



Recent trends in the cut flower and foliage industry in India: Production, technology, markets and future prospects

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Abstract

The cut flower and foliage industry in India has developed from a predominantly traditional, local-market activity into a diversified high-value horticultural enterprise involving protected cultivation, improved planting material, cold-chain management, digital marketing, floral design, landscape services, and export-oriented production. India's wide range of agro-climatic conditions permits the commercial cultivation of both temperate and tropical ornamentals, including rose, gerbera, carnation, chrysanthemum, gladiolus, tuberose, orchid, anthurium, lily, heliconia, bird-of-paradise, gypsophila, statice, and several foliage crops. Recent industry expansion has been driven by urbanization, rising disposable incomes, growth in weddings and events, hospitality-sector demand, corporate gifting, e-commerce, interior landscaping, and consumer interest in indoor plants and sustainable décor. According to the Agricultural and Processed Food Products Export Development Authority (APEDA), India had 397.89 thousand hectares under floriculture in 2024–25, producing 3,226.20 thousand tonnes of loose flowers and 1,039.29 thousand tonnes of cut flowers. Floriculture exports reached USD 92.55 million in 2025–26, with the United States, the Netherlands, the United Arab Emirates, the United Kingdom, and Canada among the leading destinations.

The present review examines recent trends in India's cut flower and foliage industry, with emphasis on changing production systems, protected cultivation, precision irrigation and fertigation, soilless media, tissue culture, climate-smart practices, postharvest technologies, value addition, digital commerce, market diversification, and sustainability. It also discusses persistent constraints, including fragmented holdings, inadequate cold-chain integration, costly air freight, poor price discovery, inconsistent quality, and vulnerability to climate variability. The review concludes that India can strengthen its position in domestic and international floriculture through cluster-based production, reliable planting-material systems, quality certification, improved logistics, market intelligence, branding, and circular-economy approaches for flower waste utilization.

Keywords: Cut flowers, cut foliage, floriculture, protected cultivation, postharvest management, flower marketing, India, value addition

Introduction

Floriculture is an important branch of horticulture concerned with the production, improvement, marketing, and utilization of flowers and ornamental plants. It includes loose flowers, cut flowers, cut foliage, potted plants, bedding plants, nursery plants, landscaping materials, dry flowers, floral crafts, natural pigments, essential oils, turf, and ornamental planting materials. Although flowers have long been integral to Indian social, spiritual, cultural, and religious life, commercial floriculture acquired greater momentum after economic liberalization, the introduction of protected cultivation, access to imported planting material, and export-oriented policy support.

The cut flower segment differs from traditional loose-flower cultivation because it is strongly dependent on uniformity, stem quality, flower size, vase life, grading, packaging, and cold-chain handling. Cut foliage is equally important because foliage provides texture, volume, contrast, and structural value in bouquets, floral arrangements, event décor, and landscape-related floral products. In many premium flower markets, foliage is not merely an accessory but a value-bearing component of floral design. Leather leaf fern, asparagus, dracaena, monstera, philodendron, ruscus, aralia, palms, cycads, eucalyptus, cordyline, and ornamental grasses are increasingly used in bouquet work and interior decoration.

India has considerable comparative advantages in floriculture. These include diverse climatic zones, availability of labour, long production seasons in several regions, a large domestic market, expanding urban consumption, and the possibility of producing both tropical and subtropical ornamentals. The country's floriculture sector has expanded from conventional open-field cultivation to high-value protected production, particularly for rose, gerbera, carnation, lily, orchid, and anthurium. Kumar *et al.* (2023)^[16] observed that the sector has moved progressively from traditional farming towards a commercial enterprise capable of generating farm income, rural employment, and entrepreneurship opportunities.

India's floriculture area and production have grown substantially, but the sector's global trade share remains lower than its production potential. Malhotra (2024)^[19] noted that Indian floriculture is increasingly linked to landscape design, maintenance services, retailing, greenhouse inputs, parks, gardens, and technical consultancy, indicating a broadening of the industry beyond flower production alone. This transformation has made the cut flower and foliage industry a value-chain enterprise rather than a simple farm activity.

