

THE DEVELOPMENT OF A DIANTHUS-POINSETTIA Combination Flowering Potted Plant

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Summary: *Dianthus 'Telstar' and 'Floral Lace Picotee' were grown either at a warm temperature with HID lighting, a double pinch and two Cycocel applications, or cool with natural light and a single pinch and two Cycocel applications, or cool with natural light and a single pinch and no growth retardant application. Planting plugs in early September produced flowering plants in mid-November for the warm grown plants and early December for the cool grown plants. Once both the Dianthus and poinsettias were in flower, the poinsettias were placed into pot cavities in the Dianthus pans, and the combination of those plants was an interesting and attractive alternative to standard poinsettias for Christmas.*

Euphorbia pulcherrima Wild is in the Euphorbiaeae or Spurge Family. This is a large family of about 700-1000 species. It is a tropical shrub native to Mexico that naturally flowers between November and January. The poinsettia is a short day plant, which usually requires a minimum of about eight weeks of short days for normal rapid flower development. Both temperature and cultivar will affect the critical photoperiod. There seems to be a requirement for days shorter than 12 hours for complete and rapid flower development.

Dianthus chinensis is in the Caryophyllaceae family or Pink family. The annual *Dianthus* is a cool temperature crop and has been developed to grow well at 52° to 54°F night and 60° to 62°F day temperatures. Germination usually takes seven days at 70° to 75°F. *Dianthus* are high light requiring plants that respond to day length and should be grown in full sun. They will flower in 15 to 16 weeks depending on cultivar. Pinches made during later periods of the year usually reduce the flowering time by one to two weeks. The plants develop four to five strong stems with typical blue-gray foliage having an attractive curling pattern. The plants reach a height of 7-9 inches above the pot at the time of flowering and have an abundance of buds that will continue to open over a period of two to three weeks if proper environmental conditions exist. The 1.5 to 2 inch diameter flowers of most cultivars have a clove or honey fragrance and an array of colors which can be used in a year round market.

The objective of this project was to demonstrate the potential to grow *Dianthus* and *Poinsettia* in their respective environments to eventually be combined together in a saleable Christmas combination pot.

Materials and Methods

The experiment began on August 29, 1997 with the potting of the *Dianthus* plugs and sticking of the *Poinsettia* cuttings. The *Poinsettias* were grown until mature in 4-inch pots, and the *Dianthus* were grown until mature and flowering in the 8-inch bulb pans. When ready for sale, the *Poinsettias* were placed in the center of the bulb pans where a four-inch pot had been inserted at planting

to leave a space for the *Poinsettia*. After being combined, the pots were to be evaluated as a potential Christmas flowering potted crop. Data was collected until December 5, 1997.

Poinsettia culture

Clean start oasis growing medium root cubes (P₁ x 1.5 x 20 inches) were thoroughly leached and seventy (70) 2-3 inch Freedom Red *Poinsettia* cuttings were taken from stock plants in the PSU greenhouse and placed into the cubes to root. They were rooted in a mist house with a mist frequency of 16 minutes off, 16 seconds on during the daylight hours and an approximate constant temperature of 70°F. Fifty two (52) cuttings were all potted, one per four-inch pot in a commercial soilless medium. The pots were thoroughly watered, placed in a greenhouse with 79° constant temperature, and were watered as needed with a fertilizer solution made from 20-10-20 at 200 ppm N.

Two months into the project, bracts on the *Poinsettias* began to change color to red and flower buds began to form. After three months in the warm greenhouse, the plants were moved to a cooler greenhouse (60°F night temperature) until the completion of the project in mid December.

Dianthus culture

Forty-five (45) 8-inch bulb pans were filled with a commercial soilless medium with a 4-inch pot placed in the center of the soil within the pan. Five *Dianthus* plugs were then evenly placed outside the 4-inch pot within each 8-inch bulb pan. There were 22 bulb pans planted with *Dianthus* 'Floral Lace Picotee' and 23 bulb pans with *Dianthus* 'Telstar Mix.'

Since timing for Christmas was an issue, the *Dianthus* were grown in two different environments. One was a cool environment (60-65°F daily) with natural sunlight. The other was a warm environment (65°-70°F daily) with HID supplementary lighting. The expectation was that the *Dianthus* would flower more rapidly with the warm temperature and supplementary lighting than with the cool temperature and natural light.

