

# S-ABA:

## Developing A New Tool For The Big Grower

Research has shown that abscisic acid is effective in delaying wilt when plants aren't watered. Big growers may soon be able to use this natural plant hormone to improve plant quality and increase sales in big box stores.

By Jim Barrett and Craig Campbell



These New Guinea impatiens are pictured five days after the last irrigation. The plant on the left is the control plant that did not receive S-ABA and was unmarketable after five days. From left, plants two, three and four were drenched with VBC's formulated S-ABA at 125, 250 and 500 ppm, respectively, and wilted after seven, eight and nine days, respectively.

**A**s a plant hormone, abscisic acid (S-ABA) plays an important role in several plant processes, such as seed dormancy, winter bud dormancy, and leaf and fruit abscission. But research has shown that S-ABA has potential for greenhouse crops because of its involvement in a plant's response to water stress. In short, when a plant undergoes drought stress, S-ABA rapidly builds up in the leaf tissue and causes stomata (small pores on a leaf surface that regulate transpiration) to close. Through this mechanism, plants evolved to develop a way of conserving water and reducing the impact of drought.

### Using S-ABA

Plant physiologists have long known that treating plants with S-ABA would close stomata and greatly reduce transpiration

rates. However, S-ABA is an expensive chemical to produce and has always been out of reach for the agrochemical market. With recent technology breakthroughs in production and product formulation, the Valent Biosciences Corp. (VBC) is now developing an S-ABA product for use on floriculture crops.

Plant wilting is a major factor that reduces sales in big box garden centers. In the peak of spring, sales are rapid and plants move before they need watering. However, just after peak, when turnover slows and the weather warms up, wilted plants in garden centers are a common sight. Likewise, wilting is a problem with any product lines that do not move rapidly, especially those like garden mums or hanging baskets where there are relatively large plants with less soil volume. There are also crops like hibiscus and impatiens that use water rapidly and wilt easily.

The accompanying photos illustrate the performance of S-ABA on a range of crops in delaying wilt when plants are not watered. S-ABA can be applied as a drench in the last irrigation prior to shipping or as a spray to well-watered plants before they leave a greenhouse. Absorption of S-ABA into plants is rapid. Within 30 minutes of treatment, the stomata begin to close and transpiration is reduced.

We have found that once the treated plants are put back under regular irrigation, the S-ABA effects dissipate in a few days. S-ABA is not causing growth suppression or reduction in flowering. The one side effect that is sometimes observed in a few crops is some yellowing of older, lower leaves. ♦



Figure 1. These are hardy hibiscus in 1-gal. pots. The plant on the left was not treated, and the plant on the right received S-ABA drench at 250 ppm. Row A is one day after treatment, and row B is two days after treatment. Plants were re-watered three days after treatment, and row C was two days after that.



Shown here are plants eight days after they had S-ABA applied to them as a spray. From left to right, treatments are control, 250, 500, 1,000 and 2,000 ppm of VBC's formulated S-ABA. Wilting occurred after six, seven, seven, nine and 10 days, respectively, after treatment.



Figure 2. This is an example of S-ABA effects on impatiens baskets. Pictures are four days after treatment and last irrigation. Basket on left is the control and one on the right was drenched with S-ABA at 125 ppm.

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#### Permit Applied For

VBC has applied for an experimental user permit for the 2007 season to further study S-ABA on floriculture crops under commercial settings. Under this permit, VBC will conduct extensive trials on a broad array of annuals, perennials and potted crops in different geographical regions. The goals of these trials will be:

- To evaluate how S-ABA-treated plants perform in big box retail settings;
- To determine optimum rate ranges for various crops; and

- To identify potential problems that users will need to be concerned with after full registration.

This product has the potential to become a very important tool for large, wholesale growers to reduce product shrink at the retail level. Maintaining plant quality and appearance is a key factor in the success of growers selling in a consignment system and even growers in an outright sale system where you are still judged on product quality and sell through. With the pressure to keep garden center displays full



Figure 3. These double impatiens are shown one day after last irrigation. Control plants are on the left; those on the right received a drench of VBC's formulated S-ABA at 250 ppm. The treated plants wilted after two days.



These are euryops in 1-gal. pots. The picture was taken six days after drench with VBC's formulated S-ABA treatment. Left to right, plants are control, 125- and 250-ppm S-ABA. Plants wilted after four, six and eight days, respectively.

even in periods of slack sales, maintaining plant appearance becomes even more critical. ■

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