

Bonzi Has Advantages Over Sumagic as a Growth Regulator for Ornamental Pepper

Brian E. Whipker, Ingram McCall, and James L. Gibson
Commercial Floriculture Extension & Research

Summary. Foliar sprays of Bonzi at 5, 10, 20, 40, or 80 ppm ($\text{mg}\cdot\text{L}^{-1}$) were applied to ‘Pretty Purple’ ornamental pepper (*Capsicum annuum*) for a comparison with the recommended Sumagic concentrations of 5 to 10 ppm for chemical growth control. Bonzi foliar sprays at 20 ppm provided comparable growth control as the recommended Sumagic foliar spray concentration of 10 ppm. Bonzi sprays 40 ppm or Sumagic sprays 5 ppm decreased the number of fruits by 36%, compared to the nontreated control. Bonzi at 20 ppm did not significantly reduce the number of fruits per plant compared to the nontreated control. Bonzi at 20 ppm was less costly than Sumagic and offered the added economic advantage to commercial growers of increased plant density on greenhouse benches, hence it should be a commercially useful treatment.

INTRODUCTION

Plant growth retardants (PGRs) are commonly applied to container-grown plants to control stem elongation and produce high quality, compact plants (Tayama et al., 1992). Researchers have reported varying degrees of success in controlling ornamental pepper plant growth when using foliar sprays of B-Nine, A-Rest, or Cycocel (Dole and Wilkins, 1999; Sanderson and Martin, 1974). Marketable sized ‘Holiday Cheer’ ornamental pepper plants have been produced with Sumagic foliar sprays of 5 to 15 ppm (Starman, 1993). Bonzi is also a triazole-type PGR similar to Sumagic, but with a lower degree of growth regulator activity (Tayama et al., 1992). While the efficacy of Sumagic has been determined with

ornamental peppers, that of Bonzi has not. This study was conducted to determine the efficacy of Bonzi foliar sprays compared with the recommended Sumagic foliar spray concentrations of 5 to 10 ppm on plant growth of ornamental pepper.

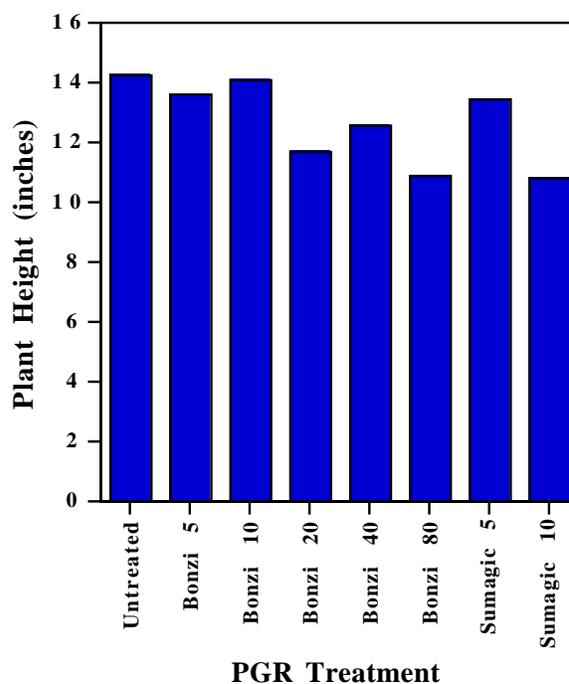


Figure 1. The effects of Bonzi and Sumagic foliar sprays on ornamental pepper plant height.

