



Poinsettias: Concise Drenches for 4.5-inch pots

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Excessive growth can be a challenge when producing smaller, 4.5-inch poinsettias. When using smaller pots, plants must be grown in proportion to the pot size or else a slew of issues will occur (water management, top-heavy plants, etc.). An extremely useful tool for growers when trying to balance growth of smaller potted plants are plant growth regulators (PGRs). PGRs can be applied in many different ways, however, drench applications offer a number of advantages over other methods.

The first is consistent control because drench uptake by the roots is evenly distributed throughout the plant. This avoids missing shoots that will continue to expand and result in uneven growth which is possible with foliar sprays.

The second is with the utilization of optimal rates, the use of a drench results in less effect on bract development (delay or limited expansion) as compared to a foliar spray. Foliar sprays typically have to be applied later in the production season to provide growth control, and this can have a detrimental effect on bract expansion.

The exact PGR to utilize is often confusing given many mixes and products exist on the market. Piccolo 10XC (paclobutrazol) is the primary go-to product, other substrate active PGRs also offer the potential of controlling plant growth. Concise (uniconazole) is also used as a drench, especially for many perennial species. This trial was conducted to evaluate the suitability of Concise for the production of 4.5-inch poinsettias.

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Summary of Findings

- Concise (uniconazole) substrate drenches evaluated on three cultivars grown in 4.5-inch pots.
- The recommended rates are between 0.5 to 1.0 ppm for most cultivars grown under North Carolina conditions.

Supported by

Poinsettia Breeders:
Ball Horticulture, Beekenkamp,
Dümmen Orange, Lazzeri, Rinehart
Poinsettias, Selecta, Suntory, &
Syngenta

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Experimental Set-up

Rooted poinsettia cuttings were transplanted into 4.5-inch pots on 9 August, 2019. The three cultivars evaluated were: 'Premium Ice Crystal' from Dümmen Orange; 'Mars Marble' from Syngenta Flowers; and 'Princettia Pink Queen Oasis' from Suntory. The substrate used was Sunshine Mix #1, an 80% peat and 20% perlite blend (v:v). The plants were fertilized with 13-2-13 Cal-Mag at 150 ppm N. The greenhouse temperature set points were 75 F Days / 65 F Nights [24/18 C]. The plants were pinched to 5 nodes on 27 August.

The PGR applications were applied on 19 September. Concise drenches were applied at 0.5 and 1 ppm with 2 ounces (59 ml) of solution dosed per pot. There were 20 replications per treatment. Untreated controls were also grown. Plants were evaluated on 3 December and data obtained included plant height, plant diameter (taken in 2 directions and averaged), and bract diameter (for 2 of the largest bracts, taken in 2 directions and averaged).



Figure 1. 'Mars Marble' poinsettia growth control provided by Concise substrate drenches at 0, 0.5 and 1 ppm (top and side view).

Table 1. 'Mars Marble' poinsettia growth control (in centimeters and percentage) for plants treated with Concise (uniconazole) substrate drenches of 0, 0.5 or 1 ppm.

Concentration (ppm)	Plant Height ¹ (cm) [% Control]	Plant Diameter ² (cm) [% Control]	Bract Diameter ³ (cm) [% Control]
0	28.9	21.2	19.7
0.5	23.6 [-18.4%]	19.1 [-9.9%]	17.3 [-12.2%]
1.0	20.8 [-28.0%]	18.7 [-11.9%]	16.5 [-16.2%]
Significance ⁴	***	***	***

¹Plant height was taken from the soil line to the highest point on the plant.

²Plant diameter was taken at the widest point, and the plant turned 90 degrees, and measured again. The value is the mean of those two measurements.

³Bract diameter was taken from the largest two bracts, with diameter was taken at the widest point, and the bract turned 90 degrees, and measured again. The value is the mean of those two measurements from two bracts.

⁴Significant at $P < 0.001$. Letters with a different letter in a column represent statistically significant differences based on LSD at $P < 0.05$.



