

crop cultivation

# Florel

on Summer Production of

# Pansy

With the increase in late summer and early autumn pansy and viola production, delaying flowering is more important than ever.

By Erik Runkle and Royal Heins

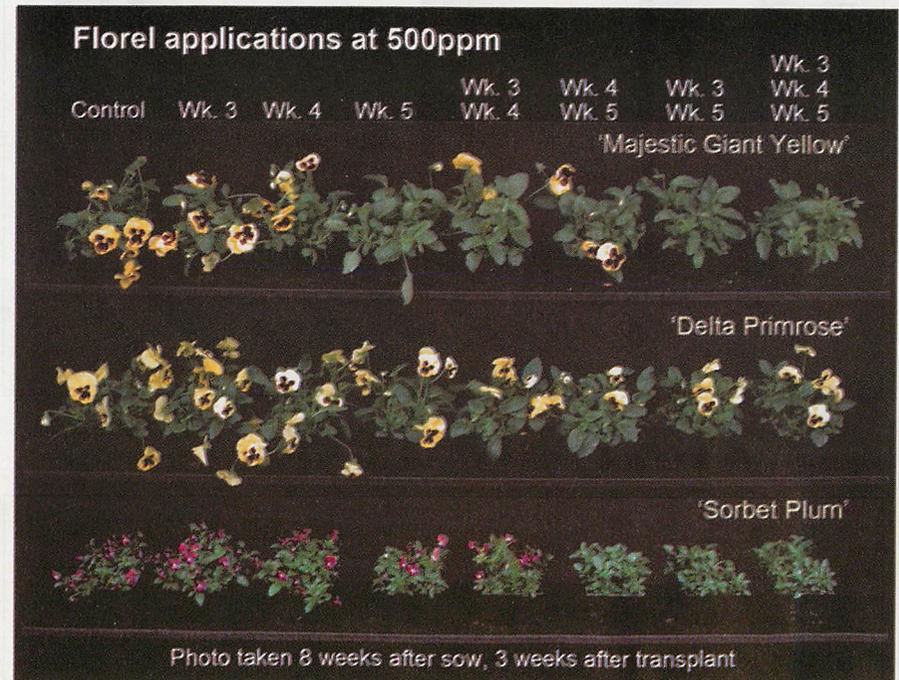


Figure 1. The effect of Florel applications at 500 ppm on production weeks 3, 4 and/or 5 on two pansy cultivars (top and middle) and one viola cultivar (bottom). Photograph was taken three weeks after the last spray treatment (eight weeks from seed sow). (Photos

**A**s consumers realize their appeal, pansies and violas are increasingly being planted outdoors in late summer and early autumn. Consequently, the production of flowering pansy continues to increase, especially for sales in late summer. To meet production demand, you must grow these cool-season crops during some of the warmest, brightest and longest days of the year.

Pansy is a facultative long-day plant, meaning that plants flower earlier when the day length is long (at least 14 hours). In addition, pansy flowers earlier when the daily light level (or daily light integral) is high. Finally, the rate of plant development increases as temperature increases, until some optimum temperature is reached. These three factors — high temperature, high light intensity and long days — all contribute to early flowering of pansy.

With many spring bedding

plants, early flowering can be desirable. However, when plants flower before they have adequately filled the finish container, then a delay in flowering is desired. Early flowering is a problem with pansies and violas produced during mid summer.

Flowering of pansy and viola can be delayed by providing shorter days, cooler temperatures and, to a more limited extent, lower light levels. However, providing short days and lower temperatures is practically impossible in a greenhouse when outdoor temperatures are high, such as mid summer. Reducing the daily light integral too much can adversely affect plant quality. Therefore, providing low light levels to delay flowering is not an acceptable solution.

Another possible strategy to delay flowering of pansy is to delay flower initiation using the plant growth regulator ethephon, commercially sold as Florel (Monterey Chemical) to greenhouse growers. Florel works by releasing ethylene inside the

plant; effects on plant growth and development depend on the crop. Two common effects of Florel (ethylene) on floriculture crops are flower bud abortion and a reduction in stem elongation. For example, Florel can stimulate branching and abort flower buds of geraniums and New Guinea impatiens, and act as a growth retardant of vinca vine.

In the summer of 2003, we performed experiments to determine if Florel could be used to delay flowering of pansy and viola when grown under bright, warm and long-day conditions. Another potential benefit of a Florel spray could be an inhibition of stem extension, thereby reducing the use of plant growth retardants.

