

Post-Harvest Management and Marketing of Daisy (*Bellis perennis* L.)

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Daisy (*Bellis perennis* L.), belonging to the family Asteraceae, is a popular ornamental flowering plant valued for its attractive blooms, extended flowering period, and versatility in landscape gardening, bedding, borders, and floral decorations. Besides *Bellis perennis*, several ornamental species commonly marketed as daisies, including *Gerbera jamesonii* and *Chrysanthemum* spp., contribute significantly to the global floriculture industry. The commercial success of daisy cultivation depends not only on efficient production practices but also on proper post-harvest handling and an effective marketing system. Since daisy flowers are highly perishable, careful harvesting, grading, packaging, storage, transportation, and marketing are essential to preserve their quality and maximize economic returns.



Harvesting

The stage of harvesting greatly influences the post-harvest life and market acceptability of daisy flowers. Flowers intended for local markets should be harvested when they are fully open with fresh, brightly colored petals. For distant markets, blooms are generally harvested at the half-open stage to withstand transportation and complete opening after reaching consumers. Harvesting should preferably be carried out during the early morning or late evening when ambient temperatures are low and plant tissues are fully hydrated. Flowers should be harvested using clean, sharp stainless-steel scissors or secateurs to minimize mechanical injury and microbial contamination. Immediately after harvesting, stems should be placed in clean water to reduce moisture loss and maintain cellular turgidity.

Post-Harvest Handling

Proper post-harvest handling begins immediately after harvesting and aims to reduce physiological deterioration and microbial infection. Harvested flowers should be kept under shade to avoid direct sunlight and excessive heat. Field heat should be removed quickly by placing flowers in cool, well-ventilated conditions. Damaged, diseased, and deformed flowers should be discarded during sorting. The lower leaves in contact with water should be removed to reduce bacterial growth. Handling should always be gentle to avoid bruising and petal damage, which significantly reduce market value.

Grading and Quality Standards

Grading improves uniformity and enhances consumer confidence. Daisy flowers are generally graded according to flower diameter, stem length, stem thickness, freshness, color intensity, and freedom from pests, diseases, and mechanical damage.

High-quality flowers possess:

- Uniform flower size and color.
- Straight and sturdy stems.
- Fresh and turgid petals.
- Absence of insect damage and disease symptoms.
- Good symmetry and uniform bloom shape.

Premium-grade flowers fetch higher prices in wholesale and retail markets due to their superior appearance and longer vase life.

Pulsing and Preservative Treatments

Post-harvest chemical treatments significantly improve flower longevity. Pulsing involves placing freshly harvested flowers in preservative solutions containing carbohydrates and antimicrobial compounds before storage or transportation. Sucrose solutions (2–5%) provide respiratory substrates that delay senescence. Silver thiosulfate (STS), 8-hydroxyquinoline citrate (8-HQC), and chlorine-based disinfectants help reduce microbial growth within stem vessels, thereby improving water uptake. Citric acid is often added to maintain acidic pH, which further suppresses bacterial proliferation. Commercial floral preservatives containing sugars, biocides, and acidifiers are widely used to enhance vase life. Depending on cultivar and storage conditions, these treatments can increase vase life by several days.

Storage

Temperature management is one of the most important factors affecting post-harvest quality. Daisy flowers should be stored under refrigerated conditions immediately after harvest. Cold storage at 0–4°C with 90–95% relative humidity effectively reduces respiration, transpiration, and microbial development.

Two storage systems are commonly employed:

- **Dry storage:** Flowers are wrapped in moisture-resistant paper and stored without water for short periods.
- **Wet storage:** Stems are maintained in preservative solution during storage, which is particularly suitable for long-distance transport and premium-quality flowers.

Ethylene exposure should be minimized because ethylene accelerates flower senescence, petal abscission, and leaf yellowing. Storage rooms should therefore be well ventilated and kept free from ripening fruits that produce ethylene.

Packaging

Proper packaging protects flowers from physical damage during handling and transportation. Corrugated fiberboard (CFB) boxes are commonly used due to their strength, light weight, and ventilation properties. Flowers are usually bundled uniformly according to stem length and flower size before packing. Soft tissue paper, newspaper, or perforated polyethylene sleeves are used to minimize friction and moisture loss. Ventilation holes should be provided in packaging boxes to facilitate air circulation and maintain low temperatures during transport. Modern packaging materials with moisture barriers and cushioning properties further improve flower quality during long-distance shipment.

Transportation

Efficient transportation ensures that flowers reach consumers while maintaining freshness. Refrigerated vehicles (cold chain transportation) are preferred for commercial floriculture because they maintain optimum temperature and humidity throughout transit. Boxes should be stacked carefully to avoid compression damage. Exposure to excessive heat, vibration, and direct sunlight should be minimized during loading and unloading. Maintaining an

uninterrupted cold chain from harvest to retail outlets significantly extends shelf life and preserves aesthetic quality.

Marketing

Marketing is a vital component of the floriculture value chain. Daisy flowers are sold through several marketing channels, including local flower markets, wholesale flower auctions, retail florists, supermarkets, garden centers, event decorators, hotels, online flower delivery platforms, and export markets. Consumer demand increases substantially during festivals, weddings, religious ceremonies, exhibitions, Valentine's Day, Mother's Day, and other special occasions. Attractive packaging, branding, quality certification, and timely delivery improve market competitiveness. Direct marketing through farmers' markets and online platforms enables growers to receive higher returns by reducing intermediaries. Cooperative marketing organizations and producer companies also strengthen farmers' bargaining power and improve access to organized markets. International marketing requires strict adherence to phytosanitary regulations, grading standards, cold chain management, and quality certification to ensure export-quality flowers.

Value Addition

Value addition enhances profitability by converting fresh flowers into diversified products. Daisy flowers can be utilized for floral bouquets, table arrangements, wedding decorations, potted plants, landscaping materials, gift baskets, dried flower crafts, floral wreaths, and decorative accessories. Innovative packaging, attractive labeling, eco-friendly materials, and customized floral arrangements increase consumer appeal and create premium market opportunities.

Conclusion

Scientific post-harvest management plays a crucial role in maintaining the quality and extending the vase life of daisy flowers. Proper harvesting stage, careful handling, grading, preservative treatments, cold storage, suitable packaging, efficient transportation, and well-organized marketing systems collectively minimize post-harvest losses and improve profitability. The adoption of modern cold chain infrastructure, standardized quality protocols, and value-added marketing strategies can substantially enhance the commercial potential of daisy cultivation while ensuring high-quality flowers reach domestic and international consumers.

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