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REPEATED LOW CONCENTRATION CYCOCEL APPLICATION TO POINSETTIAS

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The effect of low concentrations of cycocel, date of last application and method of cycocel application on poinsettias was determined. 'Annette Hegg Dark Red' and 'Marble' cultivars were used. The most desirable plants were obtained with a 1000 ppm application of cycocel every seven days from September 9, until October 15.

INTRODUCTION

Growth regulating chemicals are used commercially to control Poinsettia height, with Cycocel the most widely used compound. Cycocel is applied either as a soil drench or foliar spray. Soil drench application will provide greater height control than spray application, but plants may remain excessively short (Ecke, 1976). High Cycocel concentration spray applications may cause marginal burn on leaves under certain environmental conditions, or temporary chlorosis (Tijia, et al, 1976). The objective of this study was to determine if low concentrations of Cycocel applied frequently could be substituted for the commercial recommendations to eliminate Cycocel induced chlorosis.

METHODS AND MATERIALS

Poinsettia 'Annette Hegg Dark Red' and 'Marble' rooted cuttings (supplied by Tagawa Greenhouse and Bush Greenhouse respectively), were planted August 24, 1984, in 6 inch azalea pots. The soil mix consisted of a 1:6:1 ratio of soil:peat:perlite (by volume). $CaCO_3$ (10 lb/yd^3) and super phosphate (10 oz/yd^3) was added to the medium. Plants were watered by hand during the course of the experiment. On September 12 plants were fertilized with every watering using Ecke Poinsettia manual constant liquid feed program with a 50% increased in ammonium nitrate.

The temperature sequence followed was 68°F (until October 1), 63° (October 1-10), 65° (October 11-November 30), 55° (December 1). The plants were pinched leaving 4 to 5 nodes on September 10. There were 20 treatments **(Table 1)** with five plants of each cultivar per treatment.

On September 9 the spray treatments began. The Cycocel was mixed to the desired concentration then applied to run-off with a hand trigger spray bottle. The plants were sprayed every seven or ten days in accordance with the treatment until the last application date as indicated in **Table 1.** On September 17 the soil drench treatments began. Cycocel was applied with every irrigation. Plants were watered with 500 ml of the fertilizer Cycocel solution as needed.

Table 1: Treatments applied to Poinsettias 'Annette Hegg Dark Red' and 'Marble' for different durations.

Treatment description	Date of last application
Spray - 3000 ppm (9-17, 9-24)	9-24
- 1000 ppm every 7 or 10 days	10-1
- 1000 ppm every 7 or 10 days	10-1
- 1500 ppm every 7 days	10-15
Drench - 3000 ppm	9-17, 9-24
- 50 ppm	10-1, 10-15, 11-1, 11-15
- 100 ppm	10-1, 10-15, 11-1, 11-15
- 200 ppm	10-1, 10-15, 11-1, 11-15

Data was taken on November 29 when 95% of the plants had dehisced pollen. Plants flowered within 5 days of each other (data not presented) and bract diameter was not visually reduced by Cycocel treatment. Plant height was measured from the pot rim and the number of lateral shoots above the median plane of the bracts was recorded.

RESULTS AND DISCUSSIONS

Soil Drench. With continuous Cycocel drench, the shortest plants of 'Dark Red' occurred when 100 ppm of Cycocel was applied until November 1 **(Table 2).** While with 'Marble' the shortest plants occurred with the 200 ppm treatment with the last application on November 1. It was interesting to note that Cycocel application beyond No-

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vember 1 did not provide any additional height control. In fact, Cycocel application until November 15 was no different than a last Cycocel application on October 1 or the controls **(Table 4).** The number of laterals above the median plane of the bracts was not affected significantly **(Table 2).** There was a trend for bypassing to be greater when the plant height was significantly reduced.

Table 2: Effect of continuous Cycocel application on plant height and the number of lateral shoots above the median plane of the bracts.

Cycocel rate	Date of last Cycocel application			
	10-1	10-15	11-1	11-15
	'Annette Hegg Dark Red' plant height			
50 ppm	28.1	25.3	25.9	28.1
100 ppm	27.0	25.5	23.5	27.0
200 ppm	29.7	25.6	25.4	27.6
	number of laterals			
50 ppm	6	1	5	3
100 ppm	1	1	6	1
200 ppm	1	5	5	2
	'Annette Hegg Marble' plant height			
50 ppm	27.5	28.2	25.8	28.0
100 ppm	27.5	26.2	26.5	26.5
200 ppm	29.3	26.4	25.2	27.0
	number of laterals			
50 ppm	4	5	11	1
100 ppm	6	2	1	3
200 ppm	5	7	8	5

Spray application. The shortest plants were produced by a 1000 ppm Cycocel spray every 7 days until October 15. This produced shorter plants, compared to the other treatments **(Table 3,4)** and the least amount of shoot bypassing. This concentration was lower than the more common application rate of 1500 to 3000 ppm.

CONCLUSION

The 'Annette Hegg Dark Red' and 'Marble' cultivars both gave the most desirable plants when 1000 ppm Cycocel spray was applied every 7 days until October 15. This

Table 3: Effect of spray concentration application frequency and date of last application on Poinsettia 'Dark Red' and 'Marble' plant height and number of lateral shoots above the median plane of the bracts.

Day Between Application	Date of Last Application	Spray Concentration			
		1000 'Dark Red'	1500 'Dark Red'	1000 'Marble'	1500 'Marble'
		plant height			
7	10-1	31.0	27.4	28.5	28.1
7	10-15	26.0	—	25.8	—
10	10-1	32.6	29.9	28.5	28.3
		number of lateral shoots			
7	10-1	3	3	3	2
7	10-15	0	—	2	—
10	10-1	1	4	4	2

Table 4: Effect of a one time Cycocel drench (3000 ppm) or two spray applications (3000 ppm) on Poinsettia plant height.

	Method of Application	
	Drench	Spray
Dark Red Hegg	17.5	28.9
Marble Hegg	17.5	27.8

treatment produced no visual marginal chlorosis normally associated with Cycocel application. The application of low concentrations of Cycocel with every irrigation for height control cannot be recommended at this time.

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