



By Erik Runkle



# ABA Coming to Floriculture

Plant hormones are already commonly used in greenhouse production, and the potential introduction of Valent's ConTego may add another to the mix: abscisic acid.

Plant hormones, and chemicals that influence hormone synthesis and action, are commonly used in the production of greenhouse and nursery crops. For example, gibberellins are used to increase stem extension, ethylene is used to abort flower buds, and auxins are used to promote rooting of cuttings. One of the plant hormones that has not been used much in greenhouse crop production is abscisic acid (ABA), because there has not been any commercial product registered for use. That will change when Valent BioSciences Corporation registers ConTego, a plant growth regulator, likely in early 2010. ConTego's active ingredient is S-abscisic acid (S-ABA), the biologically active form of ABA, which Valent produces through microbial fermentation.

All plants synthesize ABA, and it influences many growth and development processes. Of particular interest is its role when plants are exposed to drought stress. When water is limiting, ABA is produced by roots and travels to the leaves to help prevent an excess loss of water. As a result, the stomata — small openings on leaves that regulate the exchange of gases — close, dramatically reducing water loss from the leaves. Photosynthesis also comes to a halt.

In the past few years, Valent has worked internally, as well as with several plant scientists and

greenhouse growers throughout the United States to determine whether — and how — S-ABA can be used to delay wilting of ornamentals. Applying it to leaves or media causes stomata to close, which reduces water lost by the leaves; thus, time to wilting increases. This response can be desirable if plants are subjected to water stress when marketed to consumers: A turgid plant is much more likely to sell than a wilted one.

## Research with S-ABA

In the past three years, our floriculture group at Michigan State University has worked with Valent to help determine how bedding plants respond to S-ABA. As with other PGRs, the response has varied by species, concentration and volume applied to plants. On many species we've studied, a srench (heavy spray) application of S-ABA at 250-500 ppm has extended the time to wilt from as little as one day to as many as six days in a warm, sunny greenhouse (Figure 1). On some crops, we observed little to no response, and on a few species, some treatments caused minor phytotoxicity, such as spotting on flowers or a light yellowing of lower leaves. As with all PGRs, growers will have to use care when deciding on which crops and S-ABA rates to use.

According to Craig Campbell, senior field R&D scientist with Valent, ConTego will be evaluated in 2009 in large-scale trials under an experimental-use permit in cooperation with select greenhouse growers. Valent's ConTego submission for registration is currently under review by the U.S. EPA. Its primary use on ornamentals is drought stress management of finished crops to reduce shrink during marketing. The suggested application will be a foliar spray at 500-1,000 ppm, with the addition of a surfactant to improve uptake of the active ingredient. Growers will be urged to perform their own trials on a small scale to determine appropriate rates and responses. The most desirable application timing for ConTego will be soon before shipping to prevent plants from wilting during shipment and while on retail display. Effects can last from a few days to a week or more, depending on the application rate and retail conditions. **GPN**

**Effects of S-ABA on drought stress tolerance  
Petunia xhybrida 'Red and White'  
six days after application at 68°F without watering**



30 mL water  
(Control)

30 mL S-ABA  
at 250 ppm

Figure 1. An experimental formulation of S-ABA, to be marketed as ConTego, delayed wilting of petunia when left unwatered. (Photo: Linsey Newton, Michigan State University)

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