

## Early growth regulator drenches on poinsettia

Research shows early growing medium drenches with flurprimidol effectively control final poinsettia height.

By Christopher J. Currey and Roberto G. Lopez

**C**ontrolling height is an important aspect of poinsettia production. Traditionally, growers have applied plant growth regulator sprays containing daminozide (B-Nine, Dazide), chlormequat chloride (Cycocel, Citadel) or paclobutrazol (Bonzi, Piccolo, Paczol) to control height before the beginning of short days or first bract color. Another technique growers use to control stretch later in the production cycle is low-dose growing medium drenches containing paclobutrazol.

A recent technique used to inhibit poinsettia stem elongation is the application of an early, low-dose growth regulator drench. These drenches are applied

early in the production cycle, typically two weeks after pinching when shoots are about 1 inch long. Compared to applying growth regulator foliar sprays, early drenches typically have less of a negative impact on bract size, provide more uniform results and increased height control.

Flurprimidol (Topflor) is one of the newest growth regulators to be released. Flurprimidol is related to the other triazole growth regulators including ancymidol, paclobutrazol and uniconazole. Flurprimidol is effective as a foliar spray and medium drench.

### Comparing different rates

A study was initiated to determine the effectiveness of early flurprimidol drenches in controlling stem elongation of a high- and low-vigor poinsettia cultivar in the northern United States. In August 2009,

vigorous growing 'Classic Red' and lower vigor 'Freedom Salmon' poinsettias were grown in 6½-inch pots in a Purdue University glass greenhouse under natural day lengths. Plants were pinched back to six nodes two weeks after rooted cuttings were planted. When shoots were about 1-inch long (two weeks after pinching), a 4-ounce solution of flurprimidol at concentrations of 0, 0.05, 0.1 or 0.15 parts per million was applied to the growing medium surface. Other plants were sprayed with a tank mix containing 1,250 ppm daminozide and 750 ppm chlormequat chloride. The vigorous 'Classic Red' plants were treated again five weeks after pinching, as average height exceeded the graphical tracking curve.

### Treatment effectiveness

All growth regulator treatments reduced final height of 'Classic Red' when compared to untreated control plants. Control plants were 19.5 inches tall. As flurprimidol drench concentration increased from 0.05 to 0.15 ppm height decreased from 14.9 to 11.7 inches. The daminozide and chlormequat chloride tank mix sprays

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resulted in plants that were 16.7 inches tall (Figure 1). All flurprimidol drenches suppressed final plant height more than the tank mix sprays.

The bract area of 'Classic Red' was reduced for all plants treated with flurprimidol compared to untreated plants. Bract area of plants sprayed with the daminozide and chlormequat chloride tank mix were similar to the untreated plants. Although the treatments did affect the bract area:height ratio, there were no significant differences among treatments.

Applying 0.05 ppm flurprimidol drenches or the daminozide and chlormequat chloride tank mix sprays did not delay flowering of 'Classic Red' compared to untreated plants. Flowering was delayed by four or five days when 0.1 or 0.15 ppm flurprimidol drenches were applied.

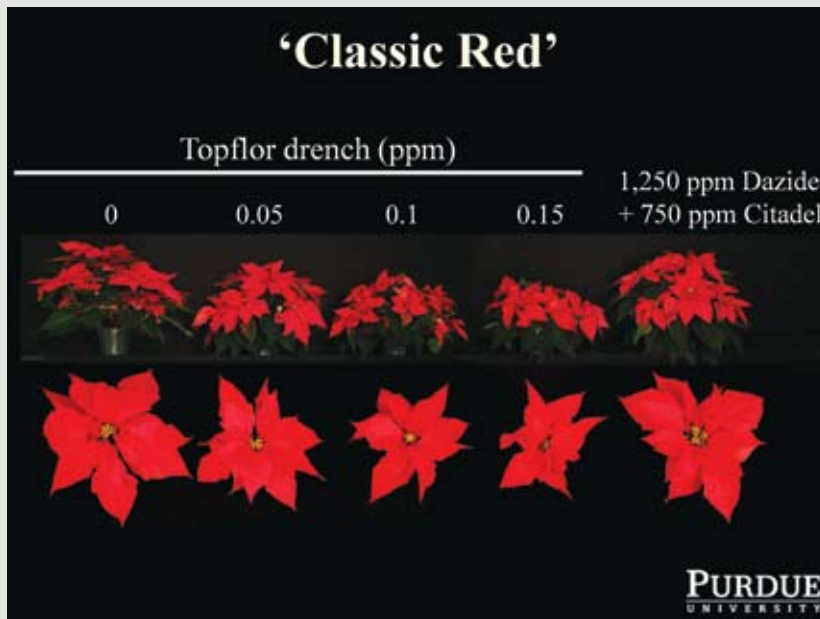
All flurprimidol treatments reduced height of 'Freedom Salmon' compared to untreated plants (15.3 inches). The daminozide and chlormequat chloride tank mix spray did not significantly reduce height (14.1 inches). As flurprimidol concentration increased from 0.05 to 0.15 ppm height decreased from 13.7 to 12.4 inches (Figure 2).