The industry has also become more demand-responsive. Flowers are purchased not only for religious purposes and festivals but also for birthdays, anniversaries, weddings,

conferences, funerals, corporate events, hotel decoration, public functions, and gifting. The expansion of online flower delivery platforms has widened the consumer base and reduced the distance between growers, wholesalers, florists, and end users. At the same time, changing consumer preferences have increased demand for novelty flowers, pastel colours, premium bouquets, sustainable packaging, preserved flowers, indoor foliage plants, and locally sourced floral products.

This review discusses the major recent trends shaping the cut flower and foliage industry in India and identifies the technological, market, institutional, and environmental interventions needed for sustained growth.

Status of the Industry in India

India is among the major flower-producing countries because of its climatic diversity and large area under ornamental crops. The country produces a broad spectrum of conventional flowers such as rose, marigold, jasmine, chrysanthemum, gladiolus, tuberose, and crossandra, along with high-value cut flowers such as gerbera, carnation, lily, orchid, anthurium, bird-of-paradise, heliconia, and alstroemeria. APEDA (2026) reported that India had 397.89 thousand hectares under floriculture during 2024–25. Production during the same period was estimated at 3,226.20 thousand tonnes of loose flowers and 1,039.29 thousand tonnes of cut flowers.

Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Karnataka, and West Bengal are among the major floriculture-producing states. APEDA (2026) ^[2] reported that Andhra Pradesh accounted for 27.63% of floriculture production, followed by Tamil Nadu with 17.17%, Madhya Pradesh with 11.44%, Karnataka with 10.36%, and West Bengal with 8.79%. Karnataka, Tamil Nadu, Maharashtra, Telangana, West Bengal, Himachal Pradesh, Haryana, Uttarakhand, Kerala, Odisha, Assam, Sikkim, and several northeastern states are important centres for different flower and foliage crops.

Protected cultivation is concentrated in regions with good market access and a relatively developed greenhouse ecosystem. Bengaluru and its surrounding districts continue to be important production and marketing centres for roses, gerberas, carnations, chrysanthemums, orchids, and foliage materials. Pune, Nashik, Satara, Sangli, Nilgiris, Hosur, Kodaikanal, Coimbatore, Hyderabad, and parts of Himachal Pradesh and Uttarakhand also contribute substantially to commercial cut flower production.

The export profile of Indian floriculture includes cut flowers, loose flowers, dried flowers, bulbs, tubers, live plants, foliage, and value-added floral materials. APEDA (2026) reported floriculture exports of USD 92.55 million in 2025–26, with the United States, the Netherlands, the United Arab Emirates, the United Kingdom, and Canada among the major destinations. More than 300 export-oriented units operate in the country, and a substantial share is concentrated in Karnataka, Andhra Pradesh, and Tamil Nadu.

Despite this progress, India's export potential remains underutilized. Kumar *et al.* (2023) ^[16] argued that weak infrastructure, inadequate quality planting material, inefficient marketing systems, high freight charges, insufficient cold storage, and poor vertical integration continue to constrain the sector. The future of Indian floriculture therefore depends not only on raising production

but also on improving quality consistency, postharvest management, branding, certification, logistics, and market intelligence.

Recent Trends in Cut Flower Production

Shift towards protected cultivation

Protected cultivation has been the most visible technological trend in Indian cut flower production. Polyhouses, naturally ventilated greenhouses, shade-net houses, insect-proof structures, rain shelters, and low-cost protected structures are increasingly used for flowers that require control over temperature, humidity, light intensity, rainfall, and pest incidence.

High-value flowers such as rose, gerbera, carnation, lily, orchid, anthurium, and alstroemeria are increasingly grown under protected conditions. Protected cultivation enables year-round production, improved flower quality, longer stems, uniform bud size, reduced weather damage, more efficient water use, and better crop scheduling for festive and wedding markets. It also helps growers meet specific market requirements for colour, stem length, bloom stage, and vase life.

Rose remains one of the most important cut flowers in India, particularly in premium urban and export markets. Hybrid tea roses and spray roses grown under polyhouses are valued for their stem length, bud shape, colour uniformity, and vase life. Gerbera has also become popular because of its high productivity, wide colour range, and suitability for protected cultivation. Carnation production, particularly in cool and moderate climates, has expanded in some regions due to demand from hotel, event, and bouquet markets.

