



B-Nine + Cycocel:

The advantages for poinsettias and pansies

Research on B-Nine/Cycocel tank mixes at Clemson University helps determine optimal combinations of these PGRs for use on poinsettias and pansies.

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The effect of a B-Nine/Cycocel tank mix on the height and bract are of a single-stemmed Freedom Red poinsettia. Left: Control; Right: 4,500 ppm B-Nine and 1,500 ppm Cycocel applied. (Photos courtesy of Jim Faust)

B-Nine and Cycocel have been effectively used as a tank mix growth regulator application for many years. The major benefit of this tank mix is that it provides an easy-to-apply, medium-activity growth regulator application. The spray volume is not crucial, so any grower can effectively and safely use it. The B-Nine and Cycocel tank mix (B-Nine/CCC) is particularly useful in situations where B-Nine and Cycocel are individually insufficient to control plant height. Thus, B-Nine/CCC fits a niche between the lower-activity products (B-Nine and Cycocel) and the higher-activity products (Bonzi and Sumagic).

Growers have different methods of determining the best B-Nine/CCC combination to use. A common technique is to identify the rate of Cycocel that provides a reasonable measure of control without causing any phytotoxicity, then to adjust the rate of B-Nine to provide the desired strength of growth regulator effect. Our approach was to apply a range of B-Nine (0-4,500 ppm) and Cycocel rates (0-1,500) to identify the interactive effects of these two products when applied as a tank mix. We applied 14 combinations of B-Nine/CCC (see Table 1, page 60) to poinsettias and pansies with the goal of identifying the optimal tank mix combination.

POINSETTIA

Rooted cuttings of 'Freedom Red', 'Success Red' and 'Winter Rose Dark Red' were potted on July 26 and grown as straight-ups (unpinched). Short days were started on August 14, and growth regulators were also applied during the first short day. Growth measurements were recorded at first pollen.

B-Nine/CCC affected final plant height and total bract area similarly for all three poinsettias grown in this study (see Figure 1, page 58). The highest rate of B-Nine/CCC (4,500:1,500 ppm) decreased the heights of the three cultivars

Figure 1. The effects of application rate and combination of B-Nine and Cycocel on final height and bract area of Freedom and Success combined. Data was collected at pollen shed.

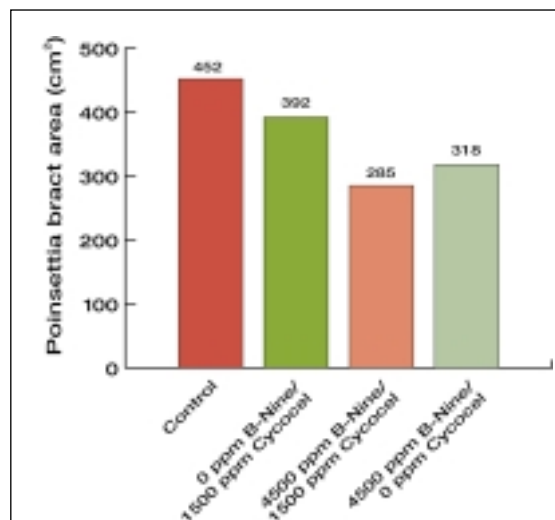
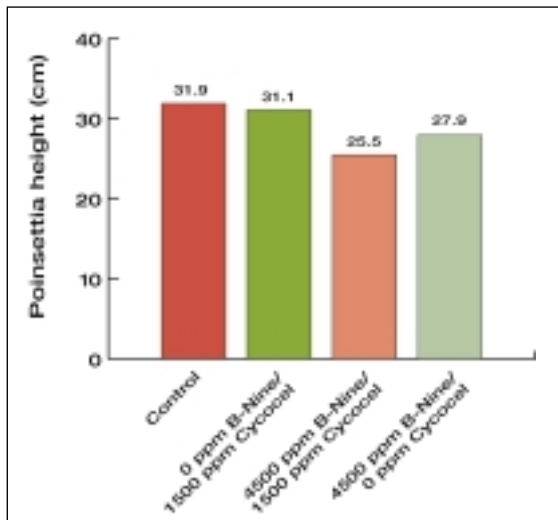


Table 1. Plant growth regulator applications made to both poinsettia and pansy.

