

Temperature and Chrysanthemum Flower Development

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Whether the quality of bloom on chrysanthemums is superior if developed at 50° or 60° is dependent on the variety in question. Arcadia is best at 50° while Gold Coast is best at 60°.

The early work with chrysanthemums (reviewed in Cornell Bulletin #787) showed the number of flowers per stem of pompons decreased as the variety flowered later in the season. Night temperatures as low as 50° were found to prevent flower bud formation. Low temperature after buds had formed reduced the number of buds per stem which developed.

Growers have noticed certain varieties developed flowers of unusual petal shapes at some times of the year. This has been especially noticeable in our year-around production program. It appears desirable to sort varieties for flowering at different times on the basis of the type of flower produced. Certain varieties are found especially valuable for flowering in summer. They may be superior, when flowered early, to the same variety in normal season.

Many research workers and some commercial operators have emphasized the desirability of flowering chrysanthemums at low temperature to improve the quality. We have not had proper equipment to grow the same varieties at temperatures other than at 50 and 60 degrees.

This year, plants of five varieties were grown in two houses - one at 60°F and the other at 50°. Plants were benched September 1. The night temperature remained above 60°F in both houses until September 20 and after October 1, it was above 60° much of the time until October 15 due to the warm fall. The temperature was controllable after October 15.

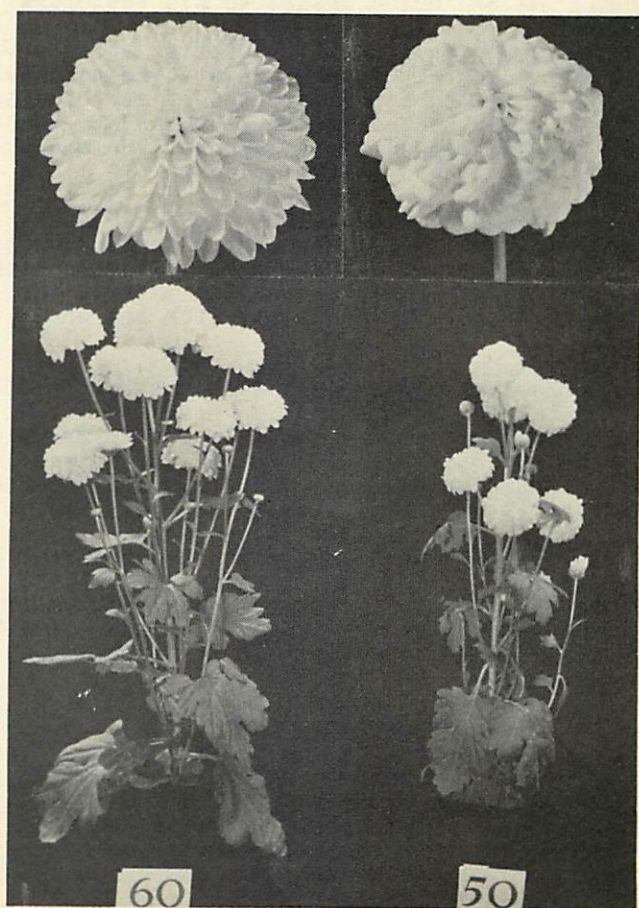
Some plants were permitted to bud and flower immediately. They were in full flower November 15. The buds had formed at 60° but developed at 50° and 60° respectively.

Spray development was superior on Arcadia and Gold Coast at 60° and more flower buds developed at the higher temperature. The color of pink and bronze varieties has always been darker at the lower temperature.

cont. on pg. 8



Arcadia



Gold Coast

Sticking in the Center

Petals on Arcadia "stuck" in the center and failed to develop on many of the flowers at 60° while the flowers developed full centers at 50°. This problem has been of considerable importance to chrysanthemum growers. Some varieties have a tendency to do this some years. More varieties were affected in this manner in 1947 than in previous years. This was probably because of the delay in flowering because of long September days and high fall temperatures (New York State Flower Growers Bulletin #27).

Temperature alone is certainly not the entire reason for this lack of development of the center florets. These same varieties do not produce this type of flower in summer. Probably the amount of food available for flower development is responsible. The total amount of light during the fall months is less than in summer. This permits the plant to produce a limited amount of food. The high temperature causes the food to be used in respiration and sufficient is probably not left for complete development of the center florets.

Reflexed Petals

Gold Coast produced reflexed petals at 50° and concave petals at 60°. The flowers opened at the two temperatures appeared like entirely different varieties. Those at 60° being most desirable. This variety and others having similar characteristics will be good for early flowering, but will probably be of poor quality in normal season when the temperature reaches 50° during the flowering period.

Summary

Color of pink and bronze varieties is better when flowers open at 50° than when they open at 60°.

Number of flowers per spray is greater when flowering is at 60° than at 50°, and the general form of the spray is also better at the higher temperature.

Varieties which tend to stick in the center should be allowed to develop the buds during the last three weeks at 50°, especially from September to March.

Varieties which tend to produce reflexed petals should not be allowed to develop at as low a temperature as 50°.

All varieties should be catalogued with information concerning their response to temperature.

The exact temperature at which this change-over occurs probably varies with the total light received by the plant. Perhaps it is 55°, 58° or 60°.
