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Floriculture Expansion in Bihar: Analysing Area and Yield Increases from 2021 to 2024

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Abstract:

This study examines the transformation of floriculture in Bihar from 2021 to 2024, tracking its evolution from a niche activity to a significant contributor to the state's horticultural economy. The total cultivated area increased from 1.21 ha to 1.41 ha, while flower production rose from 11.14 t to 13.32 t. Marigold dominated this progression, with its area expanding from 1.159 ha to 1.350 ha and production growing from 10.60 t to 12.80 t. Jasmine and rose observed modest growth during the same period, but tuberose and other minor varieties remained relatively stagnant. Driving this shift are policy interventions, infrastructure improvements such as modern nurseries and drip irrigation, and targeted schemes including Phool Vikash, Kela Vikas, and the Rooftop Gardening initiatives. Using secondary data from the Bihar Economic Survey and employing ratio and percentage analyses, this study explores the balance between area expansion and yield enhancement. The findings indicate that while marigold remains the primary driver of growth, emerging trends in jasmine and rose signal untapped diversification potential. The insights presented can inform future policy direction, aiming to leverage floriculture as a means to diversify rural incomes, support livelihoods, and catalyze sustainable agricultural development in Bihar.

Keywords: Horticulture, Floriculture, Marigold, Production, Nurseries, Sustainable.

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Introduction:

Relating to horticulture, intensive science and practice of growing garden and high-value crops such as fruits, vegetables, flowers, ornamental plants, and herbs. It involves careful, hands-on management of plant health, propagation, yield, aesthetics, and post-harvest quality.

In this paper, we examine the quantitative dimensions of this floriculture boom: tracking how cultivated area and yield have changed across the years 2021 to 2024. We seek to uncover the underlying factors-policy interventions, technological adoption, economic incentives, and farmer behaviour-that are driving this transition. Ultimately, the study aims to shed light on the potential of floriculture in transforming Bihar's agrarian landscape, enhancing rural incomes, and guiding future policy directions for sustainable horticultural growth in the region.

Between 2021 and 2024, floriculture in Bihar has evolved from a marginal agricultural activity into a dynamic and promising sector. What once occupied a few hundred hectares has now expanded into a more diverse and integrated horticultural enterprise, as farmers increasingly adopt flower cultivation alongside traditional crops. This shift is driven not only by individual farmer initiative but also by a broader push-including infrastructural development of nurseries, dedicated floriculture centres, and high-yield planting material, that signals a strategic commitment to floriculture as a powerful instrument of rural diversification. The growth in cultivated area and output reflects a purposeful move toward high-value farming. Modern nurseries and drip irrigation systems are enabling farmers to grow commercial varieties such as marigold, rose, jasmine, and even decorative plants on a larger scale. At the same time, agricultural training programs and subsidies are helping producers modernize operations, streamline production, and access new markets.

Objectives:

1. To quantify the change in total cultivated area for floriculture in Bihar from 2021–22 to 2023–24.
2. To identify which flower varieties—Jasmine, Marigold, Rose, Tube Rose, and Others—experienced the most pronounced increases in area and production.
3. To compare area and production growth rates across different species to understand which crops contributed most to overall expansion.

Need of the Study:

Bihar's economy remains deeply rooted in agriculture, with nearly 80% of its population directly engaged in farming. Despite this high engagement, crop choices are narrow and heavily weighted toward traditional staples. Introducing floriculture offers a valuable opportunity to disrupt this pattern, moving farmers into higher-value, market-driven crops and diversifying their income streams.

Moreover, floriculture is an inherently labour-intensive activity that can spark meaningful rural employment, particularly benefiting women and young people. With many households in Bihar facing constrained incomes and limited job options, the expansion of flower cultivation holds promise not only for boosting household revenues but also for creating sustainable, long-term livelihoods.

