

Dried Flower Products: Leaders in Indian Floriculture Sector

Saraswati^{1*}, M. K. Singh² and Namita³

¹Ph.D. Research Scholar, Division of Floriculture and Landscaping, ICAR-Indian Agricultural Research Institute, New Delhi, India 110012

²Head, Division of Floriculture and Landscaping, ICAR-Indian Agricultural Research Institute, New Delhi, India 110012

³Senior Scientist, Division of Floriculture and Landscaping, ICAR-Indian Agricultural Research Institute, New Delhi, India 110012

Corresponding Author: ssgorebal0107@gmail.com

Dry flowers encompass not just parts of flowers but also dried shoots, seeds, and bark. This industry utilizes a variety of materials including cut flowers, foliage, ferns, grasses, sedges, seed pods, flower skeletons, nuts, fruits, cones, bark, branches, lichens, and fungi. These are widely used to create handmade paper, lampshades, candles, bags, photo frames, wall quilts, cards, and various gifts. The incorporation of dry flowers enhances the aesthetic and beauty of these products. Dry flowers are a crucial export commodity in both national and international markets. In India's floriculture exports, dry flowers lead, followed by cut flowers, live plants, bulbs, tubers, etc. India is also a significant exporter of dry flowers, accounting for 7% of global trade. The export composition of Indian flowers is 71% dry flowers. Annually, the export of dried flowers and plants from India amounts to about Rs 100 crore. The industry exports 500 varieties of flowers to 20 countries, with the UK being the largest importer, accounting for an import value of 65 million US dollars, which is 40.7% of the total, followed by France. The major import destinations for Indian dry flowers include the USA, The Netherlands, UK, Germany, and UAE.

Dried ornamental products boast a variety of attributes such as novelty, durability, aesthetic appeal, versatility, and year-round availability. The processing of dried flowers primarily involves three steps: drying, bleaching, and colouring. Dried flowers and their arrangements maintain a fresh and attractive appearance for years.

Methods of Drying

1. Air Drying

This method involves tying flowers into small bunches and suspending them upside down in a warm, well-ventilated area, shielded from direct sunlight, preferably in a cool, dark space. The duration of the drying process can range from one week to several weeks, depending on the flower's size, type,

and the ambient temperature and humidity of the drying area. Dried flowers tend to be fragile, and their stems remain straight due to being hung inverted, which can give them an unnatural appearance. Flowers suitable for air drying include Hydrangeas, Celosia, Globe Amaranth, Strawflowers, Acroclinium, Gypsophila, Helichrysum, Larkspur, Limonium, Statice, and others.

2. Press drying

Press drying is a technique commonly utilized by botanists to prepare herbarium specimens. Flowers and foliage are arranged between layers of newspaper or blotting paper, spaced out to prevent overlap. These layers are stacked, with corrugated boards inserted between them to facilitate the escape of water vapor. To expedite drying, the sheets may be placed in an oven at a suitable temperature. Ideal candidates for this method include the leaves of Adiantum, Silver Oak, and Thuja, as well as the flowers of Aster, Bougainvillea, Candytuft, Chrysanthemum, Euphorbia, Hibiscus, Ixora, Lantana, Marigold, Rose, Verbena, and others.

3. Glycerine drying

Glycerine drying is used more for preservation than drying, keeping flowers and foliage supple and long-lasting. A mixture of water and glycerine in a 2:1 ratio is prepared. Freshly cut flowers are immersed in this solution, allowing the glycerine to replace the water within the flowers. This method is appropriate for Eucalyptus, Gypsophila, Hydrangea, Magnolia, Maple leaves, and more. The longer the flowers absorb the solution, the more glycerine they uptake. The greatest moisture loss was observed in *Thuja orientalis* after 96 hours in a hot-air-oven drying with a 1:1 glycerine-water solution.

