

Besemer 60

(From California State Florists Assoc. Magazine
Vol X, No. 3, October 1960)

Evaluation of Cut Flower Shipping Methods

by Seward T. Besemer
University of California Farm Advisor
San Diego County

The San Diego County cut flower industry depends to a large extent on out-of-state shipments for marketing its products. To coincide when the author was to be at Cornell University, a project was devised to receive, observe, and evaluate the condition of San Diego County cut flowers upon arrival and following arrival in the East.

Six trial shipments by local growers and shippers at Encinitas were air-freighted to arrive at Ithaca, New York, during the week of June 19 to June 26, 1960. Shipments included comparison of containers, methods of packing, pre-conditioning of flowers by the grower or shipper, flowers cut at different stages of maturity, and various treatments to affect keeping life at Ithaca.

Although several techniques compared in these trials were not new, the purpose was to evaluate combinations of old and new methods for the most satisfactory transfer of cut flowers from the grower to the ultimate consumer. All flowers shipped in these trials arrived in good condition. Since there was a wide variety of treatments involved, it might be assumed that if the merchandise is free from problems when shipped it will arrive at its destination in good condition despite methods employed. Results of these trials should therefore contribute to the preparation of healthy merchandise to perform at its greatest keeping life potential and create maximum customer satisfaction.

COLUMN STOCKS

Observations - Crushing stems for 2 or 3 inches at the bottom allowed flowers and foliage to regain turgidity after shipment. Stems not crushed remained flaccid whether refrigerated or 1-ft at room temperature. Cooling stocks for 24 hours after shipment did not decrease the rate of decline of keeping life but delayed decline by 24 hours. There was no difference in flower condition on arrival or comparative keeping life of stocks shipped in corrugated or styrene-type hampers.

Conclusions - Column stocks are one of the most difficult types of cut flowers to condition after shipment because of their inability to take water. Crushing stems 2 or 3 inches is the best treatment for conditioning. Cooling is advantageous for holding the flowers in a better condition after they have regained turgidity. The use of flower preservative might improve the conditioning process for stocks although it was not tried in this trial.

CARNATIONS

Observations - Recutting of stems at Ithaca increased keeping life about two days with no other treatments involved.

Cooling prior to shipment increased keeping life at Ithaca about one day with no other treatments involved. Following shipment, carnations with recut stems in plain water held well for 10 days at 42°F, but keeping life at room temperature after removal from the cooler was reduced about 50 per cent.

The use of a commercial flower preservative increased keeping life one to two days when used prior to shipment only or following shipment at Ithaca only. There was little or no difference in keeping life between recutting and not recutting stems at Ithaca when preservative was used prior to shipment at Encinitas. The use of preservative for 24 hours only following shipment, even if stems are recut, showed no increase in keeping life. Where flowers remained in water with preservative, keeping life was increased.

(Icing of boxes did not appear to be necessary for carnations. Flowers were cut early in the morning, given no water and were packed and shipped immediately in a box with no ice. The keeping life of these flowers was equal to those that were given water prior to shipment and packed in an iced box.)

Ice placed in the ends of the box (at the flower heads) did not prove advantageous. In this trial the box ends were seriously water-soaked, collapsed, and caused many flowers to become wet and some flowers to be broken from the stems below the calyx.

An upright stock holder of carnations with ice around lower stems was observed. The method was shown to be impractical because flower heads became water-soaked. Also, short grades must be combined with fancy grades to efficiently fill space.

A comparison was made of carnation blooms harvested and shipped at different stages of maturity. Very tight buds (petals vertical from calyx) did not open properly even when stems were recut and preservative used. Buds where petals were slightly flared outward opened successfully and had the greatest keeping life of all stages when stems were recut and placed in water with flower

(Shipping Methods - Continued)

BESEMER 60

preservative at room temperature. Stems were recut and solutions changed in all treatments every 4 to 5 days.

