

# Special Research Report #423: Postproduction

## Optimizing Postharvest Life of Cut Linarias

J.M. Dole, F.L. Fanelli, W.C. Fonteno, B.T. Harden and S.M. Blankenship, Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609



Phone: 618/692-0045

Fax: 618/692-4045

E-mail: afe@endowment.org

Website: www.endowment.org

### BACKGROUND

Each year a large number of new cultivars and species are made available from plant breeders, propagators, and suppliers. Specific postharvest information must be obtained for these new species as they are made available to the market. One new cut flower, linaria (Photo 1), produces tall, open spikes of small rose,

Photo 1. Linaria 'Lace'



violet, white or yellow snapdragon-like flowers (Photo 2), which make great filler flowers for bouquets and arrangements. Linaria grows best at cool temperatures, 40-50°F, and is very productive with 5-10 stems per plant. This study determined the optimum handling procedures to extend the postharvest life of cut linaria stems.

Photo 2. Close up of linaria 'Lace Violet'



### MATERIALS AND METHODS

Trials were conducted in 2003. Cut linaria 'Lace Violet' 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. After treatment, stems were placed at 68±4°F under approximately 200 ftc light for 12 hrs/day.

Stems were harvested when 2-4 florets were open. Flowers were monitored daily to determine the end of *wholesale/retail vase life* which was designated as the first day a change was observed in the inflorescence that would typically prevent it from being sold by a wholesaler or retailer. This occurred when the immature florets opened pale or when more than 50% of the spike opened. The *consumer vase life* was designated as the day a consumer would have disposed of the stem. This occurred when the stem collapsed or more than 75% of florets were discolored or shriveled.

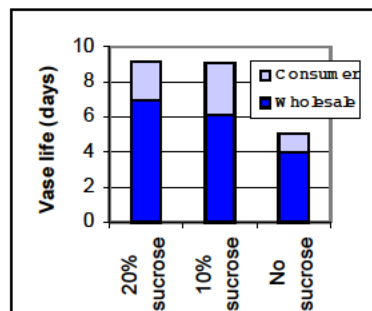
### RESULTS

#### *Pretreatments*

A 24 hr 10 or 20% sucrose pulse increased the wholesale/retail and the consumer vase life by 2-4 days resulting in a consumer vase life of 9 days as compared to control flowers which had a 5 day consumer vase life (Fig. 1). The 20% sucrose pulse

produced only a slightly longer vase life so a 10% pulse can be used.

Fig. 1. Effect of sucrose pulses on linaria 'Lace Violet' vase life.



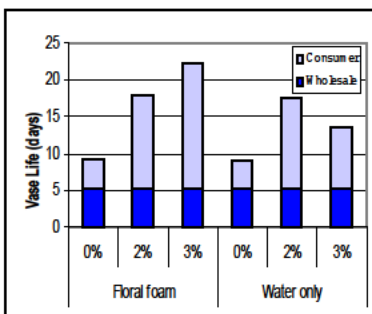
### Cold Storage/Ethylene

Cold storage at 34°F for one week decreased vase life, but longer storage had little additional effect. Treating linaria with either 0.1 or 1.0 ppm ethylene, 1-MCP or STS had no effect on wholesale/retail or consumer vase life. Thus linaria is not an ethylene sensitive flower.

### Holding Solutions

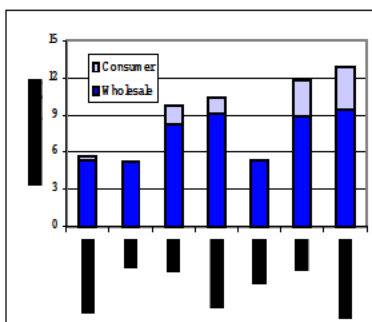
Stems lasted the longest, 14-19 days, when held in 2 or 3% sucrose. The use of floral foam decreased vase life, but only slightly when used with either 0 or 2% sucrose (Fig. 2). The use of a commercial holding solution (Floralife Professional or Chrysal Professional 2 Processing Solution) increased vase life to 10-13 days (Fig. 3). However, neither commercial hydrating solution (Floralife Hydraflor 100 or Chrysal Professional 1 Processing Solution) was effective.

Fig. 2. Effect of floral foam and 0, 2, or 3% sucrose in the vase solution on linaria 'Lace Violet' vase life.



Lowering water pH to 3.5 with citric acid and using an antimicrobial agent such as 8-HQS increased consumer vase life to 11 days.

Fig. 3. Effect of commercial hydrating solutions, Floralife Hydraflor 100 (FL100) and Chrysal Professional 1 Processing Solution (CPI), and holding solutions, Floralife Professional (FLP) and Chrysal Professional 2 Processing Solution (CP2) on Linaria 'Lace Violet' vase life.



## CONCLUSIONS

Linaria 'Lace' (Photos 1 and 2) is an excellent filler flower available in several colors with a consumer vase life of 5-7

days that can be increased to 10-19 days with various treatments, including commercial holding solutions, 2 or 3% sucrose in the vase solution, and citric acid + 8-HQS. Stems should not be cold stored and can be used in floral foam with only a slight decrease in vase life. With proper handling linaria is suitable for wholesale/retail marketing.

The optimum handling procedures for cut linarias are to:

1. pulse with a 10% sucrose solution,
2. place in 2 or 3% sucrose solution or commercial holding solutions,
3. cold store at 34 °F for less than one week.

## IMPACT TO THE INDUSTRY

Linaria 'Lace' is a productive, filler flower. It is critical to the industry to maintain a constant supply of new, successful cut flowers with proper postharvest handling information.

For Additional Information Contact:  
[john\\_dole@ncsu.edu](mailto:john_dole@ncsu.edu)

2004 August © Copyright The American Floral Endowment. All Rights Reserved.