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Comparison of Dwarf Carnation Responses to Retardants Sumagic™ and Bonzi™

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There were no differences in the response of the dwarf carnation 'Snowmass' to spray application of Sumagic and Bonzi growth retardants during winter applications. The most desirable plant height (6 to 7 inches) was obtained when 15 ppm Sumagic™ or Bonzi™ were applied 6 weeks following the pinch and when vegetative laterals were 3 to 4 inches in length.

The initial research involving the most responsive stage of the naturally dwarf Colorado Majestic Mountain (CMM) carnation 'Lindsey' (1, 2) to the application of the growth retardant Sumagic™ was reported in *Colorado Greenhouse Growers Research Bulletin* 464 (4). The most effective treatment was 15 ppm a.i. sprayed when the lateral shoots were 2 to 4 inches in length. A second experiment, reported in CGGA Bulletin 468 (5) determined that 15 ppm a.i. Sumagic™ was the optimum dose required to obtain a pre-established plant height of 18 to 25 cm (3). The objective of this study was to compare the ability of growth retardants Sumagic™ (uniconazole) and Bonzi™ (paclobutrazol) to control the height of CMM 'Snowmass' during winter months.

Methods and Materials

The experiment was conducted using cultured and environmental conditions described in previous Bulletins (4, 5). Rooted cuttings of the dwarf carnation 'Snowmass' were planted in 4-inch azalea pots on 12 September 1988 and grown in an atmosphere enriched with 600 to 1000 ppm CO₂.

They were pinched 23 September 1988. On 14 October three weeks following the pinch and when the lateral vegetative shoots reached 1 to 1½ inches in length, a sin-

gle foliar spray of 5, 10 and 15 ppm a.i. Sumagic™ or 5, 10 and 15 ppm a.i. Bonzi™ was applied to the first group of plants. Single applications of the same doses were applied to groups two and three on 4 and 25 November respectively. Treated plants were sprayed with the solutions until they were thoroughly wet. Control plants were sprayed with tap water.

Lateral shoot length, flower diameter, days to flower and plant fresh weight were recorded on week 16 following potting. The design was a Randomized Block with 19 treatments (3 concentrations x 2 chemicals x 3 times of applications plus one control) and three blocks. Within each block, treatments were compared using a 3 x 2 x 3 factorial analysis. Additional individuals were compared to each other and to the control using the Least Significant Difference (LSD) method.

The responses of the dwarf carnation 'Snowmass' to applications of growth retardants Sumagic™ and Bonzi™ were similar in every respect. Plant heights due to dose and time of application (**Fig. 1 and 2**) did not differ significantly. The desirable height of 6 to 7 inches (16 to 18 cm) for a mini pot carnation was obtained on plants treated with 15 ppm a.i. of both Sumagic™ and Bonzi™, 6 weeks following the pinch (**Fig. 3 and 4**). Even though there were no significant height differences in the 10 or 15 ppm treated plants, regardless of growth retardant used, plants treated with 10 ppm were slightly taller than the desired 7 inches. The 5 ppm treated plants were taller than 8 inches, but shorter than the controls.

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The growth retardant treated plants did not differ from the control plants in flower size, number of internodes, or time of flowering. There was no leaf damage observed.

Conclusions

Identical responses were observed when Sumagic™ and Bonzi™ plant growth retardants were applied to the dwarf carnation 'Snowmass' in equal rates and periods of application.

References

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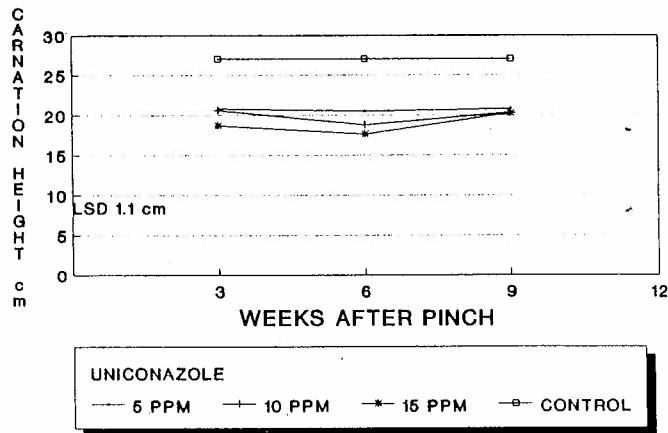


Figure 1: Flowering height of dwarf carnation 'Snowmass' treated with 5, 10, 15 ppm uniconazole solution on the treatment period either 3, 6 or 9 weeks following the pinch.



Figure 3: The final height of dwarf carnation 'Snowmass' treated with uniconazole solutions 6 weeks following the pinch.

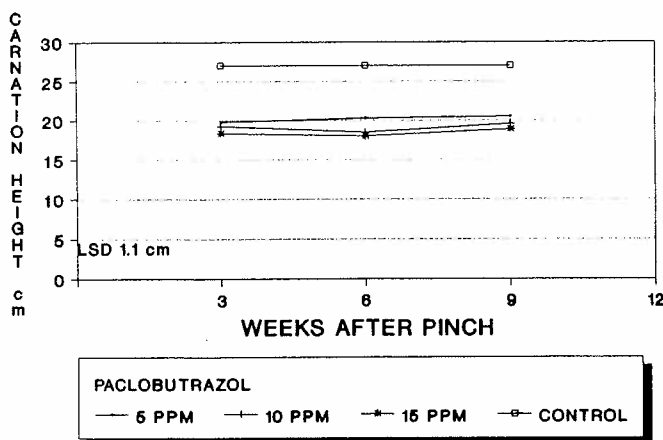


Figure 2: Flowering height of dwarf carnation 'Snowmass' treated with 5, 10 and 15 ppm paclobutrazol solution on the treatment period either 3, 6 or 9 weeks following the pinch.



Figure 4: The final height of dwarf carnation 'Snowmass' treated with paclobutrazol solution 6 weeks following the pinch.