Results

At the concentrations used, suitable growth control occurred with Concise substrate drenches between 0.5 to 1.0 ppm (Figs. 1-3). These concentrations resulted in more compact plants, with greater effect occurring with plant height than plant diameter. Growth control was greatest with 'Princettia Pink Oasis'. These plants treated with 1 ppm Concise were over 40% shorter than the untreated control, while the degree of control ranged from 24 to 28% for 'Premium Ice Crystal' and 'Mars Marble', respectively (Tables 1, 2 and 3). Plant diameters were approximately 10% more compact with the use of Concise. Bract diameter was also smaller with the use of Concise. The least effect occurred with 'Mars Marble' (~13% smaller), followed by 'Premium Ice Crystal' (~16% smaller), and the greatest effect occurred with 'Princettia Pink Oasis' (~24% smaller) with the 1 ppm drench as compared to the untreated control. While the bracts were smaller with the use of Concise drenches of 0.5 to 1 ppm, the bract and plant size were proportionally controlled for optimal visual appeal for 4.5-inch pot production (Table 1).



Figure 2. 'Premium Ice Crystal' poinsettia growth control provided by Concise substrate drenches at 0, 0.5 and 1 ppm (top and side view).

Table 2. 'Premium Ice Crystal' poinsettia growth control (in centimeters and percentage) for plants treated with Concise (uniconzazole) substrate drenches of 0, 0.5 or 1 ppm.

Concentration (ppm)	Plant Height ¹ (cm) [% Control]	Plant Diameter ² (cm) [% Control]	Bract Diameter ³ (cm) [% Control]
0	22.4	18.3	20.1
0.5	17.8 [-20.5%]	16.2 [-11.5%]	18.3 [-11.4%]
1.0	17.0 [-24.1%]	15.8 [-13.7%]	17.5 [-12.9%]
Significance ⁴	***	***	***

¹Plant height was taken from the soil line to the highest point on the plant.

²Plant diameter was taken at the widest point, and the plant turned 90 degrees, and measured again. The value is the mean of those two measurements.

³Bract diameter was taken from the largest two bracts, with diameter was taken at the widest point, and the bract turned 90 degrees, and measured again. The value is the mean of those two measurements from two bracts.

⁴Significant at $P < 0.001$. Letters with a different letter in a column represent statistically significant differences based on LSD at $P < 0.05$.



Conclusions

Concise substrate drenches of 0.5 to 1 ppm provided suitable growth control for the three cultivars grown in 4.5-inch pots. The degree of control increased with the rate. Growers will need to determine the degree of control they desire when selecting an optimal rate to use. These rates were determined under North Carolina growing conditions (35.78 °N Latitude). Growers further north may want to reduce the rate by up to 50% for their environmental conditions and for operations further south, a rate increase of up to 50% more may be appropriate to trial.

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Figure 3. 'Princettia Pink Oasis' poinsettia growth control provided by Concise substrate drenches at 0, 0.5 and 1 ppm (top and side view).

Table 3. 'Princettia Pink Oasis' poinsettia growth control (in centimeters and percentage) for plants treated with Concise (uniconzole) substrate drenches of 0, 0.5 or 1 ppm.

Concentration (ppm)	Plant Height ¹ (cm) [% Control]	Plant Diameter ² (cm) [% Control]	Bract Diameter ³ (cm) [% Control]
0	31.5	18.0	17.0
0.5	20.9 [-33.7%]	16.5 [-8.3%]	14.7 [-13.5%]
1.0	18.9 [-40.0%]	15.7 [-12.3%]	12.9 [-24.1%]
Significance ⁴	***	***	***

¹Plant height was taken from the soil line to the highest point on the plant.

²Plant diameter was taken at the widest point, and the plant turned 90 degrees, and measured again. The value is the mean of those two measurements.

³Bract diameter was taken from the largest two bracts, with diameter was taken at the widest point, and the bract turned 90 degrees, and measured again. The value is the mean of those two measurements from two bracts.

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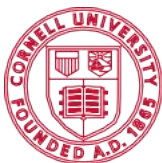
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