Special Research Report #407: Postproduction

Postproduction Factors Influencing Quality and Longevity of Cyclamen, Gerbera, Hiemalis Begonia, Hydrangea, and Lisianthus

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BACKGROUND

Proper postproduction handling practices, including transport and the conditions at the retail and consumer phases, play a major role in the quality and performance of potted flowering plants for consumers. To meet the current market demands, many potted plants are transported long distances for long periods of time. The research has identified optimum transport conditions for several species of potted flowering plants. Studies were also conducted to determine optimal light and temperature conditions in the consumer environment to maximize postproduction quality and longevity. The crops tested include cyclamen, gerbera daisy, Hiemalis begonia, hydrangea, and lisianthus.

MATERIALS AND METHODS

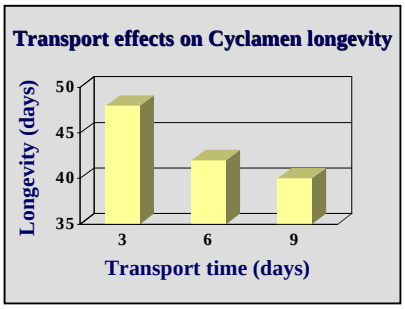
Plants were grown using standard cultural practices. For each crop, 2 widely-used cultivars were selected. For the simulated transport studies, plants were sleeved, boxed, and stored for 3, 6 or 9 days at various temperatures. Plants were then placed in postproduction rooms maintained at 70°F, 70 ftc. (12 hours/day), and 50±5% relative humidity.

To test consumer conditions on quality and longevity, plants were sleeved, boxed, and stored for 3 days at optimum temperatures for each crop. Plants were at the proper marketable stage when sleeved and boxed. Plants were then placed at 65, 70 or 75°F providing light levels of 50 or 100 ftc.

RESULTS

Cyclamen

'Finlandia' and 'Julia' were tested. Plants were shipped at 40 or 60°F for 3, 6 or 9 days. For optimum performance, plants should be transported at cool temperatures (35-40°F) for 3 to 5 days. Plant longevity and the number of flowers that developed in consumer conditions were significantly reduced when transported for 9 days, especially for 'Julia'. Leaf yellowing occurred when stored for 9 days.



Plants lasted 3 weeks longer when maintained at 65°F compared to 75°F. Longevity also increased an average of 10 days when maintained at 100 ftc. instead of 50 ftc.

Factors to maximize quality and longevity of Cyclamen.

Stage of marketability	2-3 open flowers
Transport conditions	35-40°F 3-5 days
Consumer conditions	65-70°F 100 ftc.
Ethylene	Sensitive
Expected longevity	4-6 weeks or longer

Gerbera Daisy

'Dark Eye Orange Delight' and 'Swift Red/Orange' were tested. Plants were shipped at 3, 6 or 9 days at 35, 45, and 55°F. To maximize performance, plants should be transported at 35°F for 3 days. Transporting at higher temperatures for longer periods of time decreased longevity up to 7 days. Plants lasted 10 days

longer when maintained at 65°F compared to 75°F and 4 days longer at 100ftc..

Factors to maximize quality and longevity of Gerbera.

Stage of marketability	50% open flowers
Transport conditions	35°F 3 days
Consumer conditions	65-70°F 100 ftc.
Ethylene	Sensitive
Expected longevity	2-3 weeks

Hiemalis Begonia

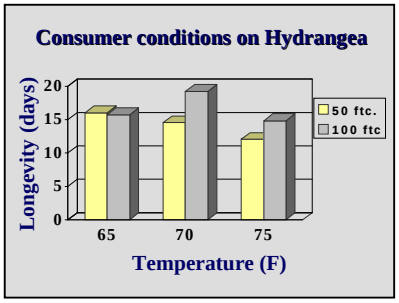
'Takora Yellow' and 'Sonata' were tested. Begonias have extremely long-lasting characteristics and were tolerant to a wide range of transport and consumer conditions. Plants lasted at least 60 days when transported at 45, 55, and 65°F for 3, 6 or 9 days. Plants performed excellently under all consumer conditions. Stalk elongation and flower fading decreased when maintained at 100 ftc.

Factors to maximize quality and longevity of Begonias.

Stage of marketability	10-75% open flowers
Transport conditions	45-55°F 3-5 days
Consumer conditions	65-75°F 50-100 ftc.
Ethylene	Sensitive
Expected longevity	3-4 months

Hydrangea

'Leuchtfeur' was transported at 35, 45, 55, and 65°F for 3, 6 or 9 days. Plants must be marketed when at least 50% of the bracts are colored. Bract development does not occur if marketed earlier. This cultivar performed well at all transport temperatures as long as the duration was less than 3 days. Longevity decreased by 50% when stored for 9 days, especially at temperatures above 35°F.



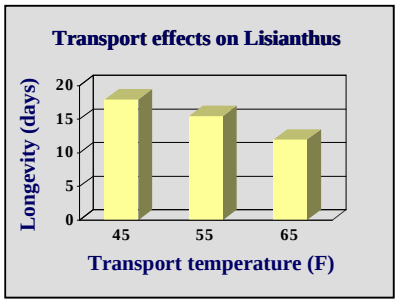
Plants maintained at 65-70°F at 100 ftc. lasted the longest.

Factors to maximize quality and longevity of Hydrangea.

Stage of marketability	50-75% open flowers
Transport conditions	35-50°F 3 days
Consumer conditions	65-70°F 100 ftc.
Ethylene	Not sensitive
Expected longevity	2-3 weeks

Lisianthus

'Maurine Blue' was transported at 45, 55, and 65°F for 3, 6 or 9 days. When transported at 45-55°F for 3 days, plants lasted longest, flowering 5 to 7 days longer.



Under consumer conditions, plants lasted 20 days when maintained at 65°F, 15 days at 70°F, and 13 days at 75°F.

Factors to maximize quality and longevity of Lisianthus.

Stage of marketability	75% open flowers
Transport Conditions	45-50°F 3 days
Consumer Conditions	65°F 100 ftc.
Ethylene	Slightly sensitive
Expected longevity	2.5-3 weeks

CONCLUSIONS

Proper postproduction handling practices maximize potted plant quality and longevity. Also, plants must be marketed at the proper stage of development and kept away from ethylene.

IMPACT TO INDUSTRY

Wholesalers, retailers, and consumers can improve postproduction performance and extend longevity by utilizing optimal conditions.

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