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Optimizing Postharvest Life of Cut Dahlias

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BACKGROUND

For years dahlias have been used as cut flowers, but most cultivars are not very uniform and have a poor postharvest life. A new series, >Karma= dahlias (Photos 1 and 2), produces multitudes of medium-diameter flowers on long, strong stems. This study examined the optimum handling procedures to extend the postharvest life of cut dahlias.

Photo 1. Dahlia 'Karma Thalia'.

Photo 2. Dahlia 'Karma Naomi'.

MATERIALS AND METHODS

Trials were conducted in 2003 and 2004. Cut dahlia 'Karma Thalia' stems were subjected to a range of tests to determine ethylene sensitivity, optimum cold storage duration, and the effects of pretreatments and pulses, vase solutions and substrates, and commercial preservatives. Unless otherwise indicated fully expanded flowers were harvested. After treatments, stems were placed at 68±4°F under approximately 200 ftc light for 12 hrs/day.

Flowers were monitored daily to determine the end of consumer vase life. This occurred when browning on the petals was noticeable when looking directly at the flower head.

RESULTS

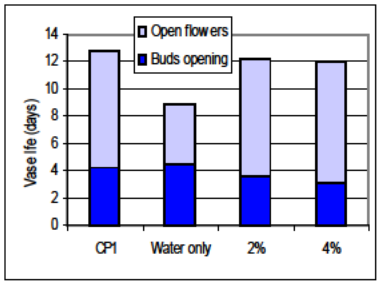
Harvest Stage

The longest vase life was obtained when floral buds were cut at the breaking stage (one petal open) and had a minimum of 50% color (Photo 1). The buds required 3.1-4.5 days to fully open and lasted 12.1-12.8 days if placed in 2 or 4% sucrose or commercial holding solutions (Fig. 1). Many of the buds held in water (control) either did not fully open or did not attain the flower size and color of buds held in sucrose or commercial holding solutions.

Photo 3. Stage at which buds were harvested.

Fig. 1. Effects of either Chrysal Professional 1

Hydration Solution (CP1), or 0, 2 or 4% sucrose on dahlia 'Thalia' stems cut as buds.



Pretreatments

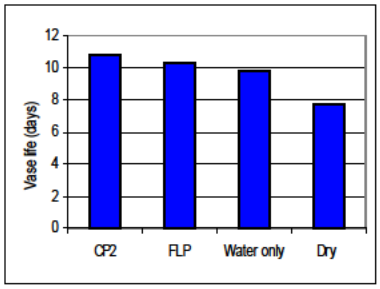
Commercial hydration solutions had no effect on vase life.

Cold Storage/Ethylene

One week of cold storage at 34°F reduced vase life up to 2 days. Ethylene at 0.1 to 1.0 ppm had no effect on dahlia stems, indicating that they are not ethylene sensitive. STS and 1-MCP had no effect on vase life.

Stems could be cold stored at 34°F for up to one week, but reduced the vase life to 6.6 days as compared to 8.4 days for unstored flowers. Storage of cut stems in commercial holding solutions such as Chrysal Professional 2 Processing Solution or Floralife Professional increased vase life compared to storage in water only or dry storage (Fig. 2).

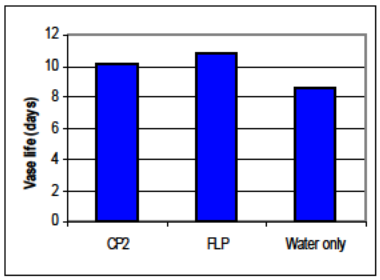
Fig. 2. Effect of storage on vase life of cut dahlia 'Thalia' stems in Chrysal Professional 2 Processing (PC2), Floralife Professional (FLP), water or dry storage.



Holding Solutions

Dahlia had a vase life of 6-9 days that could be increased to 10-11 days using commercial holding solutions such as Chrysal Professional 2 Processing Solution or Floralife Professional (Fig. 3). Floral foam had no effect on vase life.

Fig. 3. Effect of Chrysal Professional 2 Processing (PC2) or Floralife Professional (FLP) on vase life of dahlia 'Karma Thalia'.



CONCLUSIONS

Dahlia 'Karma' is a series of beautiful cut flowers (Photos 1 to 3) available in several colors with a consumer vase life of 6-9 days. The vase life could be increased to 13 days if cut as a bud and placed in commercial holding solutions. Cold storage reduced the vase life. Flowers harvested when fully open are best used for local sales, while those cut as buds should be used for wholesale marketing.

The optimum handling procedures for cut dahlias are to:

1. cut in bud stage,
2. place in commercial holding solutions,
3. cold store at 34 °F for less than one week.

IMPACT TO THE INDUSTRY

'Karma' dahlias can make excellent bright flowers for bunches, bouquets, and arrangements. It is critical to the industry to maintain a constant supply of new, successful cut flowers with proper postharvest handling information.

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