After one week of growth, it was apparent that the 'Floral Lace Picotee' variety was a taller more upright plant than 'Telstar.' Two weeks after planting, both varieties in both houses began to form flower buds. One month after planting, both varieties in both houses were pinched according to the following *Dianthus* pinching guidelines: the pinch should leave 3-4 leaf pairs on the plants which would provide 4-5 good shoots. When premature buds forms, they must be carefully removed; this might be considered a second pinch. After the pinch, all flower buds were removed and both varieties in both houses began branching.

The plants in the warm section began to get quite tall and develop additional flower shoots. These plants were then divided into three groups to determine the effect of a growth retardant application.

All plants were given a second pinch before their respective treatments. (Cycocel treatments began after the second pinch when new branches elongate to 1.2 inches long and continued in two week intervals after the first treatment until all treatments were complete.)

Cycocel treatments

- Treatment A: (5 pans of 'Floral Lace Picotee' and 5 pans of 'Telstar') received no growth retardant treatment.
- Treatment B: (5 pans of 'Floral Lace Picotee' and 6 pans of 'Telstar') received one treatment of Cycocel at 1500 ppm-dilution of 1 to 80).
- Treatment C: (5 pans of 'Floral Lace Picotee' and 5 pans of 'Telstar') received two treatments of Cycocel at 1500 ppm.

Treatments B and C were sprayed with Cycocel on October 17, 1997. Treatment C was sprayed with Cycocel again on October 31, 1997. Ten days after the first Cycocel spray, all plants had unopened flower buds, and by the 14th day, the first flower of all the plants opened. Three months after the planting date, all plants were moved to a cool (60°F) greenhouse and grown there until the 4-inch Poinsettia plants were placed into the 4-inch pot depression that was maintained in the Dianthus pots.

Results and Discussion

There have been many reports detailing production of Poinsettias, so the majority of this discussion will be focused on Dianthus production for Christmas sale. Time was a major factor in growing the Dianthus. It was found that the plants grown in warm temperatures and under HID lighting flowered up to 9 days earlier than the ones grown under natural lighting conditions with no growth regulators. In addition, there was a greater number of flowers on the plants grown under HID compared to the natural light plants (Figure 1).

Height control is an important issue when growing flowering potted plants. Untreated Dianthus grown in warm temperatures were substantially taller than when grown in cool temperatures (Figures 2 and 3). To provide adequate control of stem elongation of warm grown Dianthus, it was necessary to apply two applications of Cycocel (Figure 4).

Our data demonstrates that Dianthus can be forced in warm temperatures and under supplemental HID lighting, with a double pinch and two applications of Cycocel, to produce quality flowering potted plants for Christmas with a substantially shorter flower crop time than if the plants are grown in cool temperatures under natural light. However, the data also suggests that Dianthus grown under natural light and cool temperature conditions started from plugs in late August to early September can also produce a successful saleable crop for the Christmas season.

Once the Dianthus and Poinsettias were in flower, the 4-inch pot in the Dianthus pan was removed and the Poinsettia was set into the pot. The result was a unique and attractive combination planting. Although obviously not for everyone, this novelty Christmas item could provide a new Christmas product for retailers looking for something different to offer their customers.

