

# Fascination on Poinsettia

Did you hit your poinsettias with too much growth retardant? This Michigan State University research shows how to recover.

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A late application or an excessively high rate of a plant growth retardant can inhibit bract expansion of poinsettia. (Photo courtesy of Erik Runkle)

**D**uring the production of potted plants, various growth-regulating chemicals are used to manage plant height. Fascination (cytokinin/gibberellic acid, Valent USA Corp.) is a product that can be used to increase stem elongation on a wide range of crops and to prevent lower leaf yellowing during the production of lilies. The active ingredients in Fascination are gibberellins (A<sub>4</sub>+A<sub>7</sub>) and cytokinins, both of which are natural plant hormones.

Fascination can be used by poinsettia growers to increase plant height and bract size. This tool is especially useful to overcome stunted growth following an excessive application of a plant growth retarding chemical. For example, Bonzi (paclobutrazol, Syngenta Professional Products) is often used as a drench during poinsettia production to reduce unwanted stem elongation late in the crop. If Bonzi (or another growth-retarding chemical) is applied too early in the crop schedule, or at an excessive rate, bract size can be reduced.

For the past two years, we have conducted trials to determine the best application rate and timing to apply Fascination during poinsettia production. We also evaluated if Fascination could be used to increase bract size. This article presents research-based information on how to use Fascination on poinsettias treated with or without an early Bonzi drench. Results were similar in both years, so data from the second year are presented for simplicity.

## Experimental Protocol

'Freedom Red' poinsettia plants were delivered from Henry Mast Greenhouses, Byron Center, Mich., to Michigan State University (MSU) floriculture research greenhouses in September 2004. Plants were grown in 6-inch-round plastic containers filled with a commercial soilless medium (Suremix; Michigan Grower Products, Inc.) and were pinched to the sixth node from the soil level at Henry Mast Greenhouses. At MSU, plants were grown in a glass-glazed greenhouse with a constant

temperature setpoint of 68° F. The photoperiod was maintained at nine hours throughout the experiment by pulling opaque black cloth from 5 p.m. to 8 a.m.

We performed two experiments to determine the effects of Fascination on poinsettias with and without a Bonzi drench application. In both experiments, a single foliar spray of Fascination (2 quarts per 100 sq.ft.) was made on varying dates for each treatment. A surfactant (Capsil, The Scotts Company LLC) was included in all spray applications at a rate of 16 oz. per 100 gal.

In our first experiment, Fascination was applied on one of five application dates (from 10 days before first color to 30 days after

Application time	Date	Fascination spray rate
10 days before bract color	October 4	3 or 6 ppm
At first bract color	October 14	3 or 6 ppm
10 days after bract color	October 24	3 or 6 ppm
20 days after bract color	November 3	3 or 6 ppm
30 days after bract color	November 13	3 or 6 ppm
Control (no Fascination)	n/a	0 ppm

Figure 1. Fascination application times and rates used during the first experiment. No other plant growth regulators were applied during the production period.

Application time	Date	Fascination spray rate	Bonzi drench rate
10 days after Bonzi drench	Oct. 24	3, 5 or 10 ppm	2 ppm
20 days after Bonzi drench	Nov. 3	3, 5 or 10 ppm	2 ppm
30 days after Bonzi drench	Nov. 13	3, 5 or 10 ppm	2 ppm
Control with Bonzi	n/a	n/a	2 ppm
Control without Bonzi	n/a	n/a	0 ppm

Figure 2. Fascination application times and rates used during the second experiment. Bonzi was applied as a drench on the date of first bract color (October 14).

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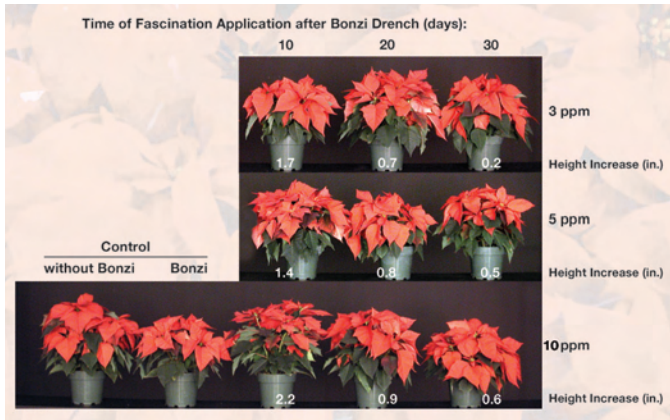


Figure 3. The effects of Fascination application time and rate on 'Freedom Red'. A single foliar spray was made to plants at rates of 3, 5 or 10 ppm and at 10, 20 or 30 days after an October 14 Bonzi drench (2 ppm). Photo taken November 19. (Photos courtesy of Matthew Blanchard)

first color) and at 3 or 6 ppm, according to the experimental protocol (see Figure 1, page 1). In the second experiment, plants received a drench application of Bonzi at 2 ppm at bract color (October 14). The drench rate was high, and the timing was late in the crop cycle to intentionally elicit a decrease in bract size. For comparison, some plants were not treated with Bonzi and are referred to as "control, without Bonzi drench." Following the Bonzi drench, Fascination was applied at one of three application times (10-30 days after bract color) and at 3, 5 or 10 ppm, according to the experimental protocol (see Figure 2, page 1). There were 10 plants in each treatment.

