



# Floral Evocation in Poinsettia

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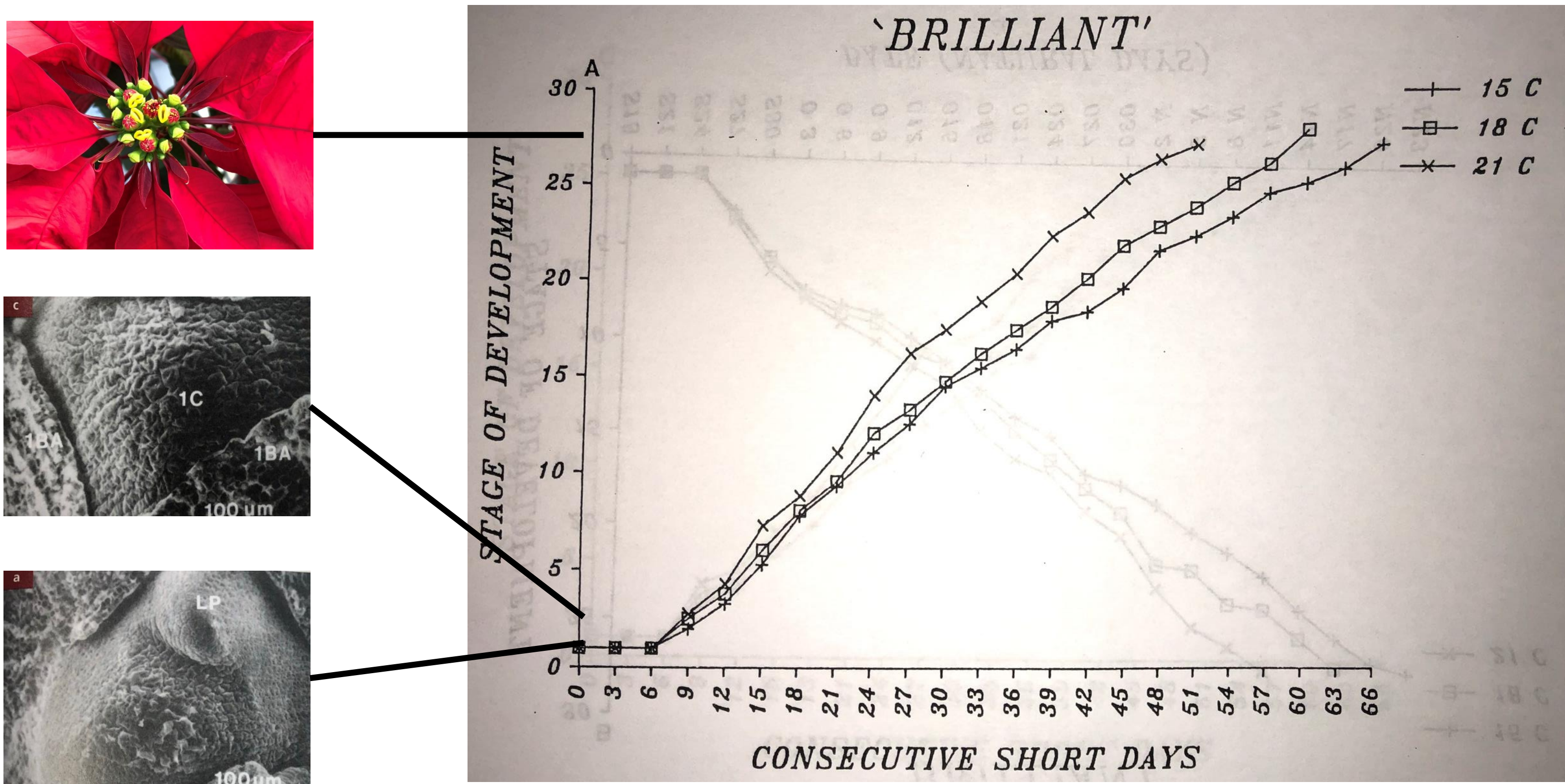
## Background

Floral evocation describes an irreversible commitment to flowering that occurs due to biochemical and physiological changes within the plant that results in anthesis. In many species, flowering will occur after exposure to a sufficient number of inductive photoperiods even when returned to non-inductive photoperiods (Thomas and Vince-Prue 1997).

Poinsettia requires numerous, consecutive short days for flowering to occur. The transition from a vegetative meristem up to anthesis involves 27 discernable stages of floral development (Grueber, 1985). Nine consecutive short days were needed to cause flower initiation (stage 3) which was followed by a near linear progression of floral development (stage 4, 5, etc...). The stage (or number of consecutive short days) for floral evocation to occur is unclear.

