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Best Practices for Fresh Cut Flowers: A Care and Handling Checklist

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BACKGROUND

When fresh cut flowers receive optimal care from harvest to consumer, they have better quality and last longer. This requires attention to details, e.g., selecting long-lasting varieties, maintaining good sanitation practices, and providing retail customers with flower food. Our research has focused on ways to make flowers last longer. We have developed a simple checklist to ensure long-lasting flowers.

VARIETIES

Vase life begins with flower variety. Some varieties will last longer than others even when production and postharvest conditions are optimal. Our tests of 60 varieties of Roses found vase life to range from 3 to 21 days. Breeders, growers, wholesalers and retailers can and should test variety vase life on a regular basis to ensure long-lasting varieties are dominating the marketplace.

HARVEST

Longest lasting flowers must be harvested at the correct stage of development. Roses, Gladiolus, and Lilies should be cut when buds are starting to open. Chrysanthemums and Carnations should be harvested when buds are half open.

HYDRATION

Cut flowers need to be hydrated at each level of distribution: grower, wholesaler, and retailer. Hydration solutions contain a buffer to lower pH, biocides to kill microorganisms on stems and in solutions, and a wetting agent to accelerate water uptake. When using hydration solutions, the most important considerations are: (1) to use freshly made solutions and (2) to use clean, sanitized water and buckets.

If flowers have been hydrated in solutions with high microbial populations, the microbes travel with flowers and can ultimately reduce vase life and quality. High microbial levels (greater than 100,000 colonies forming units per ml of solution) clog the water transport systems of stems.

Based on our research, best results occur when stems are hydrated for 1-3 hours at room temperature in clean buckets filled with freshly mixed solutions. Hydration times must be increased when hydrating stems in the cooler.

For retailers, recutting stems underwater is effective only if the water is clean and free of bacteria. Cutting stems dry does not diminish vase life. When cutting stems dry, plunge them immediately into solutions.

PACKING

Reduce moisture on leaves, stems, or petals prior to packing. Dry stems reduce free moisture in shipping boxes, which can help to reduce the incidence of *Botrytis*. Growers can place hydrated flowers in an empty bucket or container in a cooler (relative humidity 75%) for 2-3 hours.

Growers should pack flowers in a cooler maintained at 36-38 °F. Moving flowers from a cooler to a room temperature packing room and back into a cooler causes condensation to form on stems in the shipping box, which can promote *Botrytis*. Chlorine dioxide-releasing paper placed in flower boxes has been designed to reduce the incidence of *Botrytis* during storage and when transport times are one week or less.

SPECIALIZED TREATMENTS

Some cut flowers are sensitive to ethylene, which accelerates senescence and causes flowers, buds, or leaves to drop, wilt, or discolor, and prevents flower buds from opening. Anti-ethylene compounds, such as EthylBloc™ (1-MCP) or slow-release EthylBloc™ sachets protect flowers from ethylene injury. These products are applied to flowers in gas form before, during of after shipping.

Cut flowers can also be protected from ethylene by hydrating stems in silver- thiosulfate (STS) products, such as Chrysal AVB.

Some flowers experience leaf yellowing, which can be eliminated by identifying tolerant varieties or using specialized treatments. Alstroemeria, Oriental and Asiatic Lilies, and Calla lilies experience little or no leaf yellowing when stems are hydrated using commercial anti-leaf yellow products, such as Chrysal BVB and Floralife PAL. Improved OASIS® Floral Foam with Floralife Technology reduces leaf yellowing of Alstroemeria and Chrysanthemums without any prior specialized treatments.

SANITATION

Buckets, tools, cutters, tables, vases, working areas, and coolers must be cleaned and sanitized. Use freshly mixed solutions at least daily. Mix fresh solutions between different batches and types of flowers. Clean buckets with an anti-bacterial product before adding floral solutions. Use a professional floral bucket cleaner or bleach, kitchen sanitizer, or chlorine dioxide.

TEMPERATURE

Temperature control is vital to provide consumers with long-lasting flowers. Ideal air storage temperature for most cut flowers is 33ºF to 35ºF. Tropical flowers, such as Anthurium, Orchids, and Ginger require 50ºF to 55ºF.

Low temperatures reduce plant metabolism and ethylene sensitivity. Cold air also slows multiplication of microbes in storage solutions.

At the retail level, vase life for some flowers, such as Roses, decreases 30-50% if flowers are displayed at or above 50ºF. Flowers will last longer if stems are kept cold in the retail shop during display.

FLOWER FOOD

Retailers should ALWAYS provide flower food to customers and review mixing instructions with them. Using properly mixed flower food consistently increases vase life and improves flower opening. Always use specialized foods designed for specific floral species.

CONCLUSIONS

Long-lasting flowers can be marketed to consumers. The guidelines below will enhance cut flower vase life:

* Choose long lasting varieties
* Harvest flowers at the correct stage of development * Hydrate flowers in clean, microbe-free water with a freshly made solution
* Dry flowers before packing
* Treat appropriate flowers with anti-ethylene and anti-leaf yellowing compounds
* Sanitize all buckets, tools, cutters, tables, vases, working areas and coolers
* Store non-tropical flowers at 33-35°F
* Always provide flower food for customers

IMPACT TO THE INDUSTRY

Providing long-lasting flowers is the most direct way to encourage customers to buy more cut flowers. By vigorously following simple steps, growers, wholesalers, and retailers can provide long-lasting cut flowers.

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