Colorado Flower Growers Association, Inc.

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The Opening of Carnation Flower Buds Off the Plant

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At one time or another all carnation growers have cut buds from a carnation bench that was being pulled out. The most advanced buds usually opened satisfactorily when kept in water in the grading room, but the life of these opened flowers was often less than that of flowers opened on the plants.

Kohl and Smith (1) cut carnation buds in various stages from petals protruding 1/4 inch to those in the most advanced stage before petals begin to unfold. When these buds were opened in a flower preservative solution at 70° F., the open flowers were similar in quality and in useful life to those opened on the plant. The more advanced bud stages gave the best results. A minimum temperature of 70° F. and a flower preservative solution were essential to successful handling of cut carnations in this manner. The best preservative solution for this purpose would be the one that keeps the water-conducting vessels of the stem open and that supplies the food materials needed by the developing flower.

Many interesting possibilities for improving the handling of carnations are opened up by this technique. Cutting of the flowers could be done at 3- or 4-day intervals. Buds could be shipped or stored in a tight stage, thus occupying less space. In fact, it might be possible to ship carnation buds in storage from one part of the world to another and open them near the terminal market.

The first experiment on carnation buds was started on May 16, 1963, when all of the buds showing color were cut from a bench of Red Gayety. This included all stages from calyx opening to the showing of about 1 inch of color. These buds were sorted into three categories, based on the amount of color showing, and dry stored at 33° F. for 18 days. On June 3, the buds were removed from storage and half of each group placed in Everbloom (40 grams/quart of water) and the other half in Petalife, according to the manufacturer's directions. The room used was a controlled 70° F. chamber with a relative humidity of 50 to 70 percent.

As the flowers opened they were placed in an unheated laboratory room where the temperature varied from 65° to 79° F. and the relative humidity from 40 to 53 percent. The flowers were in Petalife solution during the keeping period (2 tablespoons per quart of water). The mean life of flowers developed on the plant was measured at 8.45 days and was nearly identical to that of the first 2 lots of flowers from the opening room.

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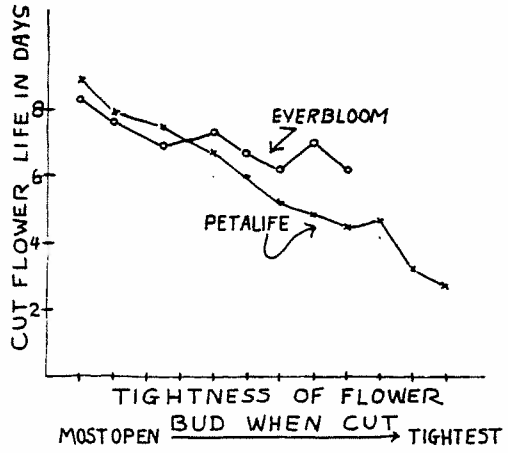
Figure 1 shows the useful life of the buds opened in this experiment. The most advanced buds lasted longest in the keeping room. There was a distinct difference in the opening and life of flowers opened in the two solutions. Buds opened

Fig. 1. Mean useful life of flowers opened in two solutions from buds of various stages of tightness. Cut flower life measured in Petalife.



sooner in Everbloom and were less "sleepy" in appearance. As tighter bud stages were opened the flowers were increasingly sleepier in appearance, especially when they were opened in Petalife. All bud stages opened in Everbloom from June 3 to 12. Ninety-two of 147 buds (62 percent) opened in Petalife during the same time. Those opening the last 3 days were sleepy in appearance and did not become normal during their life. The last 39 buds to open in Petalife were not satisfactory and were the very tightest buds when cut. Flowers opened in Petalife were a deeper and duller color, not the bright red of those opened in Everbloom.

Effect of Keeping Room Solution

The first experiment established Everbloom as superior to Petalife for opening carnation buds at a constant 70° F. The second experiment was designed to repeat a part of the first and to compare Everbloom with Petalife in the keeping room under summer conditions.

Carnation buds from calyx opening to the most advanced stages were cut on June 19, placed in dry storage until July 1, when they were removed from storage, and placed in Everbloom solution in the 70° F. opening room. July 2, and each morning thereafter, the open blooms were removed to the keeping room and placed in either Petalife or Everbloom solutions. Flowers that had opened on the plant were placed in the keeping room in Everbloom on July 2, 3, 6, and 10, and in Petalife on July 8. During this period the temperatures in the laboratory used as a keeping room varied from 72° F. to as high as 85° F., with the majority of the hours around 78° F. to 82° F. The highest temperatures occurred on July 2 and 3. Relative humidity ranged from 40 to 60 percent.

Fig. 2. The useful life of carnations opened on the plant and from buds opened in Everbloom and placed in Everbloom or Petalife for cut flower life measurement.

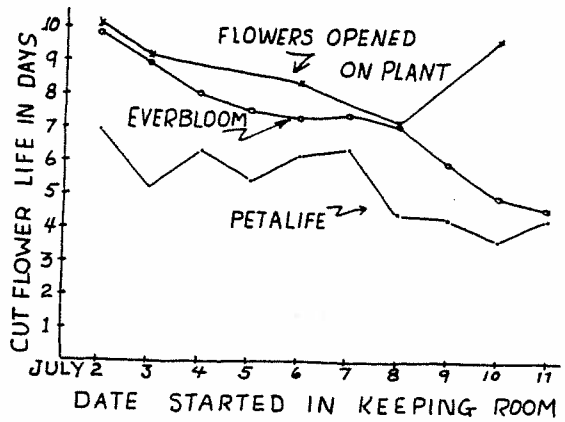


Figure 2 gives a comparison of the mean useful life of buds opened in Everbloom and placed in Petalife or Everbloom while in the keeping room. The life of flowers opened on the plants is included as a partial check. The stages of buds varied in this experiment from the most advanced, opened on July 2, to the tightest, opened July 11.

Flowers opened on the plants and buds stored and opened later had similar life when placed in Everbloom in the keeping room, up to and including the buds opened on July 8. An error is suspected of affecting the last three lots of buds in Everbloom. During these early experiments, small batches of Everbloom were obtained from several sources. The last three solutions did not have the usual light green color associated with the previous solutions used. Buds opened in Everbloom and placed in the keeping room in Petalife had 20 to 30 percent less life under the conditions of this experiment.

Conclusions

Carnation buds that show 1/2 inch of color or more can be dry stored and opened off the plant with a high degree of satisfaction.

The solution used in the opening room, and that used for the open flowers, is highly important to the success of this practice.

Research is under way to test additional opening and keeping room solutions as well as the effects of shipping and storage on carnation buds before opening.

ɔrature Cited

1. Kohl, H. C., Jr. and D. E. Smith. 1960. Development of carnation flowers cut before fully open. Carnation Craft, No. 53:7-8.