

FLURPRIMIDOL FOLIAR SPRAYS CONTROL GROWTH OF FALL PANSIES

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ABSTRACT

Flurprimidol (0.38%; trademark Topflor) foliar sprays of 0 to 15 mg·L⁻¹ were applied to 'Majestic Giant Yellow Blotch' pansies (*Viola x wittrockiana*) for growth control. Flurprimidol has a high efficacy on pansies, with a 5 mg·L⁻¹ flurprimidol application resulting in 28% shorter and 30% smaller diameter plants compared to the nontreated control. Because of the efficacy of flurprimidol on pansies, grower recommended concentrations would be between 2.5 and 7.5 mg·L⁻¹ for vigorous pansy cultivars such as 'Majestic Giant Yellow Blotch'. Cultivars vary in their response to plant growth regulators, therefore growers will need to conduct their own trials to determine optimal concentrations for their operation and cultivars used.

INTRODUCTION

Plant growth retardants (PGRs) are commonly applied to produce high-quality, compact plants (Whipker et al., 2003a). Flurprimidol (SePRO Corp., Carmel, Ind.) has been labeled as Cutless for ornamental crop use in the U.S. and will be commercially introduced as Topflor for greenhouse crops. Topflor has been tested on a number of greenhouse plants such as argyranthemum (*Argyranthemum frutescens*) (Cavins et al., 2003) and bedding plants (Whipker et al., 2003b). Researchers have reported success in controlling pansy plant growth with foliar sprays of ancymidol (A-Rest, SePRO Corp., Carmel, Ind.) at 8 to 19 mg·L⁻¹, ethephon (Monterey Chemical, Fresno, CA) at 50 to 200 mg·L⁻¹, paclobutrazol (Uniroyal Chemical, Middlebury, CT) at 5 to 20 mg·L⁻¹, or uniconazole (Valent USA, Marysville, OH) at 1.5 to 6 mg·L⁻¹ (Latimer and Whipker, 2004).

Commercial recommendations of applying flurprimidol foliar sprays to a spring crop of pansies are available to European growers (Spiess-Urania, 2002). Flurprimidol is very active on pansies and concentrations of 2.5 to 5 mg·L⁻¹ are recommended. In Europe a 1.5% Topflor formulation presently is used, while the formulation being introduced into the U.S. will be 0.38%. With reformulating Topflor, it has not been tested on pansies as a foliar spray during the fall crop cycle. Therefore, this study was conducted to determine the efficacy of flurprimidol foliar sprays on plant growth of pansies.

MATERIALS AND METHODS

'Majestic Giant Yellow Blotch' pansy plugs (288-cell) were transplanted into 1801-cell packs (8 x 8 x 6 cm cells) containing Fafard 4P (Fafard, Agawam, MA) on 6 September. Plants were fertilized at each irrigation with 150 mg·L⁻¹ N from Excel[®] 15-5-15 Cal-Mag (Scotts, Marysville, Ohio) (15N-2.1P-12.5K). Greenhouse temperature day/night set points were 24/18 °C. The plants were grown under natural daylength. Flurprimidol (0.38%) foliar sprays of 0, 2.5, 5, 7.5, 10, or 15 mg·L⁻¹ were applied using a volume of 204 mL·m⁻² on 20 Sept. when the leaves

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had expanded to the edge of the pot. The experiment was a completely randomized design with 8 single-plant replications of the six treatments. On 22 Oct., plant height (measured from the substrate surface to the uppermost part of the foliage) and plant diameter (measured at the widest dimension and turned 90°, and averaged) were recorded.

Data for plant height and plant diameter were tested by analysis of variance by general linear model (SAS Inst., Cary, NC). Plant height and diameter values were regressed using the PROC REG procedure (SAS Inst.) to determine the best-fit linear or quadratic model for flurprimidol.

RESULTS AND DISCUSSION

Plant Height

A linear relationship existed between increasing concentrations of flurprimidol foliar sprays and plant height for 'Majestic Giant Yellow Blotch' pansies (Fig. 1). Flurprimidol concentrations of 2.5 mg L⁻¹ resulted in significantly shorter plants as compared to the untreated control. Plant height was 23% smaller than the untreated control plants with 2.5 mg L⁻¹ flurprimidol. This 2.5 mg L⁻¹ flurprimidol concentration was similar to the 2.5 to 5 mg L⁻¹ recommended in Germany by Spiess-Urania (2001).