## THE FIRST EXPERIMENT

We obtained 288-cell plug trays of four cultivars of pansy and viola: 'Delta Primrose', 'Sorbet Plum Violet', 'Crystal Bowl Yellow' and 'Majestic Giant Yellow'. The plants were shipped to Michigan State University two

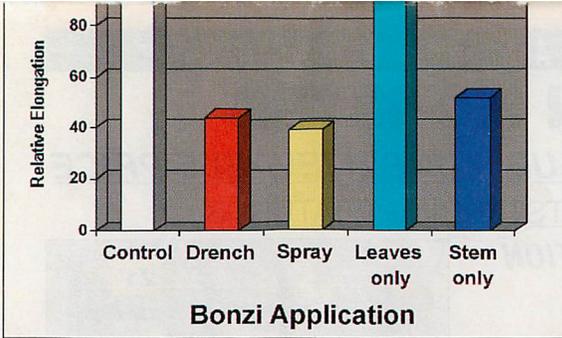
weeks after seed sowing and were placed in a glass greenhouse at 68-72° F with a 16-hour photoperiod. In the first study, plants were sprayed with Florel at 300 or 500 ppm on the following production weeks:

- week 3 only
- week 4 only
- week 5 only
- weeks 3 and 4
- weeks 3 and 5
- weeks 4 and 5
- weeks 3, 4 and 5
- no application (control)

The Florel solution was made with deionized water, and a spreader-sticker (Capsil, Scotts Professional Horticulture) was added to ensure good contact with the foliage. The solution was sprayed on plants in the plug trays in the morning (between 8 and 9 a.m.) at a rate of 2 quarts per 100 sq.ft.

One day after the last application was made (day 36 after seed sow), plugs from each tray were transplanted into a 606 bedding flat and grown under the same environmental conditions as





Bonzi spray applications work because the spray contacts the plant stems and enters the media, delivering the active ingredient either by running off the plant or hitting the media directly. The spray reaching the media has a drench effect. The drench effect is desirable, because that provides much of the size control. It is important, however, to use uniform spray techniques each time Bonzi is applied to have a uniform drench effect. For uniform spray volume, rates and formulation of the active ingredient in Bonzi are important.

For small plants with media showing, spray volumes of about 2 qts. per 100 ft<sup>2</sup> provide good results. However, for larger plants with a solid leaf canopy, a higher volume (3 qts. per 100 ft<sup>2</sup>) provides better stem coverage and more spray reaching the media.

Adapted from Barrett and Bartuska. HortScience 17(5):737-738. 1982

# Bonzi

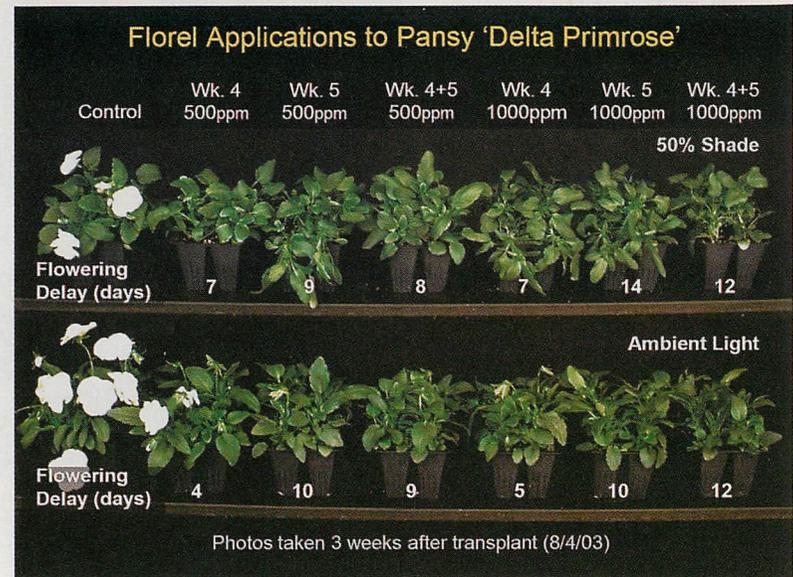
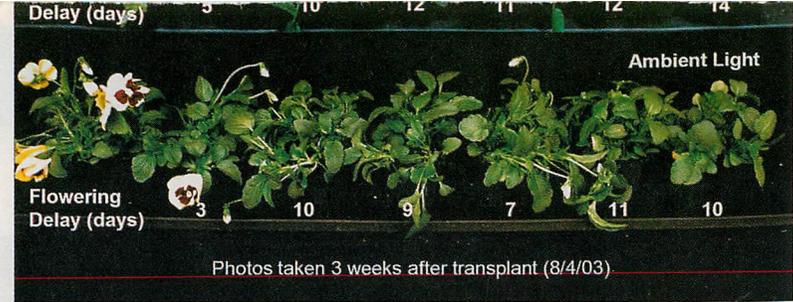
## Tip of the Month

els. Therefore, rates should be adjusted, depending on the ambient light (and temperature) conditions and the magnitude of the desired response.

As with all plant growth regulators, consider conducting your own trials on a small scale before implementing large-scale spray strategies. Finally, for maximal response, remember to apply sprays early in the morning (slow drying is important as uptake only occurs when leaves remain wet) to well-watered plants (to avoid accentuated plant stress). [GPN](#)

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