

PACKAGING FRESH FLOWER BUDS IN POLYETHYLENE TUBING FOR RETAIL SALES

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Carnation buds were harvested from the greenhouse on February 13, 1974, at a stage in which the petals extended straight up from the perimeter of the calyx. Eight carnation cultivars were mixed at random and divided into groups of nine stems each. The cultivars were 'Improved White Sim,' 'Scania,' 'New Improved Pink Sim,' 'Caribe,' 'Dusty,' 'Tangerine,' 'Blaze,' and 'Pink Ice.' Each group of nine buds was arranged in a staggered manner so that the longest stem was 18 inches and the shortest was 10 inches. The stem ends were trimmed and then dipped for 10 minutes in 4 inches of a solution of 1,000 ppm silver nitrate in distilled water. The stems were then allowed to dry for 30 minutes, and each group was inserted into a plastic tube. The tube ends were folded and stapled shut, with a label at the top end.

The filled flower tubes were then packed vertically in a shipping carton. A carton 20 by 20 by 20 inches holds 120 tubes. The carton was then placed in cold storage (32° F) for 8 weeks. Each week, 12 tubes were removed from cold storage. The buds were removed

from 6 tubes, 2 inches of the stem ends were cut off, and then each group was placed in a separate vase containing a 10 percent sucrose solution. This solution was made with Colorado River water containing about 800 ppm dissolved salts. The flower buds in the other 6 tubes were removed from the tubes and placed directly in separate vases that also contained the 10 percent sucrose solution.

Each lot removed weekly from storage was held in a room at 75° F for 14 days. Flowers were discarded when they lost turgidity. Some groups contained good flowers at the end of 14 days. These remaining good flowers were then calculated as a percentage of the total flowers at the start.

RESULTS

Table 1 shows the average vase-life days of each group after cold storage of 1 to 8 weeks. Each vase-life-day figure in the table is an average of 6 tubes of 9 flower stems each, or 54 stems.

TABLE 1. Vase Life of Carnation Buds After Cold Storage

Weeks of Storage at 32° F	Days Vase Life,* Recut Stems	Percent Good Flowers at 14 Days†	Days Vase Life,* Stems Not Recut	Percent Good Flowers at 14 Days†
1	11.2	17	13.4	43
2	9.0	0	13.6	68
3	8.9	0	12.8	48
4	8.4	0	11.1	4
5	9.8	15	9.7	2
6	8.1	0	9.4	0
7	‡	‡	9.7	0
8	‡	‡	7.5	0

* Vase-life days is average of 6 units of 9 stems each. Vase life includes bud opening of 2 to 3 days.

† Vase-life determination concluded at 14 days. The number of good flowers remaining on the 14th day was calculated as a percentage of the total flowers at the start.

‡ Data missing because some flower tubes were stolen from the cold storage facility.

The average vase-life days of stems not recut ranged from 13.6 days after 2 weeks of 32° F storage to 7.5 days after 8 weeks of storage. The stems that had 2 inches of the stem ends removed after cold storage generally had a shorter keeping life. This amounted to 2.2 days less vase life after 1 week of storage and 1.3 days less vase-life after 6 weeks of storage, as compared to the groups where stems were not recut after cold storage.

Several interesting observations were made during the vase-life determinations. All seven carnation cultivars opened well from buds in 2 to 3 days after removal from storage. This was true throughout the experiment. Also, the flowers were larger on stems not recut after storage than on stems that had 2 inches removed before being placed in the sucrose solutions. 'Improved White Sim' and 'New Improved Pink Sim' opened best from buds and showed no petal burn as a result of cold storage. 'Scania,' a red cultivar, showed no petal burn, but some slight overall darkening of the red pigment was apparent. 'Dusty' and 'Pink Ice' also performed well, with no storage problems. 'Caribe,' 'Tangerine,' and

'Blaze' all showed petal burn as a result of prolonged storage, particularly after the fourth week of storage.

CONCLUSIONS

The use of small polyethylene tubing (3-inch lay-flat width) for packaging cut flower buds provides a compact unit. With carnations the unit can be held in cold storage at least 8 weeks. Using the tubes makes it possible to save 50 to 60 percent in transportation space compared with the number of stems per carton in standard methods of packing mature long-stem flowers. If the producer pre-treats the stem ends with a silver nitrate solution, the consumer only needs to add table sugar to the vase water so that carnation buds will open and have a 7- to 14-day vase life.

Market-testing of the plastic tube will be required to determine consumer reaction. Further research is needed to test other types of flower buds that can be marketed in the plastic tubing. Other possibilities are gerberas, marguerite and Killian daisies, standard chrysanthemums, roses, gladioli, statice, gypsophila, and cornflower.



Fig. 1. Inserting nine carnation buds through fiberglass funnel to fill the polyethylene tube package.

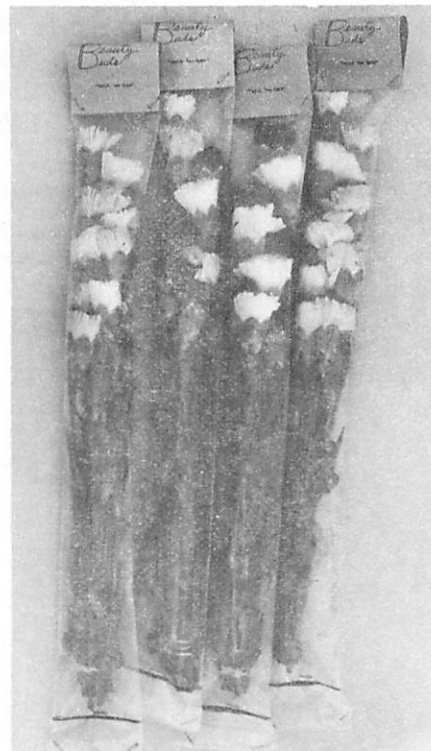


Fig. 2. Packed carnation buds, nine stems per package.