

# Geographic And Climatic Suitability In Karnataka For Floriculture

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## Abstract

Karnataka, one of India's most agriculturally progressive states, holds a pivotal position in the country's floriculture landscape due to its unique combination of **diverse agro-climatic zones, fertile soils, and a favorable tropical monsoon climate**. These natural advantages, coupled with emerging infrastructure and policy support, have enabled the state to become a leading producer and exporter of a wide array of flowers such as **roses, chrysanthemums, gerberas, marigolds, tuberose, and orchids**.

Presently, Karnataka contributes around **14% of India's total flower production**, and is recognized as a major player in **both domestic and international flower markets**, particularly through hubs like Bengaluru and Kolar. The climatic conditions—marked by **moderate temperatures, relatively high humidity, and predictable rainfall patterns**—support **year-round cultivation**, especially under protected environments like polyhouses and greenhouses, which have been increasingly adopted by farmers across the state.

This research article aims to explore the **geographic and climatic suitability** of Karnataka for floriculture and examines how this sector is being **strategically integrated with agriculture and the Micro, Small, and Medium Enterprises (MSME) ecosystem**. The study investigates how **MSMEs are playing a catalytic role** in areas such as flower processing, marketing, packaging, cold chain logistics, and export facilitation.

In addition, the paper delves into key **policy initiatives**, success stories, and infrastructural developments that have contributed to the sector's rise, while also critically analyzing existing challenges including **post-harvest losses, export taxation, inconsistent market linkages, and limited access to finance for small growers**. A focused **case study from Tumakuru district** is presented to illustrate real-world examples of floriculture success, especially where traditional farmers have diversified into floriculture and experienced significant income growth.

**Keywords:** Karnataka, Floriculture, Agro-climatic Zones, Climate Suitability, Agriculture, MSME, Sustainable Practices, Export Potential, Horticulture Policy elaborate

## Introduction

Floriculture, a specialized branch of horticulture dealing with the cultivation of flowering and ornamental plants for gardens, commercial purposes, and aesthetic landscaping, is one of the fastest-growing segments within the agricultural sector in India. Among the various states contributing to India's floriculture development, **Karnataka has carved a prominent niche** due to its unique combination of favorable geography, climate, and policy support.

Karnataka enjoys the advantage of **ten distinct agro-climatic zones**, each offering unique environmental conditions suitable for growing a wide variety of flowers such as **rose, chrysanthemum, gerbera, marigold, tuberose, and orchids**. These zones range from **humid coastal belts to semi-arid plains and hilly terrain**, allowing the cultivation of both temperate and tropical flower species. Additionally, areas such as **Bengaluru, Mysuru, Tumakuru, and Kolar** have become focal points for commercial floriculture due to their mild climate, availability of skilled labor, and proximity to major markets and export hubs.

The **tropical monsoon climate** of Karnataka, characterized by **moderate temperatures (15°C to 35°C)**, **defined wet and dry seasons**, and **relatively high humidity**, supports **year-round flower production**, particularly under protected cultivation methods like polyhouses and greenhouses. These climatic conditions not only boost productivity but also reduce dependency on chemical inputs, making floriculture more sustainable and environmentally friendly.

In recent years, Karnataka's floriculture has seen increasing integration with **agricultural practices and MSME (Micro, Small, and Medium Enterprises)** development. This synergy has created new economic opportunities for **rural farmers, women entrepreneurs, and youth** by providing alternatives to traditional crops and enabling value addition through **processing, packaging, and export-oriented floriculture units**. The floriculture value chain has thus expanded to include **nurseries, tissue culture labs, cold storage units, florists, exporters, and perfume manufacturers**, supported by robust MSME ecosystems.

However, despite its promise, the sector faces several challenges including **high input costs, inadequate infrastructure for storage and transportation, market volatility, and taxation barriers like GST on air freight**, which have impacted its export competitiveness. There is a pressing need for **policy interventions**, improved research and development, and **capacity-building initiatives** to address these challenges and unlock the full potential of Karnataka's floriculture sector.

## Review of Literature

### 1. Agro-climatic Zones and Floriculture

Karnataka is divided into **ten agro-climatic zones**, each characterized by specific soil types, temperature ranges, rainfall patterns, and elevation levels. This climatic diversity allows farmers to cultivate a **wide array of flower crops** tailored to local conditions. For instance:

- **Southern Dry Zone** (Bengaluru Rural, Mysuru): Characterized by red sandy loam soils, moderate rainfall (600–900 mm), and temperatures ranging between 16–35°C. This region supports hardy and vibrant flowers such as **marigolds, gomphrena, and chrysanthemums**, which are widely used for religious and ceremonial purposes in India.
- **Northern Transition Zone** (Dharwad, Haveri): This zone benefits from slightly higher rainfall and fertile soils, making it suitable for **gerbera, tuberose, lilies, and gladiolus**—flowers that have both ornamental and commercial value, including exports.

