

BLINDNESS IN HYDRANGEAS

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Hydrangea plants which fail to bloom, or which initiate flower buds on only a portion of their shoots, constitute a loss to commercial growers. What is known concerning the causes of blindness in hydrangeas?

In 1946, Ray (7) reported that cuttings of the variety Europa taken from blind plants produced flowers on 98 percent of the shoots. This finding indicated that failure to flower was not hereditary. He reported that the types of wood used for propagation made little difference in the quality of the mature plant. Ray further found that growing the plants under lath shade until August 1 resulted in greater foliage development. The result was greater storage of food late in the summer and fewer blind shoots.

In 1947, Post (5) stated that everything one does to a hydrangea plant may contribute indirectly to blindness. Post (6) reported that failure to form flower buds had been observed when: (1) the minimum temperature was 65°F, (2) an early frost caused leaf drop before flower buds were formed, (4) plants were heavily shaded, (5) mildew was severe, causing serious leaf injury before buds were formed, (6) plants were crowded before buds were formed, (7) plants were grown close together or with many stems to a plant, causing all growth to be weakened and the vegetative shoots thin, (8) plants were pinched so late that the vegetative shoots had not matured when the temperature was lowered, (9) potting was done so late that the foliage was wilted during the time of bud formation, reducing photosynthesis at that time, (10) pruning was done in the fall or before forcing and removing flower buds.

Hunter (1) in 1950 showed that flowers were initiated at both 50° and 60° F. night temperatures, but that there were more blind shoots at the lower temperature. He also found that defoliation of hydrangeas prior to November 1 was inadvisable in the Columbus, Ohio, area.

Struckmeyer (8) reported that plants with a large foliage area and thick stem diameters grown under proper environmental conditions were receptive to blossom induction.

Stuart (9) in 1951 reported that it was possible to condition hydrangea plants with cold storage in the presence of low light intensity, so that they could be forced considerably earlier in the winter. His studies used the varieties Strafford, Merveille, Engel's White and Drape's Pink. The plants were grown in 6-inch pots under picket shade until August 1. Beginning on August 10, plants were moved at two-week intervals to a 50° F. cold storage room for four weeks. The plants were lighted for 12 hours daily at 60- to 100- footcandles with incandescent filament bulbs. Next the plants were placed in the dark at 40° F. for six weeks. All plants so handled produced good quality blooms and there was no blindness.

Piringer and Stuart (4) working with the varieties Merveille and Engel's White found that flower buds were initiated with photoperiods from 8 to 24 hours daily, at a minimum temperature of 70° F.

Laurie, Kiplinger and Nelson (3) stated that placing hydrangeas outside in full summer sun has often led to the development of blind shoots, because of the failure of the plants to grow satisfactorily, particularly after pinching. This difficulty can be overcome by keeping the plants in the greenhouse until the new shoots have begun to develop, or by placing the plants under lath shade outside. They also reported that late pinching did not actually cause blindness. It was the failure of the plants to develop shoots properly following the pinch that was the cause of the blindness. At least two pairs of good leaves should remain on the stem following the pinch.

Kiplinger and Nelson (2) reported on the effect of temperature on flower bud formation of the variety Merveille in 1960. Flower bud formation was equally satisfactory on plants grown at a minimum temperature of 60° F. in the greenhouse, and on plants grown outside where night temperatures were lower during August, September and October. They found 25 percent blind shoots on plants grown at a 45° F. night temperature. Plants grown at night temperatures of 65° and 70° F. flowered. Defoliation prior to mid-October seriously weakened and in some instances killed the plants.

#### Summary

Although cold may in some instances contribute to blindness of hydrangeas, temperature does not appear to be the primary factor. Many factors enter the picture, but the major objective in encouraging flower bud initiation would appear to be to encourage strong growth with large leaves and thick stems. In addition, the plants should not be defoliated or placed in the dark too early in the fall (prior to flower bud set).

#### References

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