KALANCHOE HEAT DELAY

Paul Gehrke, Terril A. Nell, and James E. Barrett
Ornamental Horticulture Department University of Florida Gainsville, FL 32611
Reprinted from the Florida Ornamental Growers Assn. Newsletter, May/June 1990

WHAT IS HEAT DELAY?

Optimal temperatures for kalanchoes are 75° to 80°F and 60° to 65°F night.

Heat delay is the abnormal, uneven or delayed flowering of kalanchoes caused by high temperature production conditions. Optimal temperatures for kalanchoes are 75° to 80°F day and 60° to 65°F night. High temperatures delay floral initiation, as well as reduce plant quality and flower numbers. As night temperatures increase above 70°F, heat delay becomes evident. Heat delay symptoms limit plant marketability at night temperatures greater than 75°F. High day temperatures also influence the growth and flowering of kalanchoes, but are less significant than night temperature.

As night temperatures increase above 70°F, heat delay becomes evident.

CULTIVAR RESPONSE

Cultivars vary in their response to supraoptimal temperatures. Some are tolerant of high night temperatures and yield high quality plants. Other cultivars are sensitive or intermediate in their response to supraoptimal temperatures.

Kalanchoe Flowering Response to Supraoptimal Night Temperatures

Tolerant	Flower Color*	Intermediate	Flower Color*	Sensitive	Flower Color*
Attraction	OR	Adobe Rose	R	Bali	O
Eternity	CP	Cinnabar	O	Fascination	Pu
Inspiration	R	Firefly	Y	Osage Orange	O
Sensation	P	Fortyniner	Y	Pollux	OR
		Satisfaction	Pu	Red Sunshine	R

*Flower color: orange (O), coral pink (CP), orange red (OR), purple (Pu), red (R), yellow (Y), pink (P).

High day temperatures also influence the growth and flowering of kalanchoes, but are less significant than night temperature.

High temperature tolerant cultivars should be utilized for late spring, summer and early fall flowering. Sensitive cultivars should be grown only during late fall, winter and early spring. Intermediate cultivars are grown during the same season as sensitive cultivars; however, to get a full color selection during the summer months, some intermediate cultivars may have to be utilized.

ENVIRONMENTAL FACTORS AND INITIATION

Kalanchoes are most sensitive to supraoptimal temperatures during the first 4 to 6 weeks of short days when the first flower buds are initiated.

Kalanchoes are most sensitive to supraoptimal temperatures during the first 4 to 6 weeks of short days when the first flower buds are initiated. During this sensitive developmental phase, optimal night temperatures should be maintained in order to maximize the number of buds formed. Temperatures under the black cloth should not exceed 75°F. Air from fan and pad cooling system should be pulled under the black cloth.

The first flower buds are formed after 4 to 6 weeks of short days at optimal temperatures. Once flower buds have formed, supraoptimal temperatures accelerate flowering and increase internode elongation.

Kalanchoes require high light levels with 4,000 to 5,000 ft. c. being optimal. Lower light levels increase the severity of heat delay and delay flowering.

Kalanchoes require high light levels with 4,000 to 5,000 ft.c. being optimal. Lower light levels increase the severity of heat delay and delay flowering.

RECOMMENDATIONS TO REDUCE HEAT DELAY IN KALANCHOES

1. Maintain temperatures as low as possible.

2. Avoid high temperature buildup under black cloth. Pull cooled air under black cloth.

3. Use a 15 hour night length for floral initiation.

4. Alter shade cloth schedule (on at 7:00 P.M. and remove at 10:00 A.M.).

5. Place plants at the pad (coolest) end of the greenhouse for the first 4 to 6 weeks for initiation; then move to a warmer area for finishing.

6. Continue short day treatment until flower buds are visible on all cultivars.

7. Do not reduce light levels below 3,000 ft.c.

8. Grow high temperature tolerant cultivars.

RESEARCH UPDATE

John Erwin
University of Minnesota
Reprinted from Grower Talks, March and April 1991

PHOTOPERIOD AND CORM AGE AFFECT *LIATRIS* GROWTH

The effect of corm age and photoperiod on *Liatrus* growth was studied at the University of Maryland One year old corms produced from seed and 2 year old corms were placed under natural daylight plus 0, 4, 6 or 8 hours of 'mum' lighting as a day continuation. Plants were grown under these treatments for 35 days after emergence. Plants were then grown under a second photoperiod of 8, 12, 14 or 16 hours until harvest. Plants were, therefore, exposed to 16 different photoperiod treatments. The results are as follows:

Two year old corms flowered 10 days earlier than 1 year old corms. However, 1 year old corms produced twice as many vegetative shoots and 15% more flowers than 2 year old corms.

1. Two year old corms flowered 10 days earlier than 1 year old corms. However, 1 year old corms produced twice as many vegetative shoots and 15% more flowers than 2 year old corms.

2. An initial photoperiod after emergence of 14 or 16 hours reduced the days to flower by 8 days and increased flower shoot length by 7.9 inches compared to plants grown with no daylight extension (8 hour photoperiod).

3. However, giving long days at emergence resulted in a 50% reduction in flowering shoots compared to plants grown under short days (8 or 12 hours daylight) for the first 35 days after emergence.

A short day treatment followed by a long day treatment did not reduce flowering shoot number and increased shoot length.

4. A short day treatment followed by a long day treatment did not reduce flowering shoot number and increased shoot length.

Espinosa, I. & W. Healy. 1990. Influence of photoperiod on Liatrus spicata generative shoot growth. Hortscience 25:764-766.