

MODERATOR COLE Our first talk is by Dr. L. J. Enright, Department of Horticulture, University of Maryland, on "Vegetative Propagation of *Mahonia Bealei*." Dr. Enright!

Dr. Enright presented his paper. (Applause)

## VEGETATIVE PROPAGATION OF MAHONIA BEALEI

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Although *Mahonia bealei* can be propagated by softwood cuttings under glass, the percentage of success, the time required for rooting and the short period during which cuttings can be taken, have helped to place this plant on the long list of "difficult" woody ornamentals. The variability of seedlings also adds to the need for a propagation method which would produce strong rooted cuttings in a short period of time. Investigations at the University of Maryland have led to interesting responses by a number of woody plants during the past two years. Because it has been possible to stimulate roots on plants heretofore considered almost too difficult to propagate commercially, it was decided to try several of the techniques and methods on the Leatherleaf mahonia.

Cuttings were taken from mature plants and cut to a length of eight inches. In an earlier test it was discovered that all root development on this plant originated at a node. For this reason, the treated cuttings were wounded at a node, immediately below a node, for one and one half inches below a node, and over an area which included a node and the area one and one half inches below it. The original plan was to slice a thin portion of the bark to induce a wound but the material was so resistant to such treatment that abrasion with a coarse sandpaper block was used for the wounding treatment.

Several chemical root stimulants were used in the investigation but root initiation was brought about only by action of concentrated solutions of indolebutyric acid and water. Solutions of 5,000 parts per million, 10,000 parts per million, and 20,000 parts per million indolebutyric acid were used as ten second dips of the basal portions of the cuttings. After treatment, the cuttings were placed in a sand filled greenhouse bench under a system of intermittent mist. One hundred cuttings were used in each treatment of this investigation. Cuttings were taken on June 15, July 6 and August 10.

Of the cuttings made in June, none rooted in the check or the 5,000 parts per million IBA treatment. In a period of 59 days 70% of those treated with 10,000 parts per million IBA and 97% of those treated with 20,000 parts per million IBA were rooted. Those taken on July 6 did not root in the check, while 2% rooted in the 5,000 parts per million IBA treatment, 74% rooted with 10,000 parts per million IBA, and 100% rooted with 20,000 parts per million IBA treatments. These rooted in 51 days. The cuttings taken in August responded in a similar manner in a period of 52 days. Treated with 5,000 parts per million

IBA they rooted only 1%, the 10,000 parts per million IBA dip induced 66% rooting and the 20,000 parts per million IBA treatment resulted in 99% rooting. None of the August check cuttings rooted. The roots stimulated by the weakest solutions were minute and solitary, while those produced from the intermediate strength dip were one to two inches long and in numbers of ten to fourteen. The most concentrated solutions induced roots two to five inches long in numbers up to twenty six per plant.

It is interesting to note that wounded basal sections did not respond to chemical treatment unless the node had been similarly wounded. If a node was wounded and the area below it was wounded, (but the two areas were not connected), roots were initiated only from the node. On the other hand, if the node was wounded and the basal portion was wounded in the same way, and they were united, roots developed from the top of the node to the bottom of the basal wound. It appears that concentrated solutions of indolebutyric acid may prove to be the answer to the problem of rooting cuttings of *Mahonia bealei* profitably on a commercial basis.

MR. PINNEY, JR.: Dr. Enright, you mentioned a water solution of growth substance. As I understand it, IBA or indolebutyric acid has to be dissolved in ethyl alcohol. Am I mistaken?

DR. ENRIGHT. No, you are correct. You take your powder form of indolebutyric and dissolve in a small portion of ethyl alcohol and bring up to volume with distilled water.

MR. HOOGENDOORN: Will rooting be as good with 2 per cent indolebutyric acid powder?

DR. ENRIGHT: No, that was one of the 200 combinations.

MR. WELLS: Dr. Enright, did you try 2 per cent IBA potassium salt in powder?

DR. ENRIGHT: Dr. Morris suggested it and I tried it. The only response was decay at the basal end of the cutting.

MR. WILLIAM FLEMER III (Princeton Nurseries, Princeton, New Jersey): If that is a true leaf cutting, where does the bud or shoot come from when the plant goes on and grows?

DR. ENRIGHT: The new growth comes from the auxiliary buds.

MR. CARL GRANT WILSON: How far north will this species grow?

DR. ENRIGHT: Mr. Coggeshall just told me it doesn't grow in Boston. I will guess and say I believe it grows as far north as New York.

MR. RAY E. HALWARD (Royal Botanical Gardens, Hamilton, Ontario): We have two plants of *Mahonia Bealei*. They have been alive for three years in Hamilton.

MODERATOR COLE: Thank you, Dr. Enright. The next paper is by Dr. Sidney Waxman, Department of Horticulture, University of Connecticut, on "Effects of Daylength on the Germination of *Sciadopitys verticillata*."

Dr. Waxman presented his paper. (Applause)