Protected cultivation, however, is capital intensive. It requires investments in structures, irrigation systems, fertigation units, planting material, growing media, labour, crop protection, and energy. The economic viability of protected cut flower farming depends on yield, market access, crop management skill, planting density, quality of planting material, and postharvest efficiency. Government assistance through horticulture-development schemes has supported adoption, but many farmers still face challenges in maintaining greenhouse structures and replacing cladding materials.

Precision irrigation and fertigation

Water-efficient production systems are increasingly important because flower crops are sensitive to both moisture stress and waterlogging. Drip irrigation combined with fertigation has become standard practice in many protected flower units. Fertigation permits frequent application of soluble nutrients in small doses, thereby matching crop demand and reducing nutrient losses.

Precision irrigation is particularly useful for roses, gerberas, carnations, orchids, and foliage crops grown in containers or soilless media. It facilitates better control over root-zone moisture and nutrient concentration. Sensors, automated irrigation controllers, venturi injectors, fertigation tanks, and climate-based scheduling are gradually becoming more common in commercial units.

Micro-irrigation also supports climate resilience. Kumar *et al.* (2023) ^[16] recommended expanding micro-irrigation, mulching, rural cooling networks, and efficient nutrient management to improve productivity and reduce the risks associated with weather variability. The use of mulches, cocopeat, perlite, vermiculite, compost, and organic

amendments can further improve moisture retention and root-zone conditions.

Soilless culture and substrate-based production

A significant recent trend is the gradual movement from soil-based systems to substrate-based cultivation. Gerbera, rose, carnation, anthurium, orchids, and certain foliage plants are increasingly grown in cocopeat, perlite, vermiculite, expanded clay, rockwool, or mixtures of organic and inorganic substrates.

Soilless culture reduces soil-borne diseases and nematode problems, improves root aeration, allows precise nutrient application, and facilitates intensive cropping. It is particularly useful in areas where soil salinity, poor drainage, continuous cropping, or pathogen build-up limit productivity. Substrate culture also allows better standardization in greenhouse production.

Nevertheless, soilless systems require careful management of pH, electrical conductivity, irrigation frequency, nutrient composition, drainage, and sanitation. Farmers need technical training because minor errors in fertigation can rapidly affect crop growth and flower quality. The long-term sustainability of substrates is also important. Cocopeat is widely available in India, but its buffering, washing, quality control, and reuse require standard protocols.

Improved planting material and tissue culture

The availability of disease-free, true-to-type planting material is central to the success of the cut flower and foliage sector. Recent years have witnessed increased use of tissue-cultured plants, imported plugs, rooted cuttings, virus-indexed mother plants, and certified nursery material. Tissue culture is especially relevant for orchids, anthuriums, gerberas, foliage plants, and several bulbous ornamentals.

Kumar *et al.* (2023) ^[16] emphasized the importance of accredited nurseries, tissue-culture laboratories, and virus-indexing facilities for the supply of healthy planting materials. Poor-quality planting material can result in uneven growth, virus incidence, low productivity, off-types, and poor flower quality. Therefore, nursery certification and plant-health diagnostics are becoming important components of the floriculture value chain.

The development of indigenous varieties is also gaining attention. Dependence on imported cultivars can increase production costs and create vulnerability to supply disruptions. Breeding programmes need to focus on climate tolerance, disease resistance, long vase life, attractive colours, high productivity, and suitability for Indian protected structures and market conditions.

Diversification of crop portfolio

The Indian cut flower sector is moving beyond roses, gerberas, and carnations. Demand for novelty flowers, tropical flowers, fillers, and foliage is increasing. Orchids, anthuriums, heliconias, bird-of-paradise, ginger lilies, ornamental gingers, lilliums, lisianthus, hydrangeas, gypsophila, statice, limonium, hypericum, eucalyptus, and ornamental grasses are gaining attention in premium markets.

