

# Special Research Report #414: Postproduction

## Identifying Long-Lasting Cut Carnation Varieties

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### BACKGROUND

Cut flower varieties within a species will vary not only in their flower color and flower size but also in how long they last. Besides providing proper care, e.g., temperature control and ethylene-free environments, the genetic make-up of a plant is one of the leading factors that determine postharvest performance. With the yearly introduction of new carnation varieties every year, it is important to test their postharvest performance. Identifying high performing, long-lasting varieties is critical to improve quality and performance of cut flowers.

### MATERIALS AND METHODS

A total of 24 carnation varieties were tested. They were grown in Colombia, transported by air to Miami, FL, and commercially transported on refrigerated

trucks to the University of Florida. Flowers arrived 4 days after harvest.

Upon arrival, boxes were placed at 35°F overnight. The next day, flowers were cut dry and placed in Floralife Crystal Clear flower food for 2 days at 35°F in the dark to simulate wholesale/retail conditions. Stems were then recut and placed in vases containing fresh flower food. Flowers were maintained at 70°F and 70 ftc. (12 hrs/day) to simulate consumer conditions.

Vase life was calculated from the time the flowers were placed in vases until senescence occurred. Generally, this was due to petal discoloration (browning) and/or wilting.

### RESULTS

#### *Vase Life*

Vase life ranged from 10 to 34 days. For 17 varieties lasted at least 3 weeks, while 8 lasted 2-3 weeks.

The shortest lasting varieties were 'Lopazo' and 'Condor', which lasted less than 2 weeks. 'Condor' declined quickly due to the browning of the flower petals. 'Delphi'

another white variety, lasted twice as long.

Table 1. Vase life of carnation varieties.

#### Varieties that last >4 weeks

Variety	Vase life
L.P. Candy	34
Viola	34
Hermez	33
Tundra	32
Roma	31
Stacatto	30

#### >3 weeks to 4 weeks

Variety	Vase life
Tropea	28
Raggio DiSole	26
Impulse	24
Incas	24
Parzifal	24
Havana	23
Chery	22
Norman	22

#### >2 weeks to 3 weeks

Variety	Vase life
Dakar	21
Pearl	21
Castellaro	20
Dark Rendez	20
Delphi	20
Nelson	20
Dream	18
Laura	17

#### < 2 weeks

Variety	Vase life
Lopazo	13
Condor	10

Photo 1. Similar carnation varieties differed in their vase life.



'Condor' 'Delphi'

Some varieties that lasted over 4 weeks included: 'Hermez', 'L.P. Candy', 'Roma', 'Stacatto', 'Tundra' and 'Viola'. These longer lasting varieties had excellent color retention under postharvest conditions.

### **Ethylene Sensitivity**

Carnations are very sensitive to ethylene which causes premature flower death. Ethylene is a colorless, odorless gas that is generated from sources such as truck exhaust, cigarette smoke, and ripening fruit. It is important to keep flowers away from external ethylene sources, which are likely to occur during transport and storage.

Flowers can be treated with anti-ethylene compounds like EthylBloc and Chrysal AVB, which will protect the flowers from ethylene injury. Carnations should be treated at harvest and/or during the distribution chain. Buyers need to request pre-treated flowers to ensure maximum

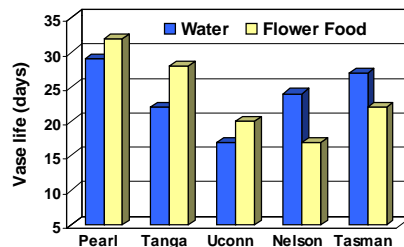
protection. (See Special Research Report #412)

### **Effect of Flower Food**

Since not all consumers use flower food, it was important to test how varieties would perform in vases containing water only.

While most varieties, lasted longer in flower food, but a few varieties actually lasted longer in vases of water. For varieties that lasted longer in flower food, the increase in vase life was variety specific. Some varieties lasted 3 days longer while others lasted a week longer.

Fig. 1. Variety response to vase solution.



Since carnations are often used in mixed bouquets or arrangements, it is recommended to use flower food. It is very important to use flower food for cut flower arrangements and to supplying consumers with flower food packets when flowers are purchased.

### **CONCLUSIONS**

Up to a 3 week difference in vase life was observed between carnation varieties.

Long-lasting varieties were: 'Hermez', 'L.P. Candy', 'Roma', 'Stacatto', 'Tundra' and 'Viola'. Avoid short-lasting varieties such as 'Condor' and 'Lopazo'. There are many varieties to choose from that last 3 to 4 weeks. Store carnations at 33-35°F, keep storage time short, and always keep away from ethylene. Carnations, which are very sensitive to ethylene, should be pre-treated with anti-ethylene compounds for protection. Always supply consumers with flower food to enhance vase life.

### **IMPACT TO THE INDUSTRY**

Identifying long-lasting varieties allows buyers, sellers and consumers to have high quality flowers. This information permits breeders to incorporate these varieties and their long lasting characteristics into breeding programs.

### **For Additional Information Contact:**

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