MATERIALS AND METHODS

'Pretty Purple' ornamental pepper seeds were sown into 1206 cell packs on 9 June 1999. On 7 July, single seedlings were transplanted into 5-inch round, plastic pots. The root substrate was Fafard® 4P (Fafard, Anderson, SC). Plants were fertilized at each irrigation with 150 ppm N from Excel® 15-5-15 Cal-Mag (Scotts, Marysville, Ohio) (15N-2.1P-12.5K) and MgSO₄·7H₂O was applied monthly at 243 ppm. Greenhouse temperature day/night set points were 75/64 °F. The plants were pinched 14 days after potting and the PGRs were applied 14 days after pinching using a volume of 0.5 gallons per 100 ft²: Bonzi foliar sprays at 5, 10, 20, 40, or 80 ppm; Sumagic foliar sprays at 5 or 10 ppm; or a nontreated control. The experiment contained five single-plant replications of the eight treatments. The dates of initial flowering and visible fruit set were recorded for each plant. On 30 Aug., plant height (measured from the pot rim to the uppermost part of the plant), plant diameter (measured at the widest dimension and turned 90°, and averaged), and fruit number were recorded.

RESULTS AND DISCUSSION

Plant Height. 'Pretty Purple' pepper plants treated with 20 ppm of Bonzi or with 10 ppm of Sumagic were at least 12% shorter than the nontreated plants (Figure 1). The height control achieved with these Bonzi or Sumagic concentrations limited the degree of internode elongation compared to the nontreated 'Pretty Purple' plants, making them more proportional to the pot size (Figure 2). The degree of height control with 20 ppm of Bonzi (18.4%) or Sumagic at 10 ppm (24.7%) was similar to the 20% reduction reported with 'Holiday Cheer' peppers treated with 10 ppm Sumagic (Starman, 1993).

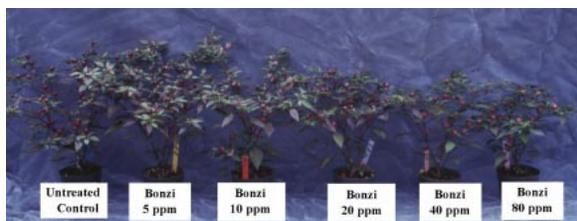


Figure 2. The effects of Bonzi foliar sprays on ornamental pepper plant height (Left to right: untreated control, Bonzi at 5, 10, 20, 40 and 80 ppm).

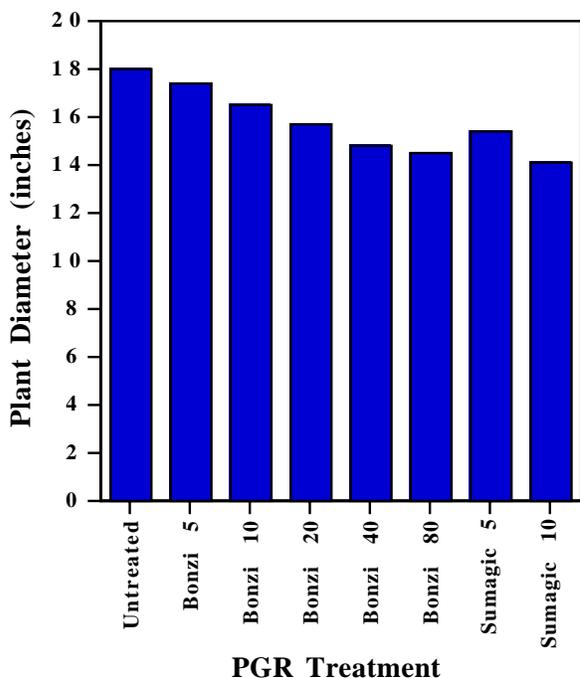


Figure 3. The effects of Bonzi and Sumagic foliar sprays on ornamental pepper plant diameter.

Plant Diameter. Plant diameter was at least 13% smaller with Bonzi sprays 20 ppm or Sumagic sprays of 5 to 10 ppm, when compared to the nontreated control (Figure 3). Starman (1993) reported a 33% reduction in plant diameter of 'Holiday Cheer' plants treated with 15 ppm Sumagic, but did not report plant diameters for 10 ppm. While a direct comparison of results with 10 ppm of Sumagic cannot be made, it appears the 21% smaller plants in our study followed a similar trend of control as reported by Starman (1993). At the concentrations used, both Bonzi and Sumagic foliar sprays offer an economic advantage for commercial greenhouse operators in producing smaller diameter plants which can be spaced closer. This reduces the cost-per-square-foot-per-week of the greenhouse operation over a larger number of plants and results in lower per pot production costs.