These regional variations allow for **region-specific flower farming strategies**, improving productivity and reducing the risk of crop failure. Research from the **University of Agricultural Sciences (UAS), Bangalore** confirms that matching flower species to suitable zones significantly enhances quality and yield.

### 2. Climatic Factors Influencing Floriculture

Karnataka's **tropical monsoon climate** provides an ideal backdrop for round-the-year floriculture. Key factors include:

- **Moderate average temperatures (15°C to 35°C)** reduce stress on delicate floral crops.
- **Bimodal rainfall distribution** across regions supports two main cropping seasons: **Kharif (June–September)** and **Rabi (October–January)**.
- **Sunlight availability** ensures sufficient photosynthesis, crucial for flowering crops.

Cities like **Bengaluru** exemplify optimal climatic conditions for floriculture, with only about **two months of harsh summer** and otherwise pleasant, moderate weather throughout the year. This allows growers to experiment with exotic varieties such as **hydrangeas, tulips, alstroemeria, and snapdragons**, especially in controlled environments.

In protected cultivation systems like **polyhouses**, growers can maintain optimal temperature and humidity levels, increasing yields and improving flower quality, leading to **higher market prices and export potential**.

### 3. Integration with Agriculture and MSMEs

The convergence of **floriculture with traditional farming and MSMEs** has opened new avenues for **value addition, rural entrepreneurship, and job creation**. This integration occurs in several ways:

- Farmers adopt floriculture as a **secondary or diversified income source**, often intercropped with vegetables or plantation crops.
- **MSMEs** in floriculture are engaged in:
  - Flower drying and preservation
  - Essential oil extraction (e.g., rose, jasmine)
  - Bouquet making and decorative products
  - Cold storage and logistics
  - Marketing platforms and e-commerce delivery

Supported by schemes like **PM Formalisation of Micro Food Processing Enterprises (PM-FME)** and **Karnataka State Horticulture Mission**, floriculture MSMEs help rural producers access markets, obtain credit, and adopt post-harvest technologies. The **availability of subsidies** for greenhouse infrastructure has been particularly influential in encouraging farmers to shift from traditional crops to high-value floriculture.

## Case Study: Floriculture in Tumakuru District

In **Tumakuru district**, located in the southern dry zone, several farmers have successfully transitioned from conventional farming to **commercial floriculture**. One prominent example is **Mr. G.C. Somshekhar** from **Kuramkote village**. Faced with falling prices in the vegetable market and increasing input costs, he opted to cultivate **chrysanthemums and button flowers**.

By adopting open-field floriculture techniques, combined with basic irrigation and organic fertilizers, Mr. Somshekhar significantly increased his income—earning nearly **₹4–5 lakhs per acre annually**, compared to ₹80,000 from vegetables. He also supplies flowers to the **K.R. Market in Bengaluru** and for religious functions in nearby towns.

This success story illustrates how **floriculture can offer higher profitability**, even on small landholdings, and demonstrates the importance of **farmer training, crop selection, and market connectivity**.

## Importance of Floriculture in Karnataka

### 1. Economic Contribution

- Karnataka is the **second-largest flower producer in South India**, with cultivation spread over **more than 30,000 hectares**.
- The **gross value output per acre** of flower farming is **10–20 times higher** than for cereals or pulses.
- Major production centers include **Bengaluru Rural, Kolar, Chikkaballapur, Tumakuru, Belagavi, and Kodagu**.
- Floriculture contributes significantly to the **state's GDP from horticulture**, supporting both domestic sales and international exports.

### 2. Export Potential

- Karnataka ranks third in India for **flower exports**, sending products to markets like **The Netherlands, UAE, Japan, Germany, and Australia**.
- Export items include **cut roses, loose flowers, dry flowers, and potted plants**.
- However, **high air freight charges, fluctuating foreign exchange rates, and 18% GST on air cargo** pose serious challenges.

- **Floriculture Parks and cold storage hubs near Kempegowda International Airport** are being developed to support exporters.

### 3. Employment Generation

- The floriculture industry provides **direct employment to over 2 lakh people**, including **marginal farmers, women, and youth**.
- Activities such as nursery management, bouquet preparation, floristry, and marketing offer **livelihoods across the value chain**.
- Employment in floriculture is often **less seasonal**, allowing for more consistent income compared to traditional crops.