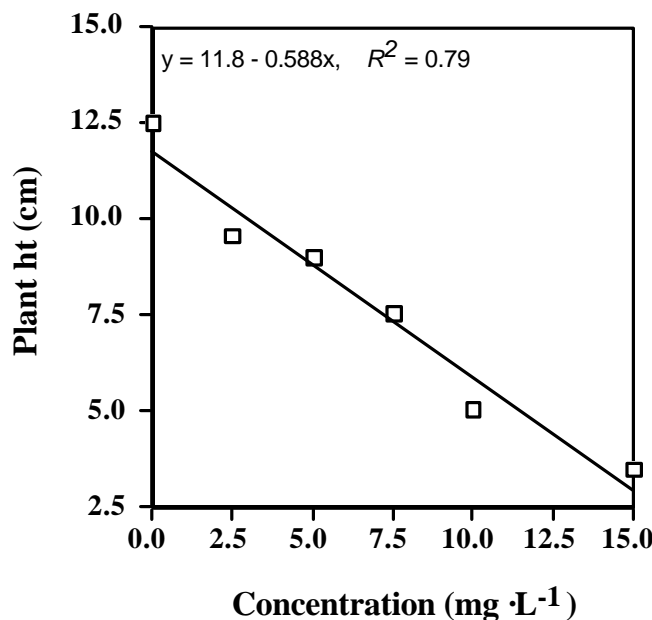


Figure 1. The plant height response of 'Majestic Giant Yellow Blotch' pansies to flurprimidol foliar sprays.

Plant Diameter

'Majestic Giant Yellow Blotch' plant diameter response to flurprimidol foliar sprays was best fit to a quadratic model (Fig. 2). Plant diameter was 24% smaller than the untreated control plants when sprayed with ≥ 2.5 mg L⁻¹ flurprimidol. Our results are also similar to the 2.5 to 5 mg L⁻¹ recommended in Germany by Spiess-Urania (2001).

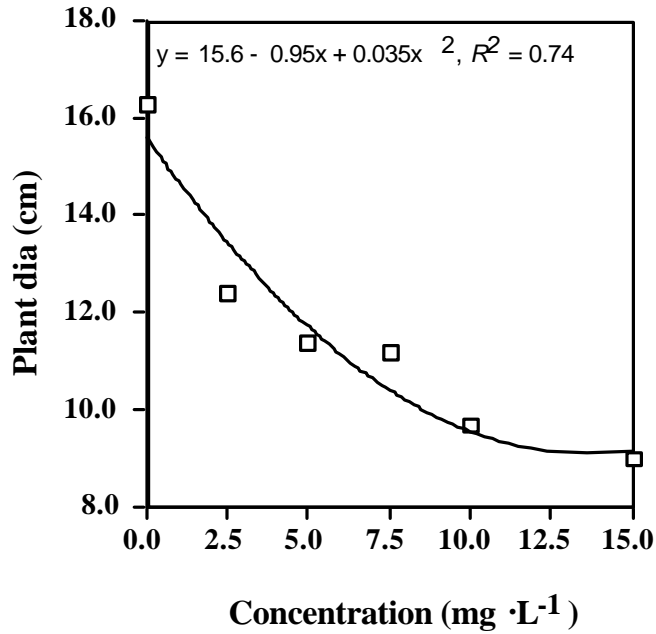


Figure 2. The plant diameter response of 'Majestic Giant Yellow Blotch' pansies to flurprimidol foliar sprays.

CONCLUSIONS

Because of the high efficacy of flurprimidol on pansies, grower recommended concentrations would be between 2.5 and 7.5 mg·L⁻¹ for vigorous pansy cultivars such as 'Majestic Giant Yellow Blotch' (Fig. 3). Cultivars vary in their response to plant growth regulators, therefore growers will need to conduct their own trials to determine optimal concentrations for their operation and cultivars used.



Figure 3. Plant growth response of 'Majestic Giant Yellow Blotch' pansies to flurprimidol foliar sprays.

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