

# Short Days are Necessary for Crown Buds in Chrysanthemums

Dr. Kenneth Post  
Department of Floriculture  
Cornell University, Ithaca, N. Y.

Previous investigations (Post, 1934 Cornell Bulletin #594) showed that crown buds resulted in chrysanthemums when the plants were exposed to a few short days followed by long days. The top bud on the plant differentiates first. It requires one or a few short days to induce differentiation. As the number of short days increase, budding continues down the stem.

The number of short days necessary for the top bud to form and for the entire plant to bud varies with the variety. Early varieties appear to bud with fewer short days and with longer days than do late varieties.

The time pinch (Delworth, 1941 Florists' Review, July 31, 1941) is made to permit or prevent crown buds forming. The crown bud stops elongation of the stem and stimulates lateral branches to form. If the interval from the time crowns form to the time of terminal bud formation is a few days, the spray forms with short branches. If the crown bud forms several days before the terminal bud the side branches are long and the spray is open.

The timed pinch as understood at present is based on the assumption that crown buds form regardless of day length after a certain length of stem has developed. These experiments were made to determine if crown buds did form regardless of day length.

Ten plants each of five pompon chrysanthemum varieties were planted as rooted cuttings on December 4, 1947. Plants were made available through the courtesy of Yoder Brothers, Barberton, Ohio. They were pinched to remove only the terminal growing points on December 20. The plants were exposed to the normal day in the greenhouse plus eight hours of artificial light from 8 p.m. to 4 a.m. The artificial light varied from 8 to 35 foot candles in intensity over the plot.

Plants were grown at a minimum temperature of 60° F. with high soil moisture and medium fertility.

Plants were removed from the bench March 12 after a growing period of 12 weeks. Only an occasional plant at the greatest distance from the light had formed buds. The results appear in the table.

### EFFECTS OF LONG DAYS ON GROWTH AND BUDDING

<u>Variety</u>	<u>Avg. Height in Inches</u>	<u>Number of Shoots Budded</u>
Arcadia	57	2
Valencia	50	0

Sunny Side	63	0
Vesper	56	0
Gold Coast	51	2

Arcadia and Gold Coast plants which were budded were at very low light intensity. It is evident from these data that crown bud formation did not occur on these varieties during the 12 weeks period of treatment even though they grew to a height of 50 or more inches. Probably Crown bud formation does not occur unless one or more short days occur to initiate it.

Time pinching cannot be expected to produce the same result each year in the same location and in successive treatments through the year. Local differences in day-length and perhaps differences in temperature will change the time of crown formation.

It is obvious from this work that crown bud formation can be induced and daylength must be accurately controlled to produce the crown bud to obtain the desired spray formation.