In a preliminary experiment with ‘Prestige Red’, 21 short days were insufficient for evocation; splitting (incomplete flower development) of the primary cyathium occurred.

- Stage 27  
Anthesis
- Stage 3  
Flower initiation
- Stage 1  
Vegetative meristem



**Figure 1.** Flower development of ‘Brilliant’ under 16-h nightlengths at three forcing temperatures (Grueber, 1985)

## Objectives

- To identify the number of short days required for flower initiation.
- To determine the number of consecutive short days required for bract and cyathia development to occur

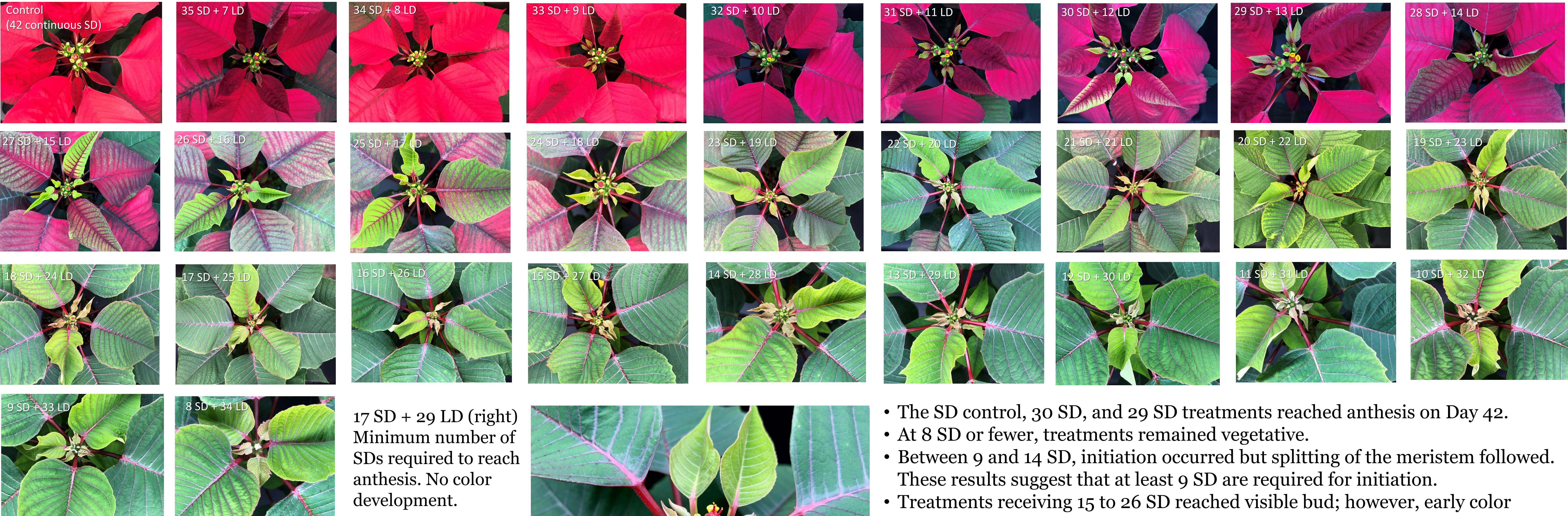
## Hypothesis

- Treatments that reach visible bud prior to exposure to long days will reach anthesis.
- Bract development will not occur or will revert to green in a range of treatments

## Materials & Methods

Treatments consisted of ‘Advent Red’ plants that were initially placed under short days (14-h nightlength) and then moved to long days (10-h day w/ night interruption lighting for 4 h). Four plants were moved from SD ( $25 \pm 2^\circ\text{C}$ ) to LD ( $24 \pm 2^\circ\text{C}$ ) daily for 35 days. A control group remained in SD until anthesis (Day 42). Data were collected for first color, reversion of color, visible bud, splitting, and anthesis.

## Results and Conclusions



17 SD + 29 LD (right)  
Minimum number of SDs required to reach anthesis. No color development.

## Acknowledgements

Floriculture Research Alliance



- The SD control, 30 SD, and 29 SD treatments reached anthesis on Day 42.
- At 8 SD or fewer, treatments remained vegetative.
- Between 9 and 14 SD, initiation occurred but splitting of the meristem followed. These results suggest that at least 9 SD are required for initiation.
- Treatments receiving 15 to 26 SD reached visible bud; however, early color development of the bracts either reverted to green or became pale and mottled. Color development requires continuous long nights after visible bud has occurred.
- At 29 SD or greater, buds were rapidly developing with little to no color reversion in bracts.
- Treatments that received at least 17 SD reached anthesis. Although development of cyathia were slower under long days, this environment was not prohibitive to further flower development. These results suggests that floral evocation occurs shortly after emergence of the primary cyathium (visible bud).