

# GROWERTALKS

## Columns

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### Garden Mums & Florel

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Ethephon is the active ingredient in several widely used plant PGRs, including Florel, Collate and Verve. Research conducted by Peter Konjoian in the 1980s laid the foundation for other researchers and growers to learn how to harness the power of ethephon. Some of Florel's attributes include increasing lateral branching, improving plant architecture, maintaining plants in a vegetative state and reducing internode elongation.

*Pictured: A chrysanthemum with crown budding. New research out of Clemson University shows that Florel has the effect of reducing internode*

*elongation in many treated plants.*

Peter also documented the “dark side” of ethephon: it’s a stress enhancer, leading to the recommendation that applications only be made to actively growing plants that are free from water, transplant or other stresses in order to avoid adverse plant reactions.

For many years, GGSPRO has recommended Florel applications for garden mum crops. The benefits for this important crop include reducing the risk of premature budding, optimized branching even under adverse conditions and the ability to influence the bloom date. We often refer to Florel applications as “cheap insurance” for garden mum growers.

Our recommendation, historically, has been to apply a foliar spray of Florel at 500 ppm as soon as the rooted cuttings arrive and then make a second application two weeks later. This program has served growers very well, but the ability to overcome premature budding under cool early-season conditions has been variable. In some cases, it worked like a charm; in other cases, it didn’t fully succeed.

Research shared in fall 2016 at the FRA Research Meetings by Jim Faust answers our questions about the lack of consistent success we saw in attempting to stop premature budding. (Thanks go to Jim and Audrey

Lecordier from Clemson University for allowing us to summarize their important garden mum research in this article.)

Jim and Audrey set out to determine treatments needed to prevent premature budding of natural-season garden mums produced under cool summer conditions. They demonstrated that extending the photoperiod, even up to 16.5 hours, didn't stop premature budding with a simulated cool summer temperature regime of 55F (12C) nights and 65F (18C) days.

The same held true for night interruption treatments. Next, they made one, two or three Florel treatments beginning after three weeks of simulated cool temperatures. Concentrations ranged from 500 to 1,000 ppm. They made several important observations that can significantly impact garden mum production:

- Flower initiation may occur earlier than previously thought, leading to a recommendation to apply 500 ppm Florel in the rooting phase. This is deemed sufficient to keep the mums in a vegetative state coming out of propagation.
- Three weekly applications of 750 ppm of Florel can re-set the flower clock during periods of cool summer weather that might otherwise lead to premature budding.
- Natural-season garden mum crops can be timed even with cool summer conditions by making weekly applications of 750 ppm Florel during the vegetative phase. Make the last Florel application one week ahead of the response time weeks to ship in the first color stage. As an example: For a variety with a six-week response time, make the last Florel application seven weeks before the desired first color date. (While a useful tool, consider the timing approximate and subject to factors such as heat delay. Keep good records and refine your approach with experience.)
- Garden mums receiving three weekly Florel applications had significantly more buds and blooms per stem when compared to plants receiving zero, one or two Florel treatments. In this experiment, the control plants averaged 35 buds and blooms per stem, while the mums receiving three applications of Florel at 750 ppm averaged 54 buds and blooms per stem.

Florel has the effect of reducing internode elongation in many treated plants, so it's reasonable to expect that garden mums receiving the recommended amount of Florel treatments might finish shorter than untreated plants. In this experiment, however, the plants receiving three 750 ppm Florel applications were slightly taller than the control plants. This is probably due to the fact that they stayed vegetative longer than the control plants, outweighing the internode elongation reduction effects of Florel.

## **Special instructions regarding the use of Florel**

Foliar spray applications of Florel should be applied evenly across all plant surfaces to the point of drip. It doesn't translocate from treated to untreated foliage. GGSPRO doesn't recommend the use of surfactants with Florel.

Highly alkaline water may need to be treated in order for Florel to be effective. When Florel is added to the spray tank, it must be able to drop the pH of the spray solution to 5.0 or lower to work properly. Distilled or

acidified water may be needed in some cases. Indicate 5 can also be used to adjust the final pH of the spray solution. Do not apply Florel to plants under water stress. Slower drying conditions will maximize the effectiveness of Florel applications.

#### Typical Florel Program for Garden Mums

	Florel ppm
During propagation	500
Upon arrival rooted cuttings	500
Two weeks later	500

#### Florel Program for Garden Mums in Conditions with Medium-to-High Risk of Premature Budding

	Florel ppm
During propagation	500
Risk identified	750
One week later	750
One week later	750

Florel rates: 500 ppm = 1.6 oz. per gal.,  
750 ppm = 2.4 oz. per gal.

Products	Description	Item Number
Florel 3.9%	1 qt.	608-395
Florel 3.9%	1 gal.	55-100161
Indicate 5	1 gal.	31705

Note: Florel treatments made after July 5 will likely delay the natural-season bloom date.

Call GGSPRO for questions regarding the use of Florel or Indicate 5. **GT**

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