

# Colorado Flower Growers Association Inc.

IN COOPERATION WITH COLORADO STATE UNIVERSITY

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## HANDLING YOUNG CARNATIONS PLANTS

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Carnation growers have often asked specific questions about the handling of young plants. The following are typical questions: Is some sort of early check in growth actually beneficial to branching and later growth and quality? Would it pay me to grow my young plants through the nursery bed stage in an uncooled greenhouse? Out of doors? Is occasional wilting in the early stages harmful or beneficial to branching and growth? A problem occasionally arising with cold storage of rooted cuttings is that of freezing. Are frozen cuttings worth salvaging?

To attempt answers to some of these questions three different nursery bed environments were used and a fourth nursery bed was planted with rooted cuttings which had been frozen to a solid condition overnight (temperature in cooler 22°F) and thawed gradually by allowing the storage to warm up. One nursery bed was located out of doors, one in an uncooled greenhouse, and the third in a house cooled by fans and evaporative pads. The frozen cuttings were also grown in the cooled house. One half of each nursery bed was allowed to wilt each time before watering while the other half was watered when the Lark tension reached 30-50. The same soil was used in all nursery beds.

All the cuttings were planted on June 20 and grown in the described environments until July 26, when they were transplanted to one bench in a cooled greenhouse. All plants had the same care and environment from transplanting to the following May 17, when records were terminated.

### Normal watering vs. wilting

Plants watered normally up to transplanting time produced 3½% more flowers (1336) than those allowed to wilt before irrigation (1290). The average grade of flowers was almost the same from both lots of plants. There was a tendency toward slightly lower branching in the latter group of plants, but the difference was only a matter of two or three inches at most. Wilting of the young plants did not seriously impair later growth of the plants. There were no beneficial effects noted.

### Other environmental effects

The table shows yield and mean grade of plants from the four different nursery beds. The mean grade was obtained by assigning numerical values to the grades as follows: split and design, 2; short, 3; standard, 4; and fancy, 5.

Frozen cuttings and those grown to transplanting out of doors produced approximately 8% more flowers than the plants in the other two treatments. This was due to faster growth from the frozen cuttings and better branching on the plants grown out of doors. The average grade of flowers was best from frozen cuttings and from plants grown to transplanting in an uncooled greenhouse, where the temperature reached 100°F on many days. The slight increase in grade for these two treatments was due to better stem length on the first crop of flowers resulting in a higher percentage in the fancy grade. None of the plants produced appreciable numbers of short or design grade flowers.

Table 1. Yield and mean grade of flowers from frozen cuttings and cuttings grown through the nursery bed stage in three environments--variety White Sim.

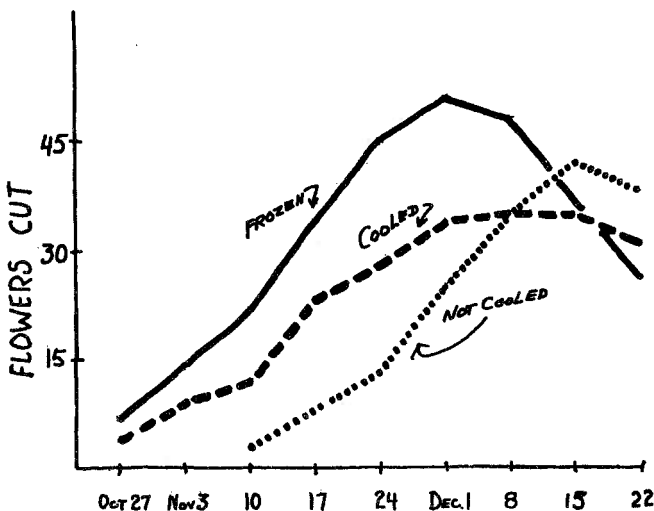
Treatment	Yield	Mean grade
Frozen cuttings	684	4.38
Air cooled greenhouse	632	4.33
Out of doors	681	4.32
Uncooled greenhouse	629	4.39

### Effect of early environment on timing

A distinct difference in the time of first flowering was noted so the accompanying graph was plotted. Three-week means were used to smooth the production curves. The frozen cuttings were about one week ahead of plants grown in an air conditioned house while those plants grown to transplanting in an uncooled greenhouse were delayed by two weeks. The plants grown out of doors followed closely the curve for the cooled plants.

### Discussion and conclusions

Just why frozen cuttings grew faster is not known. It should be borne in mind that these were from a different lot of cuttings originally, hence may have grown faster even if not frozen. The other treatments were all from the same lot and are directly comparable. We have noted this increased rate of growth from frozen cuttings before but have not designed an experiment to pin it down. At any rate, frozen cuttings are worth salvaging, if they are not killed in the freezing.



Young plants affect the time of flowering of the first crop of carnations.

Out door growing of the young plants in raised nursery beds and protected from insects is of value to the carnation grower in Colorado. Plants branch lower and more freely and might well occupy cheaper area during May, June and July.

There is no advantage to checking young plants by withholding water or subjecting them to heat.

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James J. Campbell was a senior horticulture student while this experiment was being done. He is now in the florist business at Pueblo, Colorado.