Literature Review:

In Bihar, whether in staple grains or high-value floriculture, converting agriculture into a reliable source of income hinges on strategic systemic

reforms, such as establishing organized flower markets, upgrading post-harvest infrastructure, expanding irrigation systems, and implementing supportive policies. Only through such systemic changes can the potential of floral cultivation be fully harnessed, enabling rural communities to uplift their economic stability and well-being, **Sharat Chandra Prasad (March 2025)**. In the area under study, fruit and vegetable cultivation far surpasses flower growing in terms of land use. North Bihar's plains serve as the heartland for fruit farming. Among the districts assessed, Samastipur leads the pack in horticultural activity, followed in descending order by Araria, Patna, Saran, Nalanda, West Champaran, Darbhanga, Kishanganj, Madhubani, and Muzaffarpur. **Shamsul, Haque Siddiqui, and Nasrin Biswas (2017).** The state of Bihar plays a significant role in the production of horticulture products in the country. With a share of the national production of 10% and 7%, Bihar is the largest producer of fruits and vegetables in India. In terms of fruit and vegetable production, the state ranks 3rd and 6th among other states in the country **(Rohit Kumar, 2024).**

Bihar Government Schemes to Boost Floriculture for Farmers:

- **Phool (Genda) Vikash Yojana:** The Phool (Genda) Vikash Yojana, initiated by Bihar's Department of Agriculture, supports marigold cultivation across 15 districts by covering 50% of the estimated cultivation cost of ₹80,000 per hectare, providing up to ₹40,000 per hectare, and supporting a maximum of 4 hectares per farmer. With a budget allocation of ₹6.32 crore for the 2025–26 fiscal year, the scheme also supplies subsidized seedlings and high-quality inputs. Farmers enrol through the DBT portal, and following verification by horticulture officers at the block and district levels, the subsidy is transferred directly into their bank accounts. Aimed at boosting floriculture as a profitable cash crop, the initiative also promotes processing, marketing, and rural employment while empowering farmers with diversified income sources.
- **Kela Vikas Yojana:** The **Kela Vikas Yojana**, implemented under the Mukhyamantri Bagwani Mission by Bihar's Department of Agriculture, supports commercial plantain cultivation in 15 districts. The scheme offers financial aid—₹46,875 per hectare in the first year and ₹15,625 per hectare in the second—along with high-quality tissue-cultured saplings. It ensures fairness by reserving quotas for SC, ST, and women farmers, and is open to both ryot and non-ryot farmers. All payments are routed through DBT, with farmers applying online via the horticulture department portal. By providing structured support for two years, the program aims to enhance horticultural productivity, diversify income sources, and promote inclusive growth in Bihar's agricultural landscape.
- **Bihar Rooftop Gardening Scheme** (Chhat Par Bagwani Yojana): The **Bihar Rooftop Gardening Scheme** (Chhat Par Bagwani Yojana) is a new initiative by the Bihar Government's

Department of Agriculture aimed at encouraging urban residents in Patna Sadar, Danapur, Phulwari, Khagaul, Bhagalpur, Gaya, and Muzaffarpur to cultivate fruits, vegetables, and flowers on their rooftops. Under the **Farming Bed Scheme**, each 300-sq-ft unit costs ₹50,000, with a generous 75 % subsidy (₹37,500), and homeowners can avail benefits for up to two units—institutions may get up to five. The **Planter Scheme** supports standalone pots at ₹10,000 per unit, also subsidized at 75 % (₹7,500), though not available to institutions. Applicants must own their homes or flats in Bihar and have at least 300 sq ft of usable rooftop area. Allocation of subsidies is designed to be inclusive: 78.6 % for the general category, 20 % for SC, 1.4 % for ST, and 30 % of benefits prioritized for women. Assistance is disbursed through DBT following online applications on the horticulture portal, enabling citizens to transform their rooftops into productive green spaces and foster urban sustainability.