Tropical flowers have particular potential in humid and warm regions of Kerala, Karnataka, Tamil Nadu, the northeastern states, Andaman and Nicobar Islands, and coastal regions. Anthurium, orchids, heliconias, gingers, calatheas, palms, and foliage plants are especially suited to

humid tropical climates and niche floral markets. The northeastern region has opportunities for orchids, anthuriums, lilliums, cymbidiums, dendrobiums, and indigenous ornamental plants because of favourable climate and rich biodiversity.

Diversification reduces risk. A farm producing only one flower crop becomes vulnerable to price fluctuations, pest outbreaks, consumer preference changes, and weather events. Mixed production of focal flowers, fillers, foliage, potted plants, and value-added products can stabilize income and enable year-round market participation.

Growth of the Cut Foliage Segment

Cut foliage has traditionally received less attention than flowers in India, but its importance is rising rapidly. Modern bouquet design depends on foliage for texture, contrast, volume, and visual balance. Event decorators, luxury hotels, wedding planners, premium florists, and online bouquet companies increasingly use foliage as a core component of floral arrangements.

Foliage crops can often offer advantages over cut flowers. They may be more durable during transport, have longer postharvest life, require less frequent harvesting, and tolerate handling better than delicate blooms. In addition, several foliage species can be grown under shade nets, agroforestry systems, homestead gardens, or partially shaded plantations.

Commonly used foliage plants include asparagus, leather leaf fern, dracaena, cordyline, monstera, philodendron, areca palm, chamaedorea palm, cycads, ruscus, eucalyptus, aralia, ferns, pandanus, ornamental grasses, and various tropical leaves. In Kerala and other humid tropical regions, foliage crops can be integrated with coconut-based systems, homestead gardens, shade areas, and ornamental nurseries.

The growing popularity of indoor plants has further stimulated demand for foliage plants and foliage cuttings. Offices, hotels, hospitals, malls, restaurants, educational institutions, and residences increasingly use interior plantscaping for aesthetics and perceived well-being. Malhotra (2024) ^[19] observed that the floriculture industry is expanding into landscape design, maintenance contracts, gardens, parks, greenhouses, and retail services. This broadening offers opportunities for foliage growers, nurseries, landscapers, and floral designers.

Recent consumer preference has shifted towards natural, minimalist, garden-style floral arrangements. Eucalyptus, palms, monstera leaves, ferns, grasses, ruscus, and tropical foliage are increasingly used in such arrangements. This trend is favourable for Indian growers because several tropical foliage crops can be produced with relatively low energy input compared with greenhouse-grown temperate flowers.

However, commercial foliage production requires standardized grading and handling. Leaf size, shape, colour, absence of blemishes, stem strength, maturity, and postharvest durability determine market value. Foliage must be free from insect damage, dust, fungal spots, mechanical injury, and pesticide residues. Proper hydration, cool storage, packaging, and transport are essential to retain freshness.

Postharvest Management and Cold-Chain Trends

Postharvest management remains one of the most decisive determinants of profitability in cut flower and foliage

enterprises. Flowers are highly perishable and lose market value rapidly when exposed to heat, water stress, ethylene, microbial contamination, rough handling, or delayed transport. Therefore, recent industry growth has created greater interest in farm-level pre-cooling, hydration treatments, pulsing solutions, cold rooms, refrigerated vehicles, standardized packaging, and improved auction or distribution systems.

Harvesting at the correct stage is essential. Roses are generally harvested at tight-bud or partially open stage depending on the market distance and cultivar. Gerberas are harvested when outer florets are adequately developed. Carnations require stage-specific harvest depending on whether flowers are destined for local or distant markets. Foliage should be harvested at full maturity but before senescence or physical damage.

Immediately after harvest, stems should be placed in clean water or hydration solutions. Grading, bunching, sleeve packing, and pre-cooling should follow quickly. Cold storage slows respiration, water loss, microbial growth, and senescence. A reliable cold chain from farm to wholesaler, florist, airport, and consumer can substantially improve vase life and reduce rejection rates.

