link floral producers to hospitality and event-management sectors for year-round demand beyond festival spikes.
- **Market Information Systems:** Implement real-time price discovery platforms and mandi information accessible via mobile phones to reduce asymmetry and enable growers to time sales better.
- **Sustainable Cultivation Practices:** Promote best practices to minimise pesticide overuse and encourage soil-health measures to sustain long-term productivity.

7. Limitations:

The study was based on secondary documentary synthesis rather than primary household or market surveys. While triangulation across diverse sources mitigated some gaps, granular farm-level profitability and household welfare impacts varied by district and farm size and would benefit from targeted primary research—especially panel data capturing year-on-year price and yield dynamics.

8. Conclusion:

Marigold and tuberose had functioned as more than ceremonial commodities in West Bengal; they had been livelihood assets, seasonal employment engines and integral to the cultural economy of festivals. Marketization and peri-urban floriculture had increased supply reliability and incomes, but structural weaknesses—post-harvest losses, intermediary capture of margins, price volatility and infrastructure

deficits—had limited equitable gains for smallholders. Policy interventions that had focused on post-harvest facilities, cooperative marketing, price-risk tools and extension tailored to flower crops were argued to be instrumental in ensuring that the cultural value of ritualistic flowers translated into durable economic benefits for growers and rural households.

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