LEAFLET 58 SEPTEMBER 1958

SUPPLEMENTARY ILLUMINATION of POINSETTIAS

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THE poinsettia, *Euphorbia pulcherrima,* along with holly, symbolizes Christmas. It normally blooms during the first part of December and begins to decline in quality by Christmas.

Native to moist shady parts of tropical Mexico and Central America, poinsettias are valued for the showy bracts that comprise part of the "flower." The actual flowers are small, round structures, usually green, located in the center of a cluster of colored bracts. Many varieties are available. Those most commonly used have red bracts. Varieties with white and pink bracts are gaining in popularity. Those with white bracts have better lasting qualities than the red. Either single or double bract varieties are available.

Time of flowering can be controlled by temperature control and pinching. However, presence of *Thielaviopsis* root rot and the natural difficulty of regulating fall temperatures in the South have made this approach difficult. Also, many people prefer plants that have not been pinched.

Since poinsettia flowers develop during short days, control of day length presents a method of timing the flowers for Christmas. Experiments were conducted at the Agricultural Experiment Station of the Alabama Polytechnic Institute from 1951 through 1956 to study this method.

MATERIALS *and* METHODS

All plants used in these experiments were propagated by using stem cuttings 4 to 6 inches long taken in August and September. All stock plants came from California and were grown outdoors in full sunlight.

Cuttings were dipped immediately after taken in cold water to stop the flow of latex. Prior to inserting in the propagation medium, the base of the cutting was dipped in ferbam or a mixture of ferbam and a commercial rooting powder.

Rooted cuttings were potted at first in 2½ or 3-inch pots. Later three of these plants were placed in a 6-inch pan. The night temperature was maintained at a minimum of 60° F. Recommended commercial cultural practices were followed.

Varieties used for these experiments

AGRICULTURAL EXPERIMENT STATION
of the ALABAMA POLYTECHNIC INSTITUTE
E. V. Smith, *Director* Auburn, Alabama

were: Indianapolis Red, Oak Leaf, Improved Albert Ecke, Albert Ecke, Barbara Ecke Supreme, Double Henrietta Ecke, Ecke White, and Ecke Pink.

DATE *of* BUDDING UNDER NATURAL CONDITIONS

The date of normal flower bud initiation is between September 20 and October 1 at Auburn. This date is important in using supplementary illumination. Maximum efficiency was achieved only when light was used before initiation began. Lighting after that date resulted in deformed flowers.

DATE *of* LIGHTING

Tests were conducted using the Albert Ecke variety to determine what influence the first lighting date had on flowering. Growing plants during long days from October 1 or later resulted in deformed flowers. The main axis of the stem terminated in a flower surrounded by three normal leaves, i.e. a whorl of three leaves, rather than the normal alternate arrangement. A stem developed from the axil of each leaf of the whorl. These in turn were terminated by a normal poinsettia flower, with bracts and flowers arranged normally.

Lighting plants after October 1 resulted in delayed flowering, but caused deformity. This deformity was objectionable. When light was used before September 20, this abnormal condition did not develop.

DURATION *of* LIGHTING

Since light is used only to produce a better quality plant for Christmas sale, the length of lighting must be accurately controlled. Too long a lighting period results in a flower that is too "green" to sell at Christmas. On the other hand, too short a lighting period produces a flower that is too "ripe." Results of experiments show that the night temperature used will determine the duration of lights. Plants grown at 60° F. night temperature with lights used from September 15 to October 5-10 produced perfect flowers for Christmas. The highest quality flowers at Christmas were produced when the night temperature was 65° F. and lights were used from September 15 to October 10-15.

DATE *of* TAKING CUTTINGS

The date of taking cuttings had little influence on the use of lights. Results of experiments show that highest quality is produced when plants are potted in soil by September 15 and lights used. Cuttings made after September 15 were grown in a propagation bench and lights used. However, this delay was only a few days. The use of lights on stock plants for cuttings to be made in October reduced quality. Plants from October cuttings usually bloom just before Christmas.

DAILY ILLUMINATION *and* LIGHT INTENSITY

Supplementary illumination was used from sundown to 10 p.m. or from midnight to 1 a.m. with equal results. There was a relationship between the time night lights were on and the intensity of light. A minimum of 4 footcandles of light intensity was required from midnight to 1 a.m. to efficiently delay flowering but 2 footcandles was sufficient for early evening lighting. Weaker light delayed flowering but not as much as higher intensities.

SUMMARY *and* RECOMMENDATIONS

1. The normal date of flower bud initiation on poinsettias at Auburn is between September 20 and October 1.

2. The use of supplementary illumination resulted in better quality plants and flowers at Christmas.

3. Using lights on plants growing in soil by September 15 or plants propagated before October 1 produced better quality plants and flowers at Christmas.

4. Highest quality at Christmas resulted from using lights from September 15 to October 5-10 if the crop was grown at 60° F. and to October 10-15 if grown at 65° F.

5. Delay in beginning the lighting period until after October 1 resulted in deformed flowers.

6. Lighting could either be done from sundown to 10 p.m. or from midnight to 1 a.m.

7. Low light intensities were needed. For lighting from sundown to 10 p.m., 2 footcandles were sufficient, whereas a minimum of 4 footcandles was necessary for lighting from midnight to 1 a.m.