All commercial carnation varieties used in these trials (Red Sims, White Sims, Pink Sims, Anniversary, S. Arthur Sims, Gaiety, and Tangerine) performed about equal in keeping ability if the flowers were healthy and free of insect damage or disease.

Conclusions - On the basis of results from these trials, the procedure to assure best quality and keeping life of carnations at an eastern destination, would be for the grower or shipper to cool flowers overnight at 38°F to 42°F in water with flower preservative and these could then be shipped in uniced boxes. The best procedure following shipment would be to recut stems, place flowers in water with preservative, and when flowers are fully conditioned, hold them in refrigeration until selling time.

Cutting and grading flowers, then packing and shipping immediately without ice in boxes, appears to be feasible if growers and shippers could determine whether this schedule was possible. Proper conditioning after shipment by recutting stems and using flower preservative would assure best results with this shipping method.

It was apparent that wherever ice is placed in a box, including the center, leaking water can cause collapse of the box in handling, loosening of the braces, and damage to merchandise. Boxes that will not deteriorate with water-soaking and sufficient absorptive padding under the ice should be considered to eliminate losses due to container collapse.

If the wholesaler or retailer who receives shipments of carnations was willing to utilize tighter carnation flowers and condition them properly, several days additional keeping life could be assured. Logically, the grower would benefit by cutting tighter flowers on a regular schedule; (1) he could spray and dust with less injury to flowers, (2) flowers would be younger when cut and less likely to have contracted disease or insect damage. The shipper might benefit by increasing the number of flowers packed per box and also by eliminating the cost and time of icing boxes. The buyer would get the benefit of less transportation cost per flower, less breakage and cleaner flowers with a longer potential keeping life - providing he treats them right.

As was mentioned previously, in all trials all flowers were salable on arrival at Ithaca except for minor breakage. On carnations there were minor signs of thrips injury, chemical injury, and botrytis. Of these three problems, thrips injury seems to be the most serious. If flowers with any health problem are salable following shipment, their keeping life may still be seriously curtailed from the effects of some subtle impairment. Petals showing thrips injury on arrival soon exhibit premature browning and dehydration before the flower is ready to collapse physically, or else several lesser fungi or botrytis take over by starting

where thrips injury is present. If carnations are free of disease, insect injury, and physiologically able to function as cut flowers, shipping success depends little on methods used. Methods used can increase cut flower keeping life, however. Increased self-discipline by growers and shippers to select cut flowers free from impairments at harvest, as well as on the basis of stem and flower size, would eliminate many shipment failures.

STANDARD CHRYSANTHEMUMS

Observations - Standard mums were observed to ship well in the bud stage in a box with no ice. Buds were opened at Ithaca to salable flower size in 4 to 5 days when stems were recut and either of two commercial flower preservatives used in the water. Where stems were recut and plain water used, buds could not be opened. Leaves and flowers did not remain turgid in this treatment. The treatments held in an 80° laboratory with fluorescent lighting 6 to 8 hours per day developed at a steadier rate than the same treatments in a greenhouse at 60°F night temperature and variable temperatures and sunlight conditions during the day. The greenhouse treatments opened more rapidly the first two days. All treatments in the greenhouse were seriously delayed the third and fourth days when sunlight was strong and temperatures rose above 90°F. Of the two preservatives used, one performed best in the greenhouse, the other was better in the room temperature laboratory. Stems were recut and solutions changed for all treatments every four to five days.

Conclusions - It may be feasible to ship standard chrysanthemums in bud stage and open the flowers to salable size at an eastern destination. Recutting of stems and the use of a flower preservative is necessary. Room temperature conditions appear to be better than greenhouse conditions, at least in the summer period. The labor requirement and time involved may deter development of this potential. Maximum benefits could be savings in transportation, less damage to flowers, and the possibility of "stock-piling" mums by the wholesaler.

The trials involving both chrysanthemums and carnations in various stages of maturity and attempts to open the flowers at an eastern destination are based on work in progress by Dr. Harry C. Kohl, Jr., of the Floriculture and Ornamental Horticulture Department at the University of California at Los Angeles.