### Data Collection

For each treatment, plant height was measured on the day preceding the Fascination application and seven days after the application. Plant height was measured for each plant from the base of the pot to the apex of the shoot. Plant height measurements of the control treatment were taken on Oct. 14 and Nov. 20, 2004 (37 days apart).

At anthesis, the three largest branches were removed from each plant, and the five largest bracts per branch were detached (15 bracts per plant). The area of each bract was measured using a leaf area meter, and the total surface area of the selected bracts was calculated for each plant.

**Increasing plant height.** In both experiments, the timing of the Fascination application influenced the magnitude of stem elongation of 'Freedom Red'. Fascination applied 10 days after bract color or 10 days after a Bonzi drench resulted in the largest height increase. For example, Fascination applied 10 days following the Bonzi drench increased the average plant height by 1.7, 1.4 and 2.2 inches when used at 3, 5 and 10 ppm, respectively (see Figure 3, above). Fascination applied 20 days after a Bonzi drench had a smaller promotion of stem extension (less than 0.9 inches), and an application 30 days after a Bonzi drench had little or no effect on increasing plant height. Higher application rates of Fascination generally produced a similar or greater increase in stem elongation compared to lower rates.

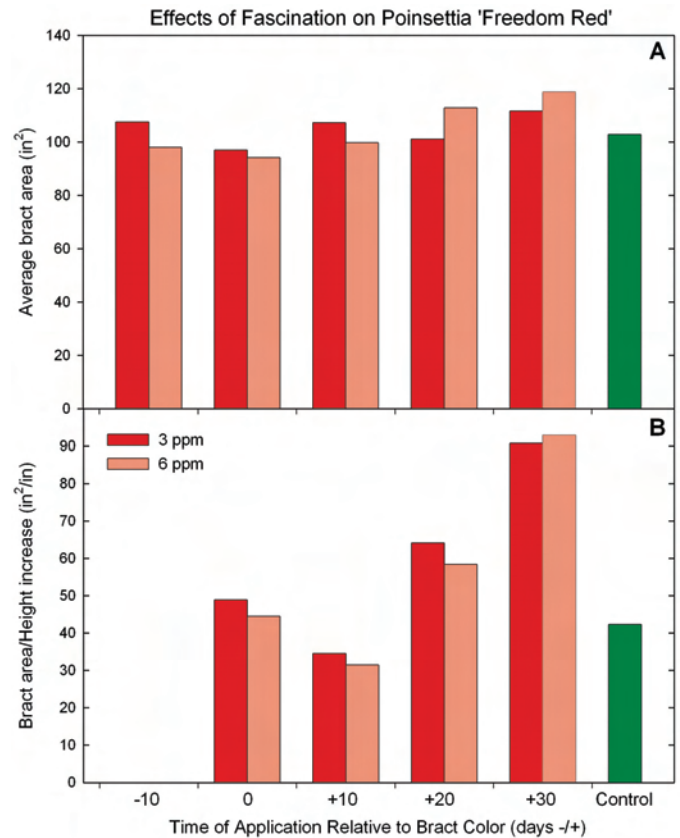


Figure 4. The effects of Fascination application time and rate on bract area (A) and the ratio between bract area and height increase (B) of 'Freedom Red'. Height increase represents the difference in plant height one day prior to application and seven days after application. Bract area was measured at anthesis.

**Increasing bract area.** The timing of the Fascination application influenced the final bract size of poinsettia in our study. A single application of Fascination 20-30 days after bract color or after a Bonzi drench resulted in the largest bract area. For example, in our first experiment, Fascination applied 30 days after bract color at a rate of 6 ppm increased bract area by about 15 percent compared to nontreated plants (see Figure 4A, above). Fascination applied at first bract color at rates of 3 or 6 ppm had the smallest effect on final bract area.

In our second experiment, the application of Fascination 20 days after a Bonzi drench increased bract area by 29 percent compared to control plants treated with the Bonzi drench alone (see Figure 5A, page 3). There was not a significant difference in bract area between plants treated 20 days after a Bonzi drench and control plants that did not receive a Bonzi application (see Figure 6, page 3). Bract size was similar or slightly larger at higher Fascination application rates compared to lower rates.