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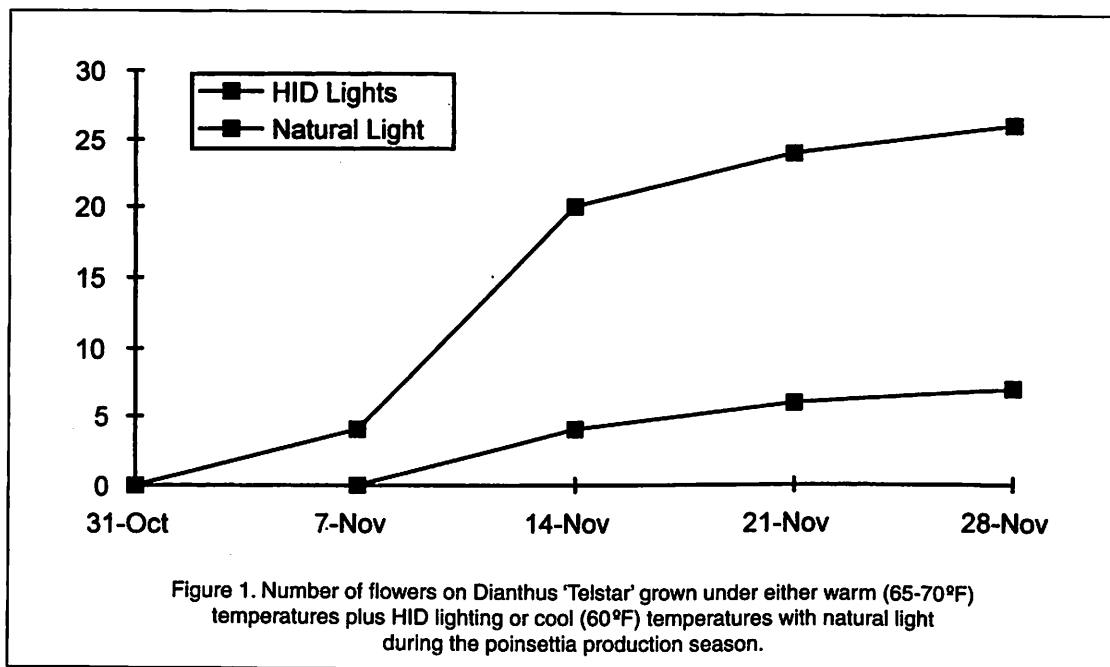
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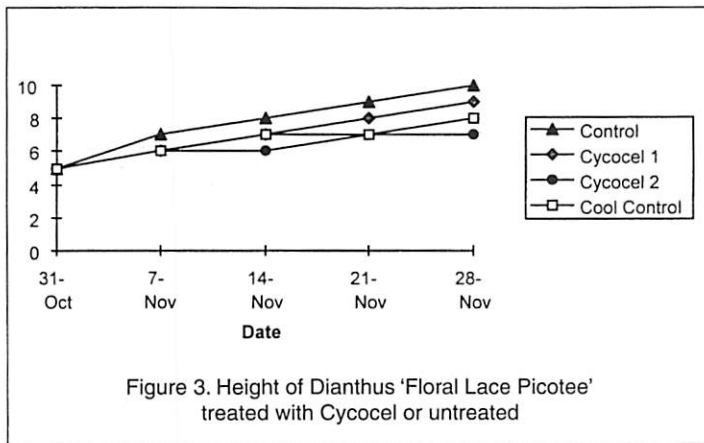
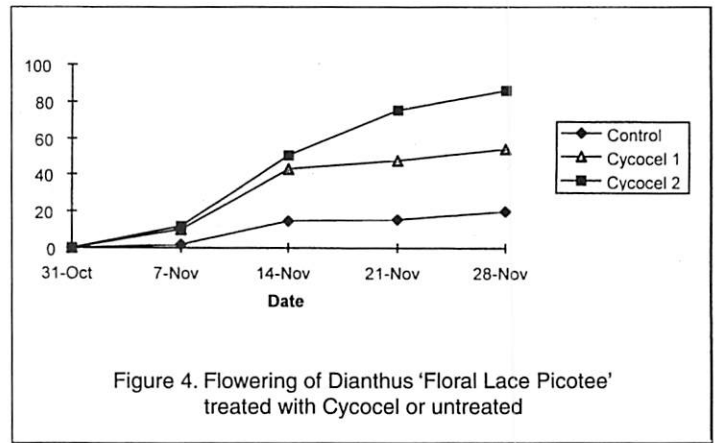
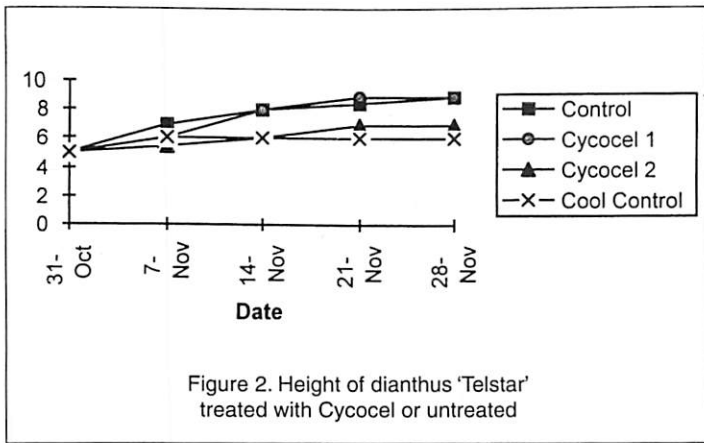
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