

kept moist and free from drafts. By June 1, they are well developed plants with 6-8" top growth.

At that stage our worries come to an end and then the other nurseryman must start thinking of how to get salable plants in the shortest possible time.

* * * *

CHAIRMAN FILLMORE: We thank Mr. Bos very much for his presentation. Time will permit only one question.

MR. FLEMER: Have you had any success with hardwood cuttings placed in the bench in winter?

MR. BOS: No, I have not.

* * * *

CHAIRMAN FILLMORE: Next is a discussion of a polyethylene case for rooting cuttings. This discussion will be presented by Mr. Roger G. Coggeshall of the Arnold Arboretum, whom I regard as one of the rising young men among propagators.

Mr. Coggeshall presented his paper, entitled: Propagation of Difficult Plants in a Plastic Case. (Applause)

Propagation of Difficult Plants in a Plastic Case

ROGER G. COGGESHALL

Arnold Arboretum, Cambridge, Mass.

The method of propagation that I am about to describe is both simple and inexpensive. The whole operation hinges upon the use of the plastic film called polyethylene. This is an air permeable, water impermeable plastic that allows for an exchange of oxygen and carbon dioxide, while at the same time retaining the moisture inside the plastic, thereby keeping the humidity very high.

This same plastic, as you may know, is now being used in a wide variety of ways, from packaging vegetables to balling plants.

Using this plastic that keeps the humidity so high, we built a frame out of one half inch strapping over a section of greenhouse bench. The frame was eight feet wide, eighteen feet long, and fifteen inches high from the surface of the medium.

Over this frame strips of polythene fifty-four inches wide and two thousandths of an inch thick were laid. By running the strips across the width of the case we were able to enclose it nicely with four sheets. An overlap of three inches was left on each sheet so that the case would be completely sealed.

Inside the case there were three different mediums: plain sharp sand; sand and Canadian peat mixed 50-50, and sand, peat and Styrofoam mixed by equal volume. The latter material, Styrofoam, an expanded plastic, was added to the medium to give better aeration.

An electric heating cable, controlled by a thermostat, ran through the bottom of the medium. The thermostat was set to maintain a 76° temperature.

For an example of the procedure used in rooting cuttings I have chosen the results obtained with *Cotinus coggygria purpureus*.

Cuttings were taken the 18th of June and handled the following way: first the soft tips were removed. Then the cuttings were separated into four lots. The 10 cuttings making up Lot 1 were dipped into a talc powder containing 2% indole butyric acid (IBA). In Lot 2, ten cuttings were dipped into a 1% IBA-Powder. In Lot 3, ten cuttings were treated with Hormodin No. 3, and Lot 4 contained ten untreated cuttings.

The cuttings were then placed inside the plastic tent in the medium of sharp sand. They were watered in well with a hose, but the sand was not pounded around them.

Here they remained until they rooted with only the following care: the whole case was shaded with target cloth from about 10:00 A.M. until 5:00 P.M. on hot days. There were no daily syringings done inside the case and I can truthfully say it went untended inside for a week at a time. However, the medium starts to dry out after that time.

This is the main value of the plastic. Once the cuttings are well watered in and the medium good and moist, the case does not need to be attended to daily, except for shading. This does not mean that you should not take an occasional look at the cuttings, but as far as time consuming labor goes, it is greatly reduced.

The cuttings were lifted the 30th of June with the following results: 7 out of 10 had rooted with the 2% IBA, 3 out of 10 with 1%, 7 out of 10 with the Hormodin 3, and none were rooted in the control lot. The unrooted cuttings in the 1% lot and the control lot were restuck.

The rooted cuttings were potted into 2½" standard pots, placed on the greenhouse bench, covered completely with a sheet of polythene film and shaded. They remained in this condition, with only the shade being removed, for about 10 days. At the end of this time the plastic was removed a little each day. By using this method to harden off the rooted cuttings we had a very good survival percentage, not just only with *Cotinus*, but with all other cuttings as well.

The two remaining lots of cuttings were lifted the 10th of July. By this time five more had rooted of the 1% lot to make a total of 8 out of 10, and in the control lot, where none were rooted on June 30th, 8 were now rooted.

Out of the four treatments the cuttings treated with 1% IBA and Hormodin 3 had the best root systems. The cuttings, treated with 2% IBA, were overdosed and had rooted too heavily, whereas, the cuttings in the control lot, even though they had rooted, rooted out on only one side of the cutting giving a one-sided root system.

These are the advantages of the plastic case. First, and foremost, it is a very economical unit to erect and maintain. Second, by having a plastic that maintains the humidity so high, cuttings can be taken a lot earlier than usual, contributing more than anything else, I think, to the en-

couraging results that have been obtained. And third, the amount of time required to operate such a unit is small.

Thank you, and if there are any questions I will do my best to answer them.

* * * *

MR. MARTIN VAN HOF: You said the cuttings were soft. Were they also thin?

MR. COGGESHALL: Yes, they were thin.

MR. VAN HOF: Why is it we have failed with soft, thin cuttings which were taken in August during the third flush of growth? They were treated with hormones, but all died.

MR. COGGESHALL: I think the reason is the difference in humidity. I have tried to root them in an open case and in a regular cutting case with a sash over them. In the polyethylene plastic case, the humidity is held so high that the cuttings don't get a chance to wilt.

* * * *

CHAIRMAN FILLMORE: We shall now have a discussion of the propagation of *Ilex cornuta Burfordi* as practiced by the Verhalen Nursery Company, Scottsville, Texas, and presented by Mr. John B. Roller. Mr. Roller is making his second appearance at our meeting. We certainly welcome him and we are glad to have members who will come so far to attend the meetings, especially when they have a contribution such as Mr. Roller will now present to us.

Mr. Roller presented his paper, entitled: Propagation of *Ilex cornuta Burfordi*. (Applause)

Propagation of *Ilex cornuta Burfordi*

JOHN B. ROLLER

Verhalen Nursery Co., Scottsville, Texas

Our cuttings are taken from stock plantings that are to be grown for a period of five years, or from plants in containers. Our container plants, of course, are sold after one growing season so we use only cuttings from young vigorous stock. We have found that young plants give us faster rooting with higher percentage striking roots.

As to timing, our cuttings are taken after each period of growth has hardened without regard to calendar dates. The best time to take them varies from a few days to weeks. We normally get two periods of growth on holly but in good seasons we can expect three. If we have an early spring our first cutting comes in June followed by cuttings in August and October. With a late spring we usually cut about July and September.

The type of cutting taken is as hard as can be had on early cuttings