Kumar *et al.* (2023) ^[16] identified inadequate grading, storage, transportation, and rural cooling facilities as major constraints in Indian floriculture. They recommended refrigerated tempos, mini-vans, rural cooling networks, plastic crates, integrated flower markets, and cold storage facilities to reduce distress sales and improve product quality. The need is especially acute for small and medium growers who cannot individually invest in cold-chain infrastructure.

Packaging innovations are also important. Corrugated fibreboard boxes, ventilated crates, floral sleeves, water-retaining packs, gel packs, and sustainable cushioning materials can protect flowers during transport. There is increasing interest in biodegradable and recyclable packaging because consumers and premium retailers are becoming more environmentally conscious.

The use of floral preservatives is another key trend. Preservative formulations containing sugars, biocides, acidifiers, ethylene inhibitors, and growth regulators can improve vase life. However, safe and standardized use is necessary. Research should focus on low-cost, locally available, and environmentally benign preservative solutions suitable for Indian supply chains.

Digital Marketing, E-Commerce and New Consumption Patterns

Digitalization has reshaped the marketing of flowers in India. E-commerce platforms, social-media marketing, mobile-based ordering, subscription services, and direct-to-consumer delivery have expanded flower sales beyond conventional wholesale markets. Consumers can now order bouquets, potted plants, floral hampers, wedding décor, funeral flowers, and corporate gifts through mobile applications and websites.

The COVID-19 period accelerated online retailing and home-delivery systems. Although the pandemic initially disrupted flower markets and event-based demand, it also encouraged businesses to diversify into doorstep delivery, indoor plants, dried flowers, preserved flowers, gift hampers, and subscription-based floral products. Many growers and local florists began using WhatsApp,

Instagram, Facebook, and online marketplaces to connect directly with consumers.

Digital platforms can improve price discovery and reduce dependency on commission agents if growers are organized into producer groups or cooperatives. However, platform-based marketing requires reliable order fulfilment, quality consistency, packaging, branding, inventory management, and last-mile delivery. Fresh flowers cannot be treated like ordinary e-commerce goods because their value declines rapidly with delay.

Malhotra (2024) ^[19] highlighted the emerging role of information technology in floriculture distribution, particularly through virtual markets, branding, cataloguing, quality assurance, and high-tech production systems. This trend suggests that digital traceability and branding will become increasingly important, especially in premium domestic and export markets.

Consumer preferences are also changing. There is growing demand for premium bouquets with imported-style floral design; locally grown seasonal flowers; exotic tropical flowers and foliage; sustainable and plastic-free packaging; indoor foliage plants and low-maintenance houseplants; dried and preserved flowers; personalized bouquets and themed gift arrangements; corporate floral subscriptions; and wedding and event décor using fresh foliage and natural materials.

Sustainable and Climate-Smart Floriculture

Sustainability has become a major concern in commercial floriculture because protected cultivation can be input-intensive. Greenhouse structures, plastics, fertilizers, pesticides, growing media, energy, packaging, and transport all have environmental implications. Recent trends therefore emphasize water efficiency, integrated pest management, organic inputs, renewable energy, waste recycling, and eco-friendly packaging.

Integrated pest and disease management

Flower crops are vulnerable to aphids, thrips, mites, whiteflies, leaf miners, caterpillars, mealybugs, nematodes, fungal diseases, bacterial diseases, and viruses. Intensive use of pesticides may cause resistance, residue problems, environmental contamination, and harm to pollinators and beneficial organisms. Aktar *et al.* (2009) ^[1] emphasized that pesticide use can provide crop-protection benefits while also creating serious ecological and health risks if used indiscriminately.

Integrated pest management in floriculture includes sanitation, insect-proof netting, sticky traps, pheromone traps, resistant cultivars, biological control agents, need-based pesticide application, disease-free planting material, and routine pest monitoring. The use of biopesticides, botanical extracts, microbial bioagents, neem products, and beneficial insects can help reduce chemical dependence.

Resource-use efficiency

Drip irrigation, fertigation, mulching, rainwater harvesting, recirculation of drainage water where feasible, and substrate reuse are important methods for improving efficiency. Kumar *et al.* (2023) ^[16] advocated support for rainwater harvesting, solar energy, enriched growing media, soil-less culture, and renewable energy in protected floriculture.

