

Special Research Report #413: Postproduction

Improving Postharvest Performance of Alstroemeria

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BACKGROUND

Alstroemeria is one of the most popular cut flower species used in the floral industry. Maintaining leaf quality is one of its major postharvest problems since the leaves turn yellow before the flowers have senesced. The discoloration of the leaves reduces quality and the appearance of the flower stem is adversely affected. Our research results have produced ways to reduce leaf yellowing and increase flower life of Alstroemeria.

MATERIALS AND METHODS

Three varieties of California grown cut Alstroemeria were harvested at commercial maturity and hydrated in water overnight at 42°F. Stems were then sleeved, boxed, and transported by air to the University of Florida within 24 hours.

Upon arrival, stems were cut and pulsed for one hour in 4 different solutions: (1) Chrysal BVB (0.15 ml/liter), a proprietary mixture of cytokinin and gibberellic acids manufactured by Pokon&Chrysal; (2) Chrysal AVB (1 ml/liter) was added to BVB; (3) Fascination (0.3ml/liter), a commercial mixture of 1.8% each of BA (benzyladenine) and GA₄₊₇ (gibberellins) manufactured by Valent BioSciences Corporation; and (4) water as a control.

After the pulsing treatments, flowers were stored in boxes, for 4 days at 35°F.

Subsequently, the stems were recut and placed in water for 2 days at 68°F and 70 ftc. for retail simulation. Stems were then cut to 40 cm, placed in vases containing either tap water or Chrysal Clear Lily and Alstroemeria floral preservative. Stems were maintained at 70°F and 70 ftc. (12 hour/day) to simulate consumer conditions.

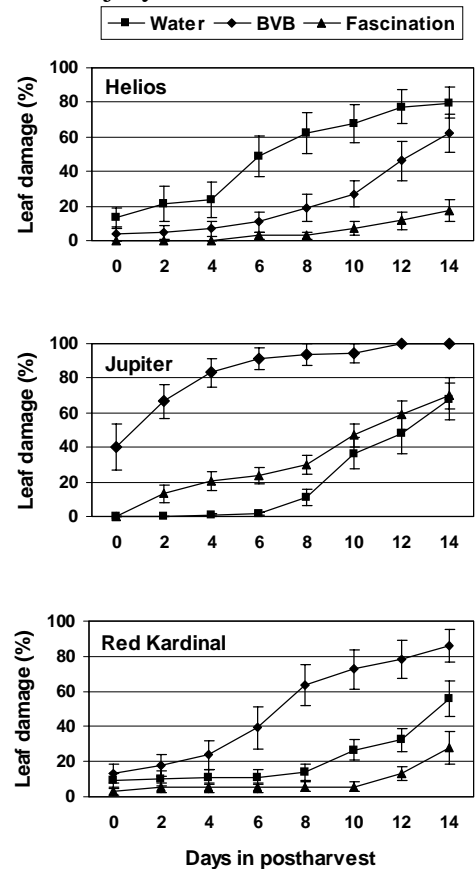
RESULTS

Leaf Damage

Leaf injury was significantly reduced when stems were pulsed with BVB or

Fascination as compared to water controls.

Fig 1. Pulsing reduces leaf injury on Alstroemeria.



After 1 week under consumer conditions, leaf injury was kept at or below 20% on all varieties when pulsed with BVB and Fascination. In contrast, controls had 50 to 90% of the leaves injury. A reduction in leaf injury was still observed after 2 weeks. All varieties exhibited leaf

yellowing. However, 'Jupiter' was extremely sensitive, and more leaves turned yellow quicker.

Photo 1. Pulsing 'Jupiter' reduced leaf yellowing.



Control (pulsed in water)



Pulsed in Fascination

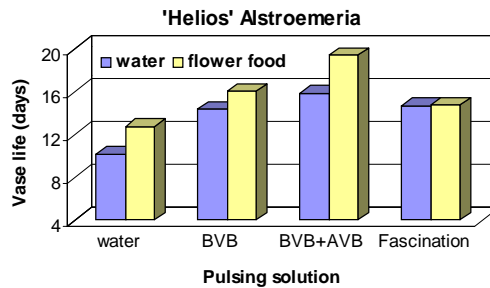
Maintaining stems in Chrysal Clear Lily and Alstroemeria flower food significantly decreased leaf yellowing and increased vase life. If stems were not pre-treated, this flower food improved leaf quality dramatically. Combining a pulsing treatment and this flower food provided the best protection against leaf injury.

Bud Opening and Vase Life

The pulsing treatments did not have a detrimental effect on bud opening. In fact, more buds opened, the flowers were larger, and they lasted longer. When AVB

was added to BVB in the pulsing solution, flowers lasted longer, especially when combined with the flower food.

Fig. 2. The effect of pulsing and flower food on vase life.



AVB is used to prevent the formation of ethylene by the flower and to protect flowers from external ethylene gas. AVB should be combined with BVB, because using AVB alone does not protect leaves from yellowing. By combining both solutions, both flowers and leaves will be protected.

Vase life doubles when pre-treated and maintained in flower food.



Control AVB+BVB

CONCLUSIONS

Pulsing Alstroemeria after harvest can significantly delay and reduce leaf yellowing and prolong vase

life. Flowers lasted longest when AVB was added to the pulsing solution and stems were maintained in the flower food. Always maintain stems in flower food, especially those formulated for Alstroemeria. This will also help to reduce leaf yellowing and improve vase life.

Buyers and florists should request that Alstroemeria be treated before purchased. It would be best to treat prior to purchase, but stems can be treated upon arrival for 1 hour to improve quality and vase life. Unlike Chrysal BVB and AVB, Fascination is not labeled for cut flowers. Always supply customers with flower food.

Our research has produced similar results with Oriental and Asiatic lilies. (See Special Research Report #415)

IMPACT TO THE INDUSTRY

Improving postharvest leaf quality and prolonging vase life of Alstroemeria helps to provide consumers with a quality, long-lasting products. Satisfied customers generally are repeat customers.

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