Table No. 1.1: Horticulture vs Agriculture: A Simple Comparison

Factor	Agriculture	Horticulture
Scale	Large fields, mechanized systems	Smaller plots, often manual or semi-mechanical
Objective	High-volume staple crops (e.g., wheat, rice)	High-value fruits, vegetables, and flowers
Labour input	Lower per plant	Higher plant-detailed care and attention
Economic value	Essential staples, lower cost per unit	Premium produce, greater profitability per area

Table No. 1.2: Area and Production of Flowers in Bihar (2021-22 to 2023-24)

Flower	2021-22		2022-23		2023-24	
	Area	Production	Area	Production	Area	Production
Jasmine	0.004	0.013	0.004	0.013	0.006	0.018
Marigold	1.159	10.601	1.201	11.065	1.35	12.798
Rose	0.018	0.138	0.018	0.014	0.025	0.152
Tube Rose	0.001	0.028	0.001	0.028	0.001	0.0269
Others	0.027	0.363	0.022	0.32	0.028	0.328
Total	1.21	11.144	1.246	11.564	1.41	13.323

Sources: Bihar Economic Survey 2024-25

Table 1.2 presents the trends in area cultivated and flower production in Bihar over three consecutive agricultural years: 2021–22, 2022–23, and 2023–24. From 2021–22 to 2023–24, the total area under floriculture in the state increased from 1.21 hectares to 1.41 hectares, marking a notable expansion. During the same period, total flower production rose from 11.14 tonnes to 13.32 tonnes, indicating a healthy trend of sectoral growth. Marigold dominates the floriculture landscape, accounting for the bulk of cultivated area and production each year. Its area expanded from 1.159 ha to 1.350 ha, while production climbed

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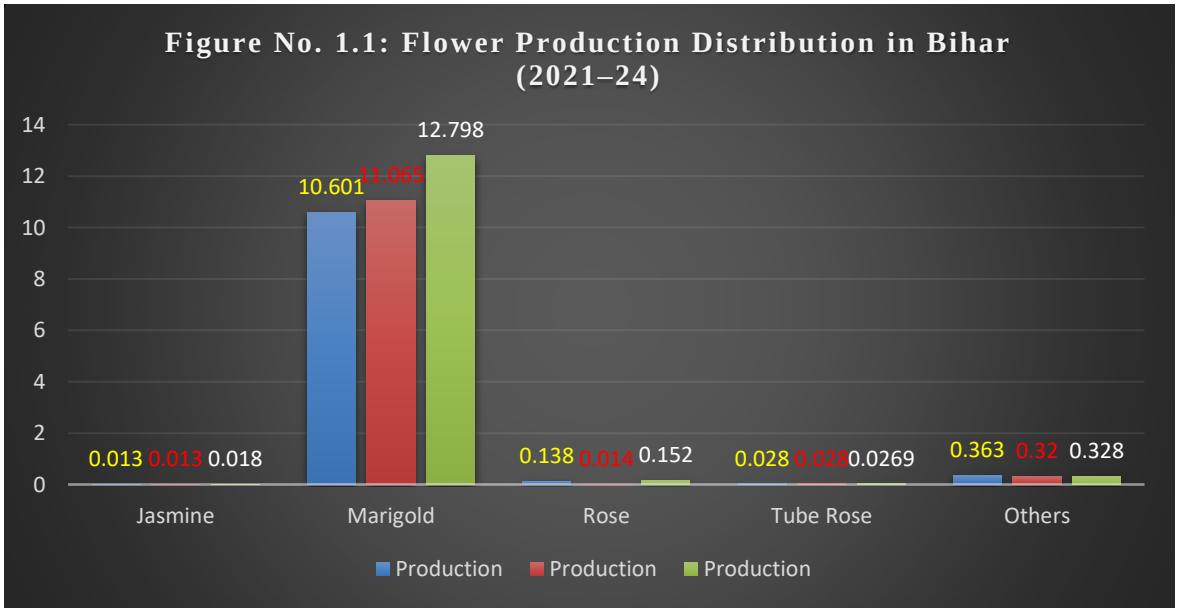
from 10.60 t to 12.80 t. Increases in marigold largely drive the overall figures. Jasmine and rose, though grown on much smaller scales, exhibit promising upward trends. Jasmine's area went from 0.004 ha to 0.006 ha, and production rose from 0.013 t to 0.018 t. Likewise, rose area and production increased from 0.018 ha and 0.138 t to 0.025 ha and 0.152 t, respectively. Tuberose remained flat at 0.001 ha, with production staying around 0.028 t, showing little change over the period. The "Others" category—which includes a mix of smaller flower varieties—also showed minor growth in area (from 0.027 ha to 0.028 ha) but a slight dip in production (from 0.363 t to 0.328 t).



