

BEGONIAS ARE NOT INDETERMINATE

Photoperiodism, the response of variety plants to the relative length of the periods of light and darkness, is a factor often overlooked in **growing Begonias indoors under artificial light**.

Originally, it was thought that the time when plants flower was dependent upon the length of the light periods and hence, the commonly used designations — long day plants (summer flowering), short day plants (winter flowering). Actually, it is the length of the darkness that determines the time of bloom and **they should really be classified as long or short night plants**.

Indeterminate plants are indifferent to the length of the dark periods and will bloom regardless whether the time of darkness is long or short, Most of the authors who have written books and articles about indoor light gardening, except for the Christmas blooming cheimantha and heimalis types and the summer blooming tuberhybrida types, have classified Begonias as indeterminate plants.

I had followed the recommendations in the books and was growing all my Begonias with an approximate 16-18 hour day length, manually controlled, While I had plants with very full and lush foliage, I was getting very few flowers. Last Spring, at a meeting of the Knickerbocker Branch we were discussing this, and some of the members pointed out that many of the rhizomatous types were short day plants and bloomed in late winter or early spring.

I decided to start experimenting by changing the length of my days and obtained automatic timers for exact control. I selected, as test plants, B. 'Erythrophylla', a rhizomatous type, and B. 'Helen W. King', a fibrous rooted cane type. These had not flowered for me, even though I had the parents and offspring for many years and I had grown them under a great variety of conditions indoors and outdoors during the summer.

My cellar gardens were divided into four different time zones, and I put trial plants in each area. Trying to simulate the changes of the seasons in a condensed manner, I arranged the sequences of the time changes in each zone as follows:

- Zone No. 1, seventeen weeks with a twelve-hour day; three weeks with a ten-hour day; one week with eight-hour; three weeks with nine-hour; and after eight weeks still continuing with a ten-hour day.
- Zone No. 2: the day length was a continuous eighteen hour.
- Zone No. 3: two weeks with a twelve- hour day, five weeks with ten-hour, nine weeks with nine-hour, three weeks with eight-hour, one week with seven-hour, three weeks with eight- hour, one week with nine-hour, one week with ten-hour, one week with eleven-hour, four weeks with twelve- hour.
- Zone 4: three weeks with sixteen hours of light, five weeks with seventeen hours, nine weeks with sixteen ours, three weeks with fourteen hours, one week with twelve hours, three weeks with ten hours, one week with twelve hours, one week with thirteen hours, one week with fourteen hours, four weeks with fifteen hours.

The best results were in Area No.1. There were no signs of budding until the day length was reduced to ten hours, then some were evident on *B. kenworthyae* and *B. 'Helen W. King'*.

After the reduction to eight hours for one week and nine hours for three weeks the following had flowers: *B. kenworthyae*, *B. 'Helen W. King'*, *B. 'Erythrophylla'*.

When time was increased to ten hours, *B. 'Helen W. King'* stopped flowering, but the others continued to bloom and the following also were in flower: *B. 'Bow-Arriola'*, *B. 'Corallina de Lucema'*, *B. 'Di-Anna'*, *B. 'Norah Bedson'*, *B. conchifolia*, *B. 'Fischer's Ricinifolia'*, *B. manicata* var. *aureo-maculata*.

The trial plants of *B. 'Erythrophylla'* and *B. 'Helen W. King'* in all the other areas did not bloom.

In Area No. 3, where I had the shortest day, the Begonias did poorly because of insufficient light, until the day length was increased to ten hours. None of the plants in this area had flowers, despite the short day lengths. Reviewing these results, I believe the plants in this area were affected by the reflected light from Area 2 (eighteen-hour). Apparently, if the darkness is not complete for the long night or is interrupted by light for a short time, the plants will react, even though the intensity of the light is low, as if they had short nights.

In Area No. 2, my Rex Begonias were very full and had many flowers. The following Begonias also bloomed in this area: *B. 'Richmondensis'*, *B. 'Frances Lyons'*, *B. 'Tom Ment'*, *B. 'Orange Rubra'*.

In the Area No. 4, the following were blooming when the day lengths-were as indicated: *B. 'Diclata'* (fourteen hours to sixteen hours), *B. schmidtiana* (sixteen hours), *B. 'Preusen'* (with twelve or more hours), *B. odorata alba* (thirteen hours), *B. 'Richmondensis'* (fourteen-fifteen hours), *B. 'Margaret Stevens'* (fifteen).

I next wanted to determine if it was necessary to have a gradual increase or decrease in day lengths, as is normal by the change of seasons, or if flowering could be induced by a direct change in day lengths. Therefore, I transferred *B. 'Erythrophylla'* that was growing in Zone 4 with fifteen hours to Zone 1 with a ten-hour day. After ten days, buds were formed and the plant had flowers in three weeks. **This seems to indicate that the gradual change is not necessary.** To confirm this result, I have since moved other plants from zone to zone, but it is too soon to observe the results.

From my experiments and the reports of others in *The Begonian* and the *Indoor Light Gardening News*, **it is safe to conclude that all Begonias are not indeterminate plants.**

Many of the rhizomatous types and some of the fibrous types are short day plants requiring fourteen to sixteen hours of darkness to bloom. Some are long day plants needing only six to eight hours of darkness to bloom and still others may be indeterminate plants blooming when the darkness is anywhere between six to twelve hours long.

The time required to stimulate the flowers on Begonias is apparently as varied as there are species and cultivars. If we consider the diversification, their original habitats, and their varied parents, this really should not be surprising,

It is my hope that this report will stimulate others to experiment with photoperiodism and will report their results to The Begonian. Also, the effect of the other factors—temperatures, light intensity, humidity and fertilization should be considered. After sufficient data has been correlated from many of our members, we will be able to make positive recommendations for the optimum time cycle to promote the best flowering of Begonias. By JACK GOLDING - published in the Begonian, June, 1969.