

# Single-cut harvesting CHRYSANTHEMU for commercial

Saleable chrysanthemums cv. 'Albatross.' The bloom on the left was harvested four days earlier than the one on the right and opened in solution.



**S**INGLE-CUT OR "ONCE-OVER" harvesting of standard chrysanthemums may be possible commercially, according to results of trials conducted during the summer and fall of 1971 at floriculture greenhouses of the Deciduous Fruit Field Station, San Jose. Cultivars tested included 'Albatross,' 'Detroit News' and 'Escapade.' These are the major white, bronze and pink standards grown during the summer in California. Additional trials with other cultivars are in progress.

Typical commercial practices were followed in these experiments until the first flowers (approximately 40% of the total to bloom) were sufficiently mature for harvest. In the first trial with 'Albatross,' the mature blooms in one treatment were harvested every two days (July 4, 6 and 8) until the ground beds were entirely cut out (by commercial harvest standards). Blooms in another treatment were all cut on the first day of commercial harvest (July 4). These were graded into two lots: those mature enough for immediate shipment, and a mixture of immature stages. A typical flower in the least mature stage of development is shown in the photo (opposite page).

The immature flowers were then placed in standard plastic chrysanthemum buckets containing deionized water to which had been added 2% sucrose and 0.0025% silver nitrate. Preliminary observations indicated that this was a satisfactory opening solution for such bud stages at San Jose. Previous work had shown optimal levels of sucrose to be 5% for the cultivar 'Fred Shoemith' and 2% for 'Albatross.' The latter exhibited leaf injury symptoms at sucrose levels of 5% at San Jose while 'Detroit News' showed leaf injury at 2.5%.

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THOMAS G. BYRNE

PETER J. LERT



*Chrysanthemum* cv. 'Albatross' at earliest stage open in solution.

The immature flowers from the single-cut treatment were held in the opening solution in a room maintained at  $70^{\circ}\text{F} \pm 3^{\circ}$  with approximately 120 ft-candles of constant light at bloom level supplied by cool white fluorescent bulbs. They were removed from solution when they had opened to a marketable stage after which the stems were cut to a standard 15 inches, weighed, and the diameter of the bloom measured. Similar data were recorded for flowers harvested mature in the greenhouse. The keeping life was then evaluated by placing the flowers in individual containers of deionized water at room temperature ( $70^{\circ}\text{F} \pm 5^{\circ}$ ). They were discarded when the foliage became wilted and/or chlorotic, or when the outer florets wilted.

The "harvest" period during which the flowers opened in solution was five days, the same as recorded for blooms harvested as they became mature in the greenhouse. An equivalent decline in fresh weight and flower size for the later-maturing flowers was noted for both treatments.

Data for the cultivar 'Albatross' are presented in the table. Figures shown are the means of six replications of nine flowers each per treatment. Row samples from each plot were used to reduce the effect of location in the bed (stems from outer plants are typically heavier and mature earlier). The differences in weight, bloom diameter and keeping life are not statistically significant. A repre-

sentative saleable 'Albatross' flower harvested conventionally is compared in a photo showing a similar flower harvested four days earlier and opened in solution (opposite page).

The results with 'Detroit News' and 'Escapade' were similar to those with 'Albatross.' In none of the trials were there significant differences in fresh weight, time of maturity or keeping life between blooms harvested conventionally and those harvested with a single cut. The harvest period for an August crop of 'Detroit News' and an early October crop of 'Escapade' was the same as for the 'Albatross.' None of the flowers exhibited flower or foliage injury symptoms from the opening solution. Weight alone was recorded in tests subsequent to those with 'Albatross.' The data indicated that fresh weight and flower size are closely correlated, but weight is a more objective measurement.

Once-over harvesting suggests a number of possibilities for the commercial grower. These include closer scheduling; better utilization of greenhouse space; lower labor requirements; less skill required for harvest labor; possible mechanization of harvest; increased flexibility in scheduling harvest; and reduced damage to blooms from insects, diseases, handling, or by cutting at a less-mature stage.

There also exists the possibility of increasing the keeping life of chrysanthemums by using an opening solution,

especially during periods of low light intensity. Future experiments (utilizing information relating to optimal opening solutions for specific cultivars grown under such conditions) will attempt to establish whether this method can improve the post-harvest quality of the later-maturing flowers from any given winter-grown crop.

*Thomas G. Byrne is Associate Specialist, Department of Environmental Horticulture, University of California Davis; and Peter J. Lert is County Director and Farm Advisor, Santa Clara County. References to previous work are from a paper presented at the 1971 annual meeting of the American Society for Horticultural Science by A. M. Kofranek, Professor, Department of Environmental Horticulture, Davis.*

COMPARISON OF WEIGHT, FLOWER SIZE AND VASE LIFE OF CHRYSANTHEMUM MORIFOLIUM CV. 'ALBATROSS' HARVESTED CONVENTIONALLY AND HARVESTED ENTIRELY IN ONE DAY WITH SOLUTION SAN JOSE, 1971

Treatment	Fresh weight of 15-inch stem + flower	Flower diameter	Keeping life
Conventional harvest (July 4, 6 and 8)	gm* 72.4	inches* 5.2	days 16.6
Single-cut harvest with solution (July 4)	73.9	5.2	16.9

\* Measurements taken on date of harvest for conventional harvest treatment and on date of saleability for single-cut treatment.