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Dry flower technology - The secret to forever flowers

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Abstract: -

The perishability of fresh flowers often results in significant post-harvest losses in floriculture, limiting their commercial potential. Dry flower technology provides an effective solution by extending the shelf life of floral products while maintaining their ornamental value. Several techniques, including air drying, press drying, desiccant embedding, microwave oven drying, and freeze drying, have been developed to preserve the colour, texture, and shape of flowers. Dry flowers have wide applications in decoration, crafts, aromatherapy, and international trade, with growing demand in eco-conscious markets. However, challenges such as lack of awareness among growers, limited access to advanced drying technologies, and competition from artificial substitutes hinder sectoral growth. With innovations in drying techniques, quality improvement, and integration into rural entrepreneurship, dry flower technology holds immense potential for sustainable value addition in floriculture and global trade.

Keywords: Dry flowers, Floriculture, Air drying, Press drying, Freeze drying.

Introduction:

The floriculture industry is one of the fastest-growing segments of agriculture worldwide, with increasing demand for fresh and value-added floral products. However, fresh flowers are highly perishable, with a short shelf life ranging from a few days to weeks. This often leads to post-harvest losses of up to 40%. To overcome this limitation, flower drying techniques have been developed, which extend the usability of flowers for ornamental and industrial purposes. Dry flowers are now considered a sustainable and profitable alternative in both domestic and

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export markets.

Methods of drying

Several techniques are employed for drying flowers to maintain their shape, texture, and colour.

1. **Air drying**: The simplest and most cost-effective method where flowers are hung inverted in a well-ventilated, dark environment. Air drying is a very common method of drying and is the easiest and cheapest method of drying. Air drying requires a cool, dry, dark and well-ventilated place with low humidity where the plant material will dry slowly and preserves the flower colour. Places having 75% or more relative humidity should be avoided as they encourage fungal growth which spoils the flowers. Air drying is possible by-

☞ **In situ drying:** It refers to natural drying of flowers or plant parts while attached to the plant: *e.g.,* Cassia, Albizzia, Koelreutaria, Pride of India, Bael, Pine, Reetha, etc.

Vertical/hanging drying: Vertical drying can be done either by hanging the flowers upside down or by placing them vertically on the racks. Leaves up to 1/4th stem length are removed and then the flowers are tied in bunches with rubber bands. The upside-down bunches are then hung with the help of thread over a rope or bamboo split or vertically on racks or wire-mesh, in a dark warm place to preserve the colour. The flowers are left for 2-4 weeks for complete drying depending upon the weather conditions. *e.g.,* Gomphrena, Paper flower, Straw flower, Bougainvillea, Statice, etc.

Fig 1: Vertical drying of gomphrena

2. **Press drying**: For press drying, flowers, leaves or floral parts are kept in two folds of blotting paper and 3-4 layers of plant parts with blotting paper are stacked together with corrugated paper over blotting paper and then placed inside an herbarium press or heavy weights are kept over the stacks of blotting papers. On alternate days, side of the flowers are turned as well as blotting papers are changed according to the requirement, so that flowers are not attacked by fungi. This method is used when flowers and foliage are needed to be flat like for making cards, bookmarks, visiting cards, etc.
3. **Desiccant embedded drying:** In this method, retention of flower colour and shape is good. After harvesting and preparing, the flowers are placed in desiccants like sand, silica gel, boric acid, borax, saw dust, alum powder, aluminium sulphate, corn granules, etc. A layer (6-8 cm) of desiccant is spread in the bottom of container and the flowers are arranged in container. The desiccant is gently poured over the arranged flowers until it completely covers the flowers and forms a layer of 2.5 cm above plant parts. The drying time vary with the flower type and usually ranges from 2 to 4 weeks.
4. **Microwave oven drying**: A modern method that shortens drying time while retaining natural appearance. Electronically produced microwaves liberate moisture from organic substances by agitating the water molecule. It is a fast method and the product quality is better in terms of retention of colour and shape. The flower has to be embedded in desiccating agent and should be kept in a microwave safe open container. Keeping a cup of water in the oven before starting helps to prevent excessive drying and maintaining moisture content. For best results, standing time (bringing down the temperature of the flower after removing it from microwave oven to room temperature) of 10 minutes to few hours is needed after drying. To prevent absorption of air moisture, microwave oven dried flower petals should be sprayed with hair spray or transparent lacquer.
5. **Freeze drying**: Freeze drying is also known as lyophilization because the flowers are dried by using lyophilizers. It is the process in which flower temperature is lowered down and then moisture is removed by using vacuum. It is based upon principle of sublimation, whereby ice held under conditions of partial vacuum (less than 4.58 torr) and low temperature (less than 0°C) will evaporate on heating without going through a liquid phase. The main disadvantage of this method is its

high costs and precise processing techniques. This method has been successfully employed in flowers like Carnation, Snapdragon, Rose, Gypsophila, etc.

Applications of dry flowers

- **Decorative purposes:** Bouquets, wall hangings, wreaths, and interior decoration.
- **Craft industry:** Greeting cards, bookmarks, resin art, and handicrafts.
- **Aroma and wellness:** Potpourri, scented sachets, and aromatherapy products.
- **Export market:** Countries such as USA, UK, Netherlands, and Japan have a high demand for dried floral products.

Fig 2: Dry flower wreath

Challenges

Despite its potential, the dry flower industry faces challenges such as:

- Lack of awareness among growers.
- Limited access to modern drying technology.
- Inconsistent quality standards for exports.
- Competition from artificial/synthetic flowers.

Future Prospects

With rising awareness of eco-friendly and sustainable products, demand for dry flowers is expected to increase globally. Integration with rural entrepreneurship, women self-help groups, and small-scale industries can further boost the sector. Research on novel drying technologies, natural colour retention, and improved packaging will enhance the competitiveness of dry flowers in domestic and international markets.

Conclusion

Dry flower technology offers a sustainable solution to reduce post-harvest losses and add value to floricultural crops. It has diverse applications in decoration, crafts, and exports, making it an emerging industry with high economic potential. Encouraging farmers, entrepreneurs, and researchers to adopt advanced drying methods can help establish dry flowers as a key component of the floriculture sector.