Solar energy can power irrigation pumps, sensors, lighting, ventilation, and small cold-storage units. It may be

particularly useful in remote production clusters where electricity supply is unreliable. Similarly, rainwater harvesting can reduce dependence on groundwater and improve resilience during dry periods.

Circular economy and flower-waste utilization

Large quantities of flower waste are generated at farms, markets, temples, hotels, event venues, and households. Instead of being dumped in water bodies or landfills, this biomass can be converted into compost, vermicompost, natural dyes, incense sticks, floral paper, essential oils, pigments, bioenzymes, and biodegradable products.

Waste flowers from marigold, rose, chrysanthemum, tuberose, and other crops may have potential for extraction of pigments, fragrances, phenolic compounds, and natural colourants. Kumar *et al.* (2023) ^[16] proposed integrated floriculture clusters and flori-malls that could include composting, vermicomposting, essential-oil extraction, pigment extraction, dried-flower units, and handmade paper production.

For the cut flower and foliage sector, rejected stems, leaves, petals, and unsold flowers can be composted and returned to production systems. Such circular practices reduce disposal costs and improve the environmental image of floral businesses.

Market Structure and Value Addition

The Indian flower market is characterized by multiple intermediaries, including growers, local assemblers, commission agents, wholesalers, retailers, florists, event managers, exporters, and e-commerce companies. While intermediaries provide market access, they can also reduce the share of the consumer price received by growers. Kumar *et al.* (2023) ^[16] reported that producers may receive only 38% to 70% of the consumer rupee in open-field flower cultivation, with somewhat higher shares in high-tech flower production.

Producer collectives, farmer-producer organizations, cooperatives, contract farming arrangements, and direct marketing can strengthen bargaining power. Cluster-based production can also facilitate common pack houses, cold rooms, grading lines, transport, quality testing, and market intelligence.

Value addition is increasingly important because cut flowers are perishable and market prices fluctuate. Important value-added avenues include bouquet preparation and floral design; event and wedding decoration; hotel and corporate floral services; dried flowers and preserved flowers; potpourri and floral craft products; natural dyes and pigments; essential oils and fragrances; floral jewellery; pressed-flower art; decorative foliage arrangements; potted flowering and foliage plants; and floral subscription services.

Dry flower production is a particularly relevant diversification option. Kumar *et al.* (2021) ^[17] described flower drying as a potentially profitable component of floriculture, especially because dried flowers can be stored, transported, and marketed over longer periods than fresh flowers. This can help farmers utilize surplus or lower-grade fresh material that may not meet premium cut-flower standards.

Challenges Facing the Sector

Despite its potential, the cut flower and foliage industry face several structural and operational challenges.

First, the industry is highly sensitive to price fluctuation. Demand peaks during weddings, festivals, religious occasions, Valentine's Day, Mother's Day, and corporate events, but prices can fall sharply during oversupply or market disruptions. Small growers often lack storage and bargaining power and are forced to sell quickly.

Second, the cold-chain system remains inadequate in many production areas. The absence of farm-level pre-cooling, refrigerated transport, temperature-controlled wholesale markets, and efficient airport handling reduces flower quality and increases postharvest losses.

Third, quality planting material is not uniformly available. Unregistered nurseries, disease-infected stock, off-types, and poor-quality imported or locally multiplied material can reduce profitability. Nursery accreditation, mother-stock certification, and virus-indexing facilities are therefore essential.

Fourth, protected cultivation is expensive and technically demanding. High costs of structures, repair, irrigation equipment, water-soluble fertilizers, substrates, pesticides, electricity, and labour can make the enterprise risky, particularly for small farmers. Inadequate technical guidance may result in poor ventilation, pest outbreaks, nutrient imbalance, and low yields.

Fifth, climate change is increasingly affecting floriculture. Unseasonal rains, heat waves, drought, storms, humidity fluctuations, and new pest and disease pressures can damage open-field crops and affect greenhouse conditions. Kumar *et al.* (2023) ^[16] noted that extreme temperatures, erratic rainfall, pests, diseases, drought, and flooding are increasingly important risks for flower production.