## Findings

1. **Geographic Suitability:** Karnataka's agro-climatic diversity makes it suitable for cultivating a wide range of flower crops, ensuring resilience and crop specificity.
2. **Climatic Conditions:** A tropical monsoon climate with moderate year-round temperatures supports continuous flower cultivation, with lower input costs under protected conditions.
3. **Integration with MSMEs and Agriculture:** Strong synergy between floriculture, MSMEs, and traditional farming is fostering value addition and rural entrepreneurship.
4. **Challenges Identified:**
  - High post-harvest losses (up to 30% in some areas)
  - Limited cold storage and logistics support
  - Export bottlenecks due to policy issues like GST on air freight
  - Lack of organized marketing networks for small-scale growers

## Suggestions

### 1. Policy Support

- The government should extend **higher subsidies for polyhouses, shade nets, and drip irrigation systems** under schemes like RKVY and MIDH.
- GST on **air freight for perishable items** should be reconsidered or waived for exporters to regain international competitiveness.

### 2. Infrastructure Development

- **Cold chain infrastructure**, grading units, and mobile storage vans should be made available at **mandi and farmgate levels**.
- Investment in **rural roads and refrigerated transport** can help reduce flower spoilage and improve delivery timelines.

### 3. Market Access and Value Addition

- Establishment of **floriculture clusters** with common branding and e-market support (like eNAM, AgriBazaar) for better price realization.
- Promotion of **processed flower products** such as essential oils, potpourri, and eco-friendly floral decor through MSME channels.

### 4. Training and Capacity Building

- State horticulture departments and agri-universities should regularly organize **skill-building programs**, including:
  - Flower-specific pest and disease control
  - Organic floriculture methods
  - Post-harvest handling and packaging

- Export readiness and quality certifications (e.g., APEDA training)

## Conclusion

Karnataka's inherent **geographic and climatic advantages**—ranging from its ten agro-climatic zones to its moderate tropical monsoon weather—have positioned it as a **natural powerhouse for floriculture** in India. This diversity allows for the cultivation of both indigenous and exotic flower species, contributing to the state's strong foothold in both domestic and international floriculture markets. The thriving production in districts like **Bengaluru Rural, Kolar, Tumakuru, and Belagavi** showcases how geographic suitability can be transformed into tangible economic opportunities.

The increasing **integration of floriculture with mainstream agriculture and MSMEs** represents a promising model for **agricultural diversification, rural employment generation, and inclusive economic development**. By adopting protected cultivation practices and entering value chains supported by MSMEs, farmers are achieving **higher returns, reduced risk, and market resilience**.

Despite these strengths, **critical challenges** persist—especially in the areas of **export infrastructure, post-harvest management, market access, and regulatory bottlenecks** such as GST on freight charges. These challenges have inhibited the sector's ability to scale sustainably and remain competitive in the global market.

To address these gaps, a **multidimensional approach** is essential. This includes:

- **Policy reforms** focused on financial incentives, tax relief, and export facilitation.
- **Investment in infrastructure**, such as cold chains, grading centers, and rural logistics.
- **Skilling initiatives** through agricultural universities and Krishi Vigyan Kendras (KVKs) to train farmers in modern floriculture techniques.
- **Cluster-based development models** to create synergies among small growers, MSMEs, exporters, and market intermediaries.

If these recommendations are implemented effectively, Karnataka has the potential not only to solidify its status as a **national leader in floriculture**, but also to emerge as a **global center for sustainable and value-added flower production**. The sector can play a transformative role in uplifting rural livelihoods, empowering women and youth, and contributing significantly to the **State's horticulture GDP and export economy**.

## References

1. University of Agricultural Sciences, Bangalore. (n.d.). *Agro-climatic Zones – Karnataka*. Retrieved from <https://www.uasbangalore.edu.in/en/agro-climatic-zones-karnataka/>
2. Amoghavarsha IAS Academy. (n.d.). *Agro Climatic Zones of Karnataka*. Retrieved from <https://amoghavarshaiaskas.in/agro-climatic-zones-of-karnataka/>
3. Department of Horticulture, Government of Karnataka. (2013). *Floriculture in Karnataka: Policy Framework and Schemes*. Retrieved from <https://horticulturedir.karnataka.gov.in>
4. APEDA (Agricultural and Processed Food Products Export Development Authority). (2012). *Export Potential of Floriculture from India*. Retrieved from <https://apeda.gov.in>
5. Indian Institute of Horticultural Research (IIHR). (2014). *Performance of flower crops under protected cultivation in Karnataka*. ResearchGate. DOI: [10.13140/RG.2.2.10595.04646](https://doi.org/10.13140/RG.2.2.10595.04646)