

The Effect of Heat Delay on the Height of *Euphorbia pulcherrima*

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INTRODUCTION

Poinsettias (*Euphorbia pulcherrima*) are a key ornamental crop in the US with a large market. Similar to any ornamental crop, plant height of poinsettias is closely monitored and managed during production due to both aesthetic and shipping purposes, and factors that affect plant height are constantly being studied.

BACKGROUND

Research has been conducted on the many ways in which temperature affects plant height, from the effects of the differences in daytime vs. nighttime temperatures to the impact of temperature drops (1, 2).

High temperatures also cause a delay in floral initiation (heat delay), and studies have shown that this phenomenon effects cultivars to a varying degree (2).

However, there haven't been any studies on whether the prolonged vegetative growth stages that take place when heat delay occurs have an impact on the overall plant height.

Every year, the University of Florida's Environmental Horticulture Club grows a crop of poinsettias of many cultivars including trials from breeding companies. We conduct research and offer our data to the companies.

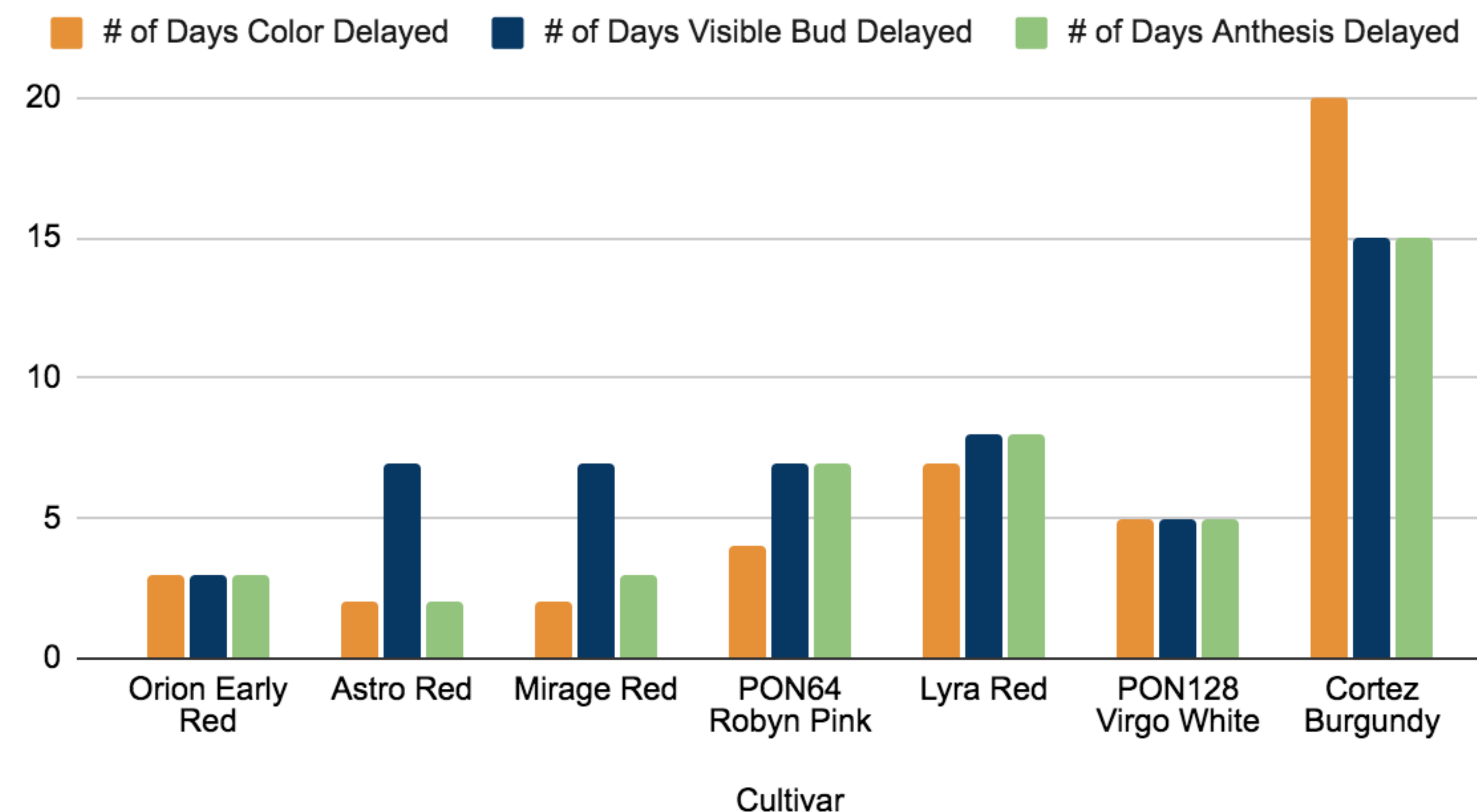
This year's study was conducted on five trial cultivars: Mirage Red, Virgo White, Robyn Pink, Astro Red, and Lyra Red, and two commercially available cultivars: Orion Early Red and Cortez Burgundy. There were twenty-six individuals in each cultivar.

HYPOTHESIS

We propose that the trial cultivars that exhibit the greatest degree of heat delay will also exhibit the greatest difference in final height compared to those individuals that did not experience heat delay.