**Increasing bract size relative to plant height.** An objective of a Fascination application, with or without a Bonzi drench, is to increase bract size with little or no increase in plant height. Therefore, we calculated the ratio of bract area to height increase for each plant. A high ratio indicates a greater increase in bract size relative to the increase in plant height (usually

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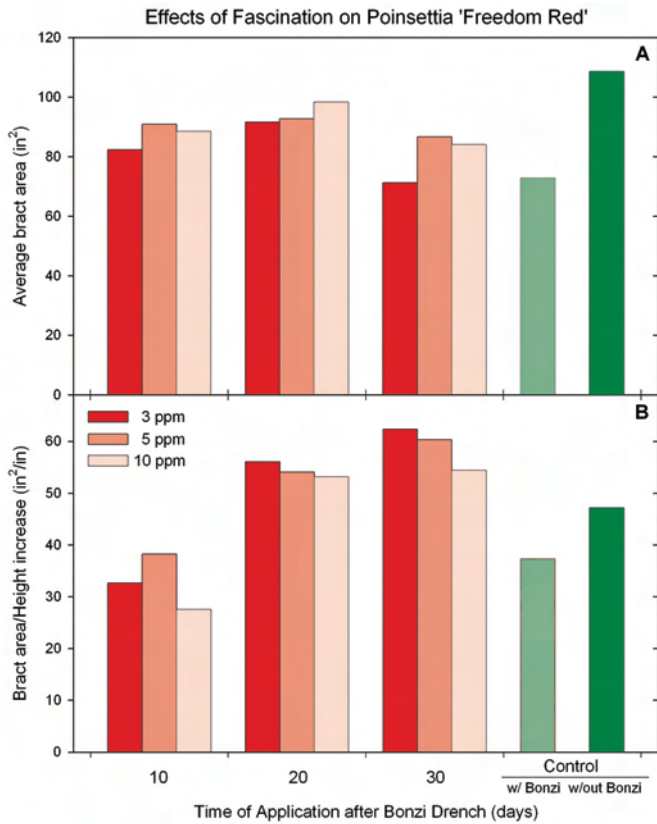


Figure 5. The effects of Fascination application time and rate on bract area (A) and the ratio between bract area and height increase (B) of 'Freedom Red' following a Bonzi drench. Height increase represents the difference in plant height one day prior to application and seven days after application. Bract area was measured at anthesis.

desirable). A low ratio indicates a greater effect on plant height relative to bract size (usually undesirable).

The timing of the Fascination application influenced the ratio of bract area to height increase. In both experiments, the largest ratio (most desirable) occurred when Fascination was applied 30 days after bract color at 3 or 6 ppm (see Figures 4B and 5B, pages 2 and 3). An earlier application (10 days after bract color) had a smaller effect on bract size relative to the increase in plant height.

## Conclusions

Our results indicate that Fascination can be used by poinsettia growers to increase plant height and promote bract expansion, especially on plants that have reduced bract size from an excessive or late growth retardant application. When warranted, we suggest applying Fascination as a spray at a rate of 3-5 ppm using a volume of 2 quarts per 100 sq.ft.

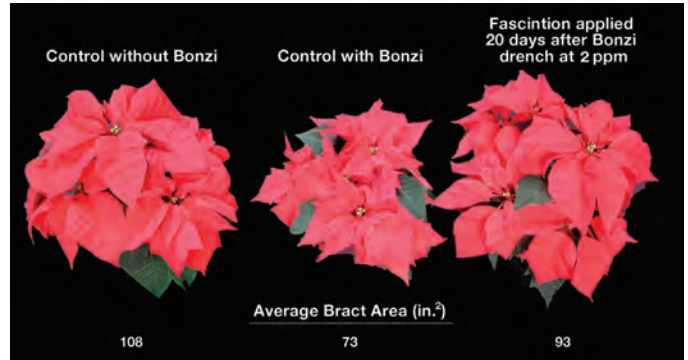


Figure 6. The effects of Fascination application on bract area of 'Freedom Red' after an October 14 Bonzi drench (2 ppm). Photo taken November 17. (Photo courtesy of Matthew Blanchard)

The amount of stem elongation and bract expansion from a Fascination spray depended on the time of application. If an increase in plant height is desired, then Fascination could be used before or soon after first color. During this time, a single spray application at 3-5 ppm increased plant height by 1-2 inches. A later application (20 or 30 days after bract color) produced little or no increase in plant height.

If an increase in bract size is desired, our results indicate that the best time to apply Fascination is 20-30 days after bract color. This late application will also have a smaller effect on increasing plant height. In addition, we noticed that late applications of Fascination made bract surfaces appear smoother and reduced bract crinkling. We did not observe any effect on bract color, although growers have reported that Fascination can slightly lighten the bract color.

In some cases, a second Fascination spray may be required to achieve the desired elongation effects. We suggest waiting at least 10 days between spray applications. Frequent applications and high rates can produce an undesirable spacing between the bracts. As with all plant growth regulators, we encourage growers to perform their own trials on a small scale to determine desirable rates for their growing conditions and for each poinsettia variety. GPN

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