Fruit Number. Bonzi sprays 40 ppm or Sumagic sprays 5 ppm decreased the number of fruits by 36%, compared to the nontreated control (Figures 4 and 5). Starman (1993) also reported a reduction in fruit number per plant (~50%) with 'Holiday Cheer' plants treated with 10 ppm of Sumagic. Fruit

number per plant was unaffected by 20 ppm Bonzi and having plants displaying a larger number of fruits would be a valuable characteristic to commercial growers.

Flowering. The date of initial flowering and visible fruit set were not affected by PGR concentration (data not shown).

CONCLUSIONS

Bonzi foliar spray concentrations of 20 ppm provided a comparable degree of plant growth control of 'Pretty Purple' ornamental pepper as the recommended Sumagic foliar spray at 10 ppm. Based on the cost of \$110/quart, Sumagic foliar sprays at 10 ppm would cost \$4.40 per 100 ft² of bench area. Based on the cost of \$110/quart, a 20 ppm Bonzi foliar spray would cost \$1.02 per 100 ft² of bench area, one-fourth of the cost of Sumagic foliar sprays. The Bonzi concentration of 20 ppm did not significantly reduce the number of fruits per plant compared to the nontreated control, produced plants which were more proportionally sized, was less costly than Sumagic, and offered the added economic advantage to commercial growers of increased plant density on greenhouse benches.

ACKNOWLEDGEMENTS

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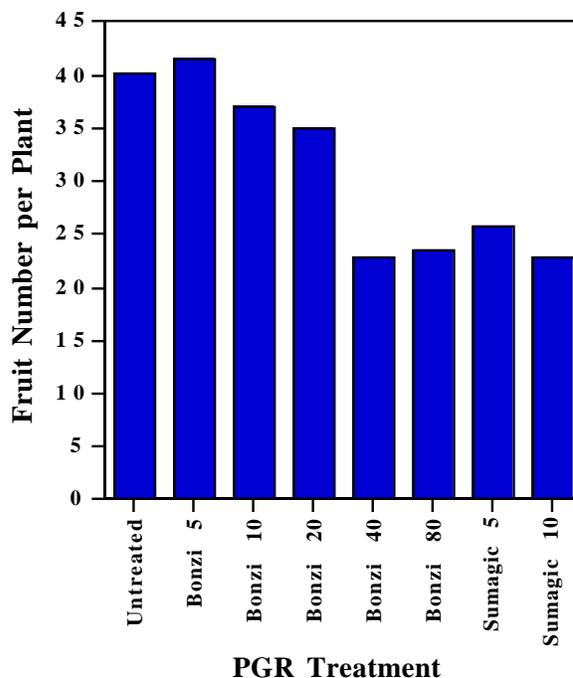


Figure 4. The effects of Bonzi and Sumagic foliar sprays on ornamental pepper plant fruit number.

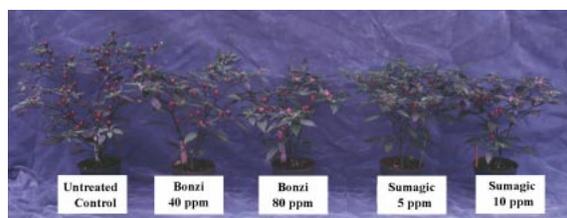


Figure 5. A comparison of growth control of ornamental peppers (Left to right: untreated control, Bonzi foliar sprays of 40 and 80 ppm, and Sumagic sprays of 5 and 10 ppm). Note the reduction in the number of fruit per plant.