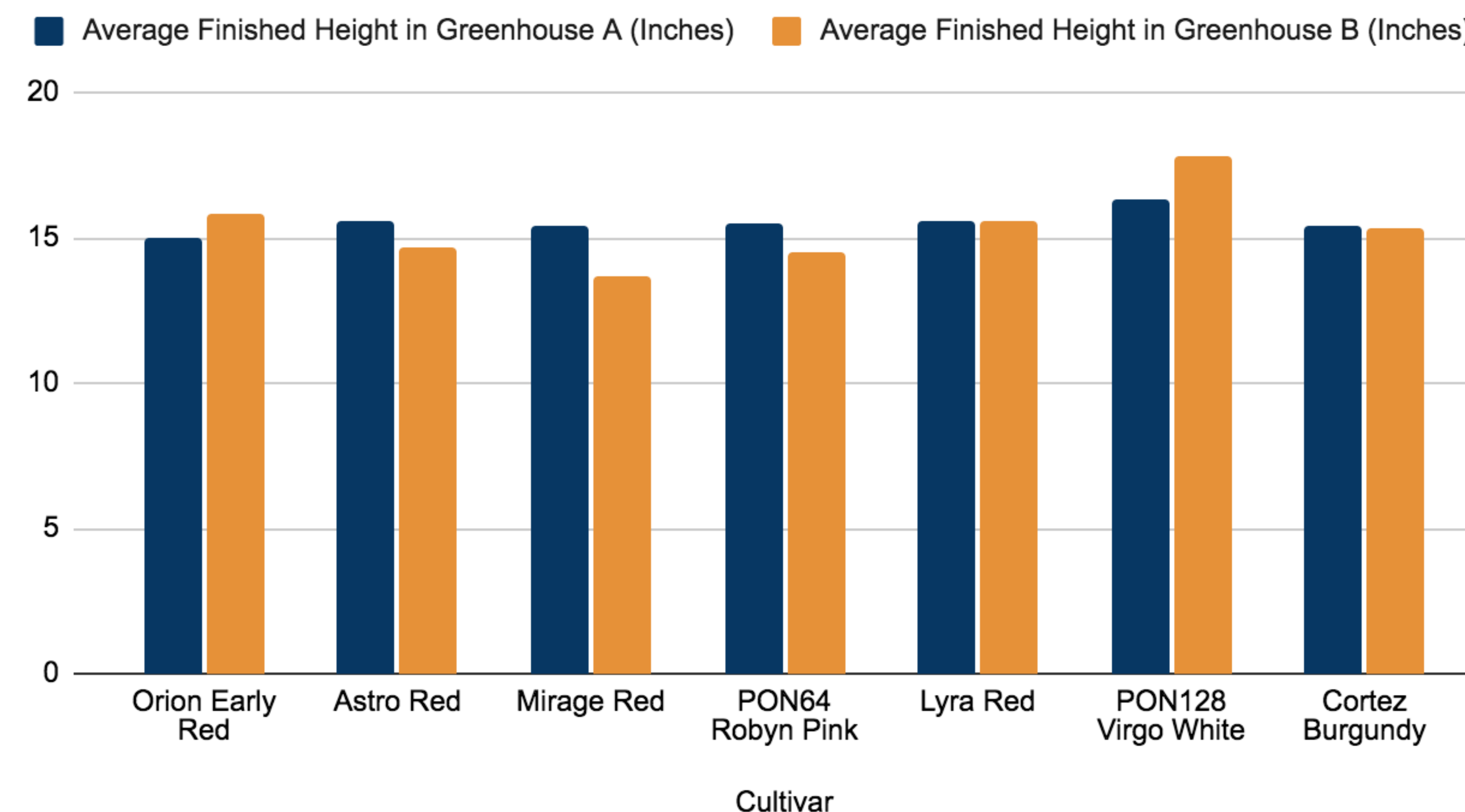
RESULTS

Days Color, Bud, and Anthesis Delayed by Cultivar



Each cultivar experienced varying degrees of heat delay, but there was no significant pattern in the differences in plant height between those that exhibited heat delay and those that did not.

Finished Height by Cultivar and Treatment



METHODS

We grew all individuals together in the same conditions up until floral initiation.

Upon floral initiation, we split the cultivars into their treatment groups, with thirteen individuals in each.

- Greenhouse A had a target daytime and nighttime temperatures were 79°F and 69°F respectively
- Greenhouse B had a target daytime and nighttime temperatures of 82°F and 75°F respectively.

Within these compartments, the plants were placed in a randomized block. The plants received the same watering, plant growth regulator, and pesticide treatments.

Each week, five representative plants were chosen, and their heights were recorded and graphed.

CONCLUSIONS

Studies prove that increased temperature causes both heat delay and increased plant heights of poinsettias; however, this study suggests that the extended period of vegetative growth caused by heat delay is not the mechanism responsible for this increase in plant height.

Heat delay still affects the plants' appearances beyond the delay of color. In some of the trials, we observed plants with misshapen leaves and leathery textures. This is something that should be researched further to fully understand and prevent

REFERENCES

- (1) Moe, Roar, Fjeld, Trove, and Mortensen, Leiv. (1992). Stem elongations and keeping quality poinsettia (*Euphorbia pulcherrima* Willd.) as affected by temperature and supplementary lighting. *Scientia Horticulturae*, 50(1-2), 127-136. Retrieved April 1, 2021 from [https://doi.org/10.1016/S0304-4238\(05\)80015-9](https://doi.org/10.1016/S0304-4238(05)80015-9)
- (2) Ueber, E., Hendrix, L. (1992). The Effects of Intensity, Duration, and Timing of Temperature Drop in the Growth and Flowering of *Euphorbia pulcherrima* Willd ex. Klotzsch. *Acta Horticulture* vol. 327, Pages 33-40. DOI: 10.17660/ActaHortic.1992.327.4