Sources: Bihar Economic Survey 2024-25

Figure 1.1 displays the production volumes of five key flower categories: Jasmine, Marigold, Rose, Tube Rose, and Others, in Bihar across three consecutive agricultural years (2021–22 to 2023–24). The standout observation is the overwhelming dominance of marigold, whose production soared from approximately 10.6 t in 2021–22 to 12.8 t by 2023–24. In contrast, all other flower types maintain much smaller scales by comparison, with production levels remaining in the hundreds of kilograms range.

Jasmine held steady at 0.013 t for the first two years before climbing to 0.018 t in 2023–24, signalling a modest upward trend. Rose showed similar small growth, hovering around 0.138 t and rising to 0.152 t by the final year. Tube Rose remains virtually unchanged, moving from 0.028 t to 0.0269 t, indicating a flat or slightly declining presence. The collective category of Others saw a minor fluctuation, decreasing from 0.363 t to 0.328 t over the period.

In summary, the histogram, reflected in this table, is striking for its portrayal of marigold as the primary contributor to flower production in Bihar, with all other varieties representing a

marginal share. Jasmine and rose show early signs of growth, while the tube rose and miscellany remain stagnant. This visual and numeric comparison underscores both the scale of marigold cultivation and the potential opportunities for diversifying into other flower types in the state.

Methodology:

This study relies solely on secondary data sourced from the Bihar Economic Survey 2024–25. We extracted time-series figures for cultivated area and production volumes of floriculture across 2021–22 to 2023–24. Quantitative techniques—specifically ratio and percentage calculations—were applied to assess annual growth and to determine each flower variety's share in the overall trend. The extracted data were organized into clear tables and visualized through histograms to illustrate changes in area, yield, and crop distribution over time.

Limitations of the Study:

This study is constrained by its exclusive reliance on a single data source, the *Bihar Economic Survey 2024–25*, which limits opportunities for data validation and cross-referencing with other records. The annual state-level aggregates that serve as the basis for analysis do not provide fine-grained insights into district-level variances, seasonal cycles, or monthly patterns. Since no primary data collection—such as field visits or stakeholder interviews—was undertaken, the study lacks on-the-ground perspectives from farmers, extension officers, and market actors, making it more difficult to contextualize observed shifts. Analytical methods were also limited to basic ratios and percentage comparisons; more sophisticated statistical techniques, like regression analysis, could not be employed due to data availability and structure. Finally, the study reflects trends only up to 2023–24 and may not capture emerging shifts or short-term fluctuations in the floriculture sector post that period.

Conclusion and Suggestions:

This study affirms that floriculture in Bihar has undergone a marked transformation between 2021 and 2024, emerging from a modest initiative into a strategically significant economic activity. The total cultivated area increased by nearly 16%, and production rose by approximately 20%, signalling clear momentum. Marigold remains the linchpin of this expansion, driving both land use and yield enhancement. Its dominance, however, also underscores the critical need for crop diversification. Jasmine and rose have demonstrated early but limited growth, suggesting valuable entry points for future investment and policy focus. Despite stagnant performance in tuberose and other minor varieties, the ongoing infrastructural improvements—modern nurseries, drip irrigation—and proactive policy frameworks such as Phool Vikash, Kela Vikas, and the Rooftop Gardening schemes have laid a robust foundation. To translate potential into resilient and inclusive rural prosperity, further efforts must emphasise diversified floriculture, market development, and capacity-building at the grassroots levels.

Drawing from insights in broader Indian horticultural policy, including the positive impacts of initiatives like the National

Horticulture Mission, it is evident that while Bihar's floriculture is set on an upward trajectory, unlocking its full potential will require targeted supports such as producer collectives, market linkages, and crop diversification strategies. This approach can ensure floriculture becomes a sustainable engine for rural livelihoods and agricultural renewal in Bihar.

This overview shows that while floriculture in Bihar is expanding, it remains heavily dependent on one crop—marigold. To build a more balanced and resilient flower economy, the state may benefit from encouraging growers to diversify into other varieties like jasmine and rose. Broader cultivation of varied flowers could help stabilize incomes, improve market flexibility, and strengthen the sector's resilience over time.

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