Sixth, export competitiveness remains constrained by high air freight, limited cargo space, phytosanitary requirements, inconsistent quality, and insufficient market intelligence. Fresh cut flowers require rapid transport, making air logistics particularly important. If flowers wait too long at airports or face temperature abuse during transit, their market value falls sharply.

Finally, there is a shortage of skilled labour in greenhouse management, grading, postharvest treatment, floral design, nursery production, and export documentation. The industry needs systematic capacity building for farmers, youth, women's groups, entrepreneurs, and service providers.

Future Prospects and Strategic Priorities

India's cut flower and foliage industry has strong prospects because domestic demand is likely to remain robust and diverse. Urbanization, higher incomes, lifestyle changes, retail expansion, the wedding industry, tourism, hospitality, and e-commerce are expected to support future consumption. However, growth must be quality-led, market-linked, and environmentally responsible.

The following priorities can strengthen the industry

1. Develop flower and foliage clusters. Cluster-based production can support common nurseries, pack houses, cold rooms, grading facilities, input supply, testing laboratories, and marketing systems.
2. Strengthen certified planting-material systems. Accredited nurseries, tissue-culture laboratories, disease-indexing facilities, and varietal certification can improve productivity and reduce crop losses.
3. Promote crop diversification. Producers should combine major flowers with fillers, foliage, potted

plants, dry flowers, and value-added products to reduce market risk.

4. Invest in cold-chain logistics. Farm-level pre-cooling, refrigerated transport, market cold rooms, airport handling facilities, and standard packaging are critical for domestic and export competitiveness.
5. Improve market transparency. Digital platforms, auction systems, producer organizations, and direct contracts with retailers, florists, hotels, and event companies can improve price realization.
6. Enhance postharvest research. Low-cost preservative solutions, improved packaging, cold-chain protocols, and cultivar-specific handling standards are needed for Indian conditions.
7. Build export-oriented quality systems. Traceability, residue management, phytosanitary compliance, grading standards, branding, and certification can help Indian flowers compete in premium markets.
8. Adopt climate-smart practices. Rainwater harvesting, micro-irrigation, renewable energy, integrated pest management, protected cultivation, and recycling of flower waste should be promoted.
9. Support floriculture entrepreneurship. Women, youth, self-help groups, and small enterprises can participate in bouquet making, dried flowers, nursery production, floral décor, landscape maintenance, and e-commerce delivery.
10. Promote indigenous ornamental biodiversity. India's native orchids, foliage plants, ferns, palms, ginger, and wild ornamentals can be developed responsibly into unique market products while ensuring conservation and benefit sharing.

Conclusion

The cut flower and foliage industry in India is undergoing a major transition from traditional production and local marketing towards technology-driven, quality-oriented, diversified, and consumer-responsive floriculture. Protected cultivation, precision fertigation, soilless culture, tissue culture, postharvest management, digital marketing, indoor landscaping, floral design, and sustainable production systems are reshaping the industry.

India's floriculture area, production base, climatic diversity, domestic demand, and entrepreneurial potential provide a strong foundation for future growth. In 2024–25, the country produced more than 1.03 million tonnes of cut flowers, while floriculture exports reached USD 92.55 million in 2025–26, demonstrating the sector's commercial significance (APEDA, 2026). Nevertheless, production expansion alone will not ensure success. The sector must improve quality, cold-chain integration, planting-material reliability, farmer organization, market intelligence, logistics, and export compliance.

Cut foliage deserves greater research and commercial attention because it can diversify farm enterprises, complement bouquet production, serve the expanding interior-landscape market, and offer relatively durable products for domestic and export trade. India can position itself as a competitive supplier of tropical flowers, foliage, fillers, potted plants, and sustainable floral products if it develops integrated production-to-market systems.

A future-ready Indian floriculture industry should therefore be based on four interconnected principles: high-quality production, efficient postharvest handling, market-led

diversification, and environmental sustainability. With coordinated support from research institutions, government agencies, private firms, farmer organizations, and floral entrepreneurs, the cut flower and foliage industry can become an important engine of rural employment, women's entrepreneurship, urban greening, and agricultural export growth.

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