Among 'Freedom Salmon' plants treated with growth regulators, those treated with 0.05 and 0.1 ppm flurprimidol drenches were similar to plants sprayed with the daminozide and chlormequat chloride tank mix. When the flurprimidol concentration increased to 0.15 ppm plants were shorter than those sprayed with the tank mix.

The average bract area of all 'Freedom Salmon' plants treated with flurprimidol was reduced compared to untreated plants, while bract area of plants sprayed with the daminozide and chlormequat chloride tank mix was unaffected. As flurprimidol concentration increased from 0.05 ppm to 0.15 ppm bract area decreased (Figure 2). Neither early flurprimidol drenches nor the daminozide and chlormequat chloride tank mix spray affected the ratio of bract area to final plant height or days to flowering.

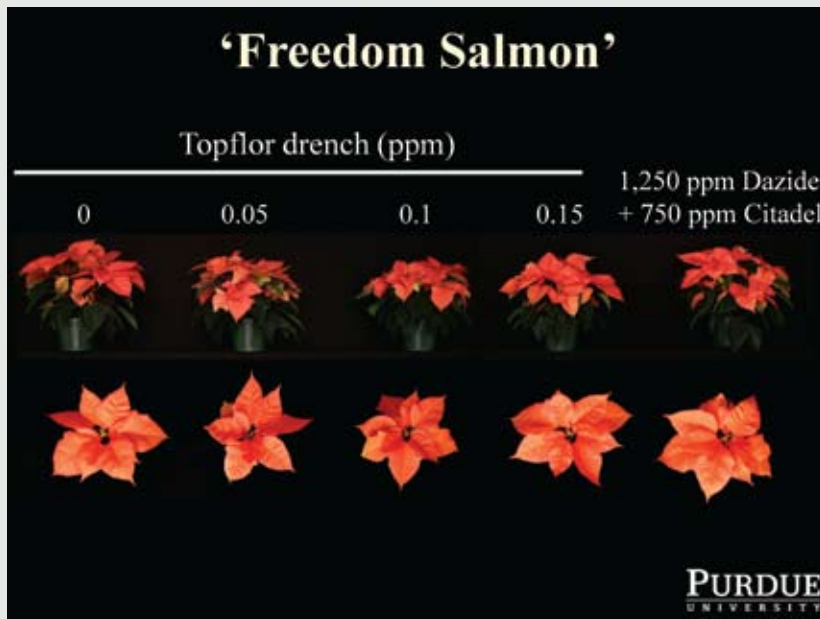
## Growth regulator drenches:

Figure 1:



Flowering plants and bracts of an individual stem of 'Classic Red' poinsettia treated with 0, 0.05, 0.10 or 0.15 parts per million flurprimidol drenches or a 1,250 ppm daminozide and 750 ppm chlormequat chloride tank mix spray at two and five weeks after pinching. Photo was taken at flowering.

Figure 2:



Flowering plants and bracts of an individual stem of 'Freedom Salmon' poinsettia treated with 0, 0.05, 0.10, or 0.15 ppm flurprimidol drenches or sprayed with a 1,250 ppm daminozide and 750 ppm chlormequat chloride tank mix spray two weeks after pinching. Photo was taken at flowering.

### Cultivar differences

'Classic Red' grew out of the first growth regulator application, requiring a second application. 'Freedom Salmon' did not require any growth regulator treatment, as the final height of the untreated control plants was between 14 to 16 inches, which met the final target height. This demonstrates the difficulty of applying a preventive height control treatment such as early drenches.

For both 'Classic Red' and 'Freedom Salmon' a reduction in bract area occurred with plants treated with early flurprimidol drenches compared to untreated plants. Flurprimidol may act similarly to paclobutrazol applied as a drench.

Even though flurprimidol drenches reduced bract area, there was no reduction in the plants' ornamental appearance. For both 'Classic Red' and 'Freedom Salmon' there were no differences in bract area:height ratios between untreated and flurprimidol treated plants. This

demonstrates that while bract area is reduced with early flurprimidol drenches, the reduction in bract area and plant height are proportional to each other and does not negatively impact the aesthetic appearance of the finished plants.

The effect of flurprimidol drenches on days to anthesis varied with cultivar. Flowering was not delayed on flurprimidol-treated 'Freedom Salmon' plants. Flowering was delayed by up to five days on flurprimidol-treated 'Classic Red' plants. This may not be commercially significant, as flowering was measured at pollen shed, when bracts are nearly fully developed.

### Commercial application

For vigorous cultivars grown in the northern United States, growers can apply multiple early drenches of flurprimidol at lower rates or a single early drench at a higher concentration. Additional late season growth regulator applications can

be made based on crop needs.

For less vigorous cultivars grown in the north, a single low-concentration early drench can be applied for cultivars that usually need some type of chemical height control. Growers in the south will likely need higher concentrations for adequate height control. Growers interested in using early drenches of flurprimidol should conduct their own trials to determine the most effective concentration and number of applications. 🌿

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