Poinsettias and Low Soil Temperature

Kenneth Post and John Mastalerz

Poinsettias (variety Albert Ecke) were subjected to various soil temperatures to determine the effect on leaf drop and bract development. A soil temperature of 40°F. for a period of 10 days was responsible for 100% leaf drop (colored bracts not included in leaf count); while plants treated for 2 and 4 days dropped few to no leaves. (Fig. 1) Bract development was drastically reduced on plants with soil temperatures of 40°F for 10 days.

A second group of plants treated in the same manner had 100% leaf drop at 40°F. soil temperature for 10 days. (Table II)

The possibility of the presence of the root rot fungus, Thielaviopsis basicola, (Dimock, 1951) was discounted because of the use of sterile rooting medium, pots, potting soil, and new gravel on the bench.

Rooted cuttings were placed in asphalted tin cans provided with drainage on September 9, and given normal daylength. The plants were grown at 60°F minimum night temperature including the treatment period. On November 13, five plants were placed at each soil temperature and removed at 2, 4, and 10 day periods. The cans were immersed in a controlled water bath to maintain the desired soil temperatures.

Plants subjected to low soil temperatures of 40° and 50°F. wilted severely during the first or second day of treatment, but recovered on the third day and remained fully turgid thereafter. Recovery at 40°F may be accounted for by the cloudy days that occured during the course of the experiment.

During the 10 days at 40°F. leaves began to turn yellow and drop in approximately 7 days and most had fallen within 20 days of the beginning of the low soil temperature treatment.

Plants subjected to 40°F. for 4 days dropped some leaves (5.4%), but after removal from the low soil temperature, no additional leaves dropped.

Kofranek (1950) treated poinsettias with various soil temperatures for 2 days and 6 days with similar results at 40°F. He had considerable leaf drop in 2 days and a heavy to complete drop in 6 days at 40°F. However, he also noted some leaf drop at 60° and 80°F. which may have been due to the root rot fungus. Low soil temperatures reduce root growth (Post, et al. 1951), but are satisfactory for the root rot fungus, resulting in yellowing and leaf drop (Dimock, 1951).

Table I. Leaf drop of Poinsettias at various soil temperatures potted Sept. 9 - Soil Temperatures Nov. 13-26.

		Average number leaves per plant	Per cent leaves lost per plant
2 days at	40°F.	17.2	0
	50°	17.4	0
	60°	16.5	3.3
	80°	17.4	0
4 days at	40°	18.2	5.4
	50°	17.4	2.2
	60°	17.0	0
	80°	17.6	0
10 days at	40°	17.2	100
	50°	18.0	0
	60°	17.5	0
	80°	17.8	0
Check		17.4	0

Table II. Second group of Poinsettias - leaf drop at various soil temperatures. Potted Sept. 9-Soil Temp. Nov. 26-Dec. 6

10 days at	40°F	8.8	100%
	50°	9.1	0
	60°	9.5	1.3

References:

Dimock, A. W. Poinsettia Trouble a Result of Root Rot. New York State Flower Growers' Bul. 69: 4-8. 1951

Kofranek, A. N. Some Physiological Responses of Antirrhinum majus, Euphorbia pulcherrima, and Lilium longiflorum to various soil temperatures. Cornell Univ. Ph.D. Thesis. 1950

Post, K., A. Bing, & F. F. Horton. Keep Poinsettias Hot. N. Y. State Flower Growers Bul. 68:5-6. 1951.

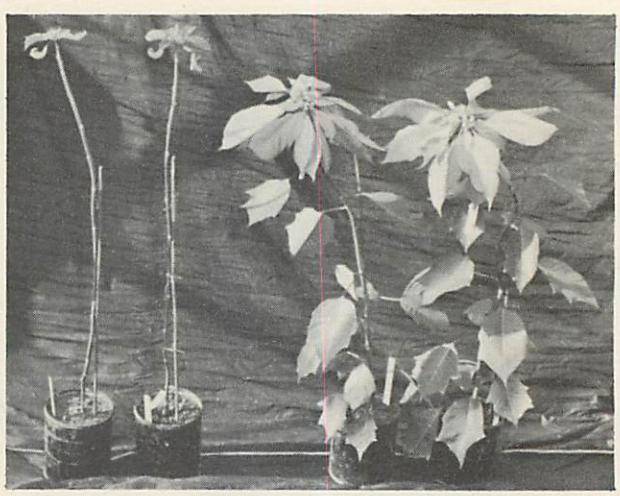

Fig. I. Poinsettia Plants (left subjected to 40°F. soil temperature for 10 days. Plants (right) represent soil temperatures of 50°F, 60°, or 80°F. or 40° for 2 and 4 days.