B-Nine: Cycocel Ratio	B-Nine (ppm)	Cycocel (ppm)
1:1	500	500
	1,000	1,000
	1,500	1,500
2:1	1,000	500
	2,000	1,000
	3,000	1,500
3:1	1,500	500
	3,000	1,000
	4,500	1,500
Controls	0	0
	0	1,000
	0	1,500
	2,000	0
	4,500	0

between 16 and 21 percent compared to the control (0:0 ppm; see comparison photos, page 56). B-Nine and Cycocel each had a linear effect on height reduction, i.e., each additional amount of B-Nine or Cycocel applied resulted in an additional reduction in height. B-Nine had a greater impact than Cycocel on overall height; however, a wider range of B-Nine rates (0-4,500 ppm) were applied compared to Cycocel (0-1,500 ppm).

The total bract area (the total area of the six largest bracts) of Freedom and Success, and the flower head diameter of Winter Rose decreased by 42, 28 and 19 percent, respectively, when comparing the highest rate of B-Nine/CCC (4,500:1,500 ppm) to the control (0:0 ppm; see Figure 1, above). Individually, B-Nine and Cycocel resulted in a linear decrease in bract area. B-Nine/CCC did not decrease the intern-

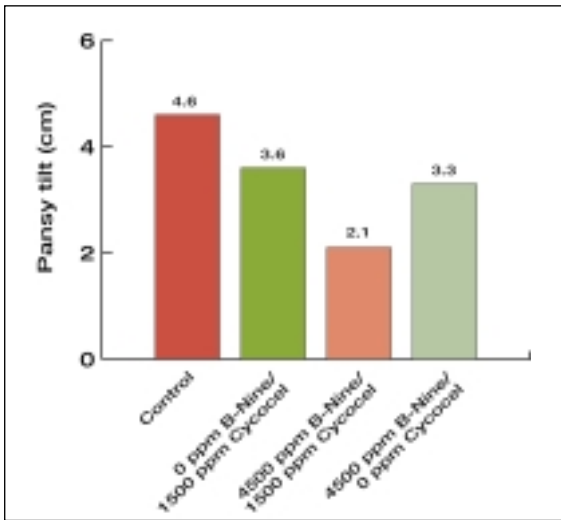
ode length between the transitional bracts, so the flower head was not more vertically compact.

We don't see many growers using B-Nine alone on poinsettias, but our data suggest this would be a very effective product to use during the vegetative stage of poinsettia

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production, e.g. on stock plants, in propagation or shortly after transplant and before short days. Considerable data suggests that B-Nine will delay flowering of poinsettias. For this reason, we applied B-Nine in this study during the first short day, i.e., the first day of flower initiation, and did not observe any effect on time to flower. Growers in cooler climates and lower-light conditions will observe potentially greater negative effects of B-Nine on poinsettia flowering. So, caution is urged. B-Nine should never be applied after the start of short days, and in Northern climates September 1 might be a safe cut-off date for natural-daylength poinsettia crops. Please conduct your own trials before risking an entire crop on a new growth regulator application.

PANSY

Plugs of 'Delta Pure Yellow', 'Majestic Giants Purple' and 'Colossus Yellow Blotch' pansies were potted on August 16. The same 14 B-Nine/CCC treatments were used on the pansies as were used on the poinsettias. The treatments were applied on August 29 and repeated on September 5 and September 13. Data were collected when two flowers had fully opened.

With the highest application rate of B-Nine/CCC (4500:1500 ppm), height or shoot length of Colossus Yellow Blotch and Delta Pure Yellow decreased by 29-37 percent compared to the control, but height of Majestic Giants Purple decreased by only 8 percent (see Figure 2, above).

We measured several different morphological characteristics, but found that the potential bene-

fit of B-Nine/CCC was most accurately represented by the tilt. "Tilt" is our term describing the degree to which the primary shoot tip slanted away from the center of the pot (see Figure 3, page 61). Tilt describes the floppiness of the pansy in the pot. Tilt decreased in Colossus Yellow Blotch, Delta Pure Yellow and Majestic Giants Purple by 49, 59 and 27 percent with the highest tank mix rate (4,500:1,500 ppm) compared to the control (see Figure 2, above).

We also observed that petiole length was slightly reduced by the growth regulator applications; however, each variety appeared to respond differently to B-Nine and Cycocel. For example, B-Nine reduced petiole length of Colossus Yellow Blotch and Majestic Giants Purple while Cycocel reduced petiole length of Delta Pure Yellow.

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