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Photoperiod of Three *Clerodendrum* species

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BACKGROUND

Clerodendrum is native mainly to the tropics in the Eastern Hemisphere. The origin of the species used in this study has a very wide range, i.e., from South East Asia to the Philippines to Java and China. These locations present significant variation in daylength throughout the year. In order to control flowering of *Clerodendrum* species, it is necessary to understand the effects of photoperiod on the vegetative and reproductive growth of these species.

Previous photoperiod research has been conducted on *C. thomsoniae* and *C. ugandense*. Both were found to be day neutral.

The objective of this study was to determine the effect of photoperiod on growth and flowering of *C. paniculata*,

C. speciosissimum, and *C. philippinum*.

MATERIALS & METHODS

Liners of *Clerodendrum* were planted on 2 January 2004 using one per 6-inch container. They were subsequently pinched and placed on treatment benches. Treatments consisted of 8, 12, and 16-h photoperiods. Treatments were applied by using an automated black-cloth system that pulled curtains over each bench at 1700, 2100, and 0100 hours. Temperature set points were 86° F day/73° F night (latitude 30.43N). Plants were fertilized at every irrigation with Peters™ 20-10-20 at 200 ppm N.

RESULTS

After 61 d in the photoperiod treatment, *C. paniculata* flowered an average of 30 d in the 12 h treatment and an average of 31 d in the 16 h treatment. There were no flowers in the 8 h treatment. For the 8 h photoperiod, days to flower, height and number of inflorescences were significantly different from the 12 h and 16 h photoperiods. Therefore, this

species was determined to be a long day plant. Plant height at 8 hour was less than those grown at 12 h and 16 h (Figure 1).

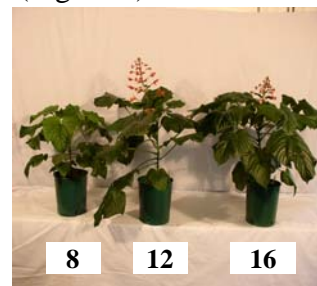


Figure 1. Effect of daily photoperiods of 8, 12, or 16 hours on growth and flowering of *C. paniculata*.

After 61 d in the photoperiod treatments, *C. speciosissimum* flowered an average of 27 d in the 12 h treatment and an average of 31 d in the 16 h treatment. There were no flowers in the 8 h treatment. For the 8 h photoperiod, days to flower, height and number of inflorescences were different from the 12 and 16 h photoperiod. Therefore, this species was determined to be a long day plant. Plant height at 8 h was less than those grown at 12 h and 16 h (Figure 2).

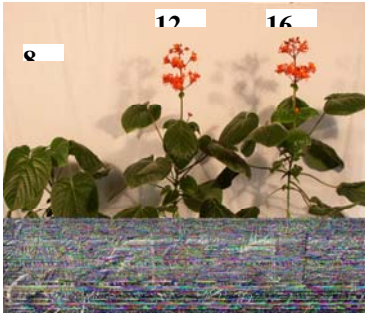


Figure 2. Effect of daily photoperiods of 8, 12 or 16 hours on growth and flowering of *C. speciosissimum*.

After 61 d in the photoperiod treatments, *C. phillippinum* flowered an average of 39 d in the 12 h treatment, and an average of 17 d in the 16 h treatment. There were no flowers in the 8 h treatment. For the 8 h photoperiod, days to flower, height and number of inflorescences were different from the 12 and 16 h photoperiod. Therefore, this species was determined to be a long day plant (Figure 3).

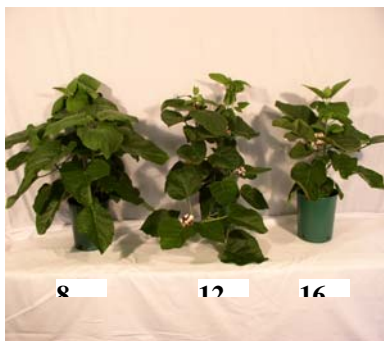


Figure 3. Effect of daily photoperiods of 8, 12, or 16 hours on growth and flowering of *C. phillippinum*.

CONCLUSIONS

C. paniculata, *C. speciosissimum*, and *C. phillippinum* were determined to be obligate long day plants. Plant heights of *C. paniculata* and *C. speciosissimum* were significantly increased by the 12 and 16-h photoperiods. This indicates that these species require long days to reach plant height maturity.

The difference in plant height compared to the controls in two species may be partially explained by the type of High Intensity Discharge (HID) lamps used for the night interruption lighting. A further explanation of the height differences compared to the controls may be due to the increased light period. This allows the long day plants to grow for a longer period in the presence of light.

Further study is necessary to determine if these *Clerodendrum* species can be used as commercial flowering potted plants. However, observations on these three species indicates that the vigorous, woody nature of these plants and large leaves could be detrimental for use as a flowering potted plant. They could, however, be useful in large containers.

IMPACT TO THE INDUSTRY

1. *C. paniculata*, *C. speciosissimum*, and *C. phillippinum* were induced to flower with daily photoperiods of 12 hours or longer. They are obligate long day plants.
2. They must be evaluated further to determine if they can be commercially utilized as flowering potted plants.
3. They should be evaluated as large container plants.

For additional information contact Jeff S. Kuehny at jkuehny@lsu.edu.

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