4. Embedded drying

Embedded drying involves using media such as sand, borax, silica gel, sawdust, perlite, or a combination thereof. Sand and borax are more

affordable but require more time to dry. Silica gel is laid out in a flat pan to a depth of half to three-quarters of an inch. Flowers are placed within the gel, then completely covered with additional silica gel. To prevent the silica gel from absorbing moisture from the air and becoming damp, which would slow or prevent the drying process, the flowers must be kept in airtight conditions. Drying time varies from a few days to a week, depending on the flower's size, quantity, and moisture content. Roses, Tulips, Anemones, Zinnia, Allium, and similar flowers are suitable for this method. For delicate flowers such as Roses, Dahlia, and Carnation, silica gel is the preferred drying medium.



Dry flower arrangement



Wall hanging



Dry flower products



Dry flower basket



Rakhi



Potpourri



Pressed flower bookmark



Dried flower phone case



Pressed flower frames



Pressed flower Coaster



Pressed flower cards



Flower embedded ornaments

(Shah *et al.*, 2022)

5. Freeze drying

Freeze-drying is a preservation method where fresh flowers undergo sublimation, maintaining their natural shape and colour. The flowers are initially frozen for at least 12 hours at temperatures below freezing. Subsequently, a vacuum pump extracts the moisture as vapor in one chamber, which then

condenses into ice in another chamber. Despite the process, the flowers' natural colours remain intact. Freeze-dried products are commonly used for cake decorations, wedding bouquets, and table adornments. Suitable species for this technique include Alstroemeria, Amaranthus, Aster, Bird of Paradise, Hyacinth, Hydrangea, Iris, Lily, Narcissus, Orchid, Peony, Phalaenopsis, Rose, Snapdragon, etc. However, the main drawbacks are the lengthy process, taking about a month, and the significant investment in sophisticated equipment.

Skeletonizing

Skeletonizing, also known as creating a fossil leaf due to its semi-transparent appearance, is a process where all leaf tissues are removed without damaging the veins. Leaves are boiled in 250 ml of water with 2 tablespoons of lye for 40 minutes. Subsequently, the leaves are rinsed in cold water, and the remaining tissue is gently brushed away with a paintbrush or toothbrush before drying. This technique is used to create gift tags, greeting cards, scrapbooks, collages, paper crafts, stamps, and wedding card decorations.



(Shah *et al.*, 2022)

Bleaching and Dyeing

Bleaching is a process that uses chemicals to discolour or whiten materials. Dehydrated products often have less intense colour, diminishing their visual appeal. To enhance their appearance, flowers undergo bleaching before dyeing to ensure better dye absorption. Flowers can be dyed using both natural and synthetic dyes, such as enamel, interior, poster, and tube paints. A combination of Sodium chlorite (10%) and Hydrogen peroxide (30%) has proven effective for bleaching Gomphrena flowers.

Tinting (colouring)

Tinting is a valuable enhancement technique for flower crops lacking colour pigments or possessing light-coloured blooms. It involves the application of

artificial colours or food colouring agents to natural flowers. The use of edible dyes on the inflorescences of cut flowers improves their visual appeal, making the arrangements more attractive. Tinting allows for the addition of a single colour or a combination of colours to cut flowers, thereby increasing their aesthetic appeal and the novelty of the arrangement. A prolonged immersion time (24 hours) ensures more extensive dye translocation throughout the flower spike of the tuberose cultivar 'Mexican Single'.

Dried Flower Products

Dried flower arrangements, pressed flower products, potpourris, etc., along with processed flower products such as essential oils, herbal medicines, dyes from ornamental plants, tinted flowers, beverages, poultry feed, insect repellents, petal-embedded handmade paper, cosmetics, wall hangings, dried flower baskets, rakhis, pine cones, pressed flower cards, ornaments with flower inclusions, bookmarks with pressed flowers, and frames adorned with pressed flowers.

Conclusion

The dried flower business is a promising international model for women to create profitable craft items and build new business sectors. It offers self-employment and empowerment, particularly for physically challenged and women. Proper training, awareness, and funding can encourage small-scale ventures, boosting creativity and income levels in rural areas. Awareness can be raised through workshops and training programs.

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