

admitted more light, the plant headed right for that opening. After perhaps a week of what you would call hardening, we pressed in the remaining bottom portion of the malted milk cup which left what was in effect a tube inserted around these plants. Any time after that we lifted the rest of the tube off the plant and once again we had the plant established in a can.

The growth rate this first season I would estimate as nearly double that which you would expect when the same individual is propagated in an outdoor bed, lifted, bedded, and handled in the usual manner. Therefore, once again, one of the advantages of this technique is the increased growth rate one obtains by not disturbing the plant.

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MODERATOR COLE: If there are no questions, we will continue our discussion of container propagation by calling on Dr. Ken Reisch, of the Department of Horticulture, Ohio State University.

Dr. Reisch presented his talk on "Hardwood Cutting Propagation in Containers." (Applause)

HARDWOOD CUTTING PROPAGATION IN CONTAINERS

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I believe Mr. Hill explained the purpose for doing this type of propagation very thoroughly. Here again we are interested in producing plants with the minimum amount of handling by propagating directly in the container in which they will be finally marketed. Our tests on which I will report were conducted during the Spring of 1956 and 1957

Cutting wood was collected in the usual manner in January and February. Eight inch cuttings were then made, stored at 70 degrees for roughly two weeks, and then held at 40 degrees until they were stuck directly in the containers in March and April. Multiples of one through four cuttings were used in these experiments. The containers were then put right out in the nursery without any protection. The cuttings rooted and produced saleable 15 to 18 inch plants that same year.

The first year we propagated *Weigela*, *Forsythia*, and *Philadelphus* by this technique. Although I do not have the percentages I would say we had 75 or 80 per cent stands by this type of propagation. In '57 we did the same thing, with the same plants, plus European privet, and had similar results. We found about three cuttings to a container was enough to insure a stand. When we had three, in practically every case at least one cutting survived.

We conducted one other test this past year in which we used rooted hardwood cuttings. These were propagated in the usual manner in the greenhouse. After they had rooted, we planted them directly

into cans in March and April and put those outside without any protection. Our results were good.

MODERATOR COLE: Thank you. Are there any questions?

MR. HOOGENDOORN: What do you intend to do with these one year old plants now, cut them back or grow them for another year?

DR. REISCH: I wish I could answer your question. I hope we can sell them next spring although they may have to be cut back to promote branching and then grown for another year.

MR. HOOGENDOORN: It seems to me you would have to cut the plants back next spring and let them sit in there another year. This is the impractical part and the place where your trouble is going to come.

MR. WELLS: What is the growing or propagating mixture used?

DR. REISCH: One part soil, one part sand and one part peat were the components of the mixture.

MR. D. D. QUINN (Willo'dell Nursery, Ashland, Ohio): Have they usually been fed with liquid fertilizers?

DR. REISCH: Yes, our fertilizers have been primarily liquid this season. We have some studies under way in which they have been fertilized every two weeks.

MR. JACK SIEBENTHALER (The Siebenthaler Co., Dayton, Ohio): Suppose that you took the hardwoods earlier in the year and possibly callused them, put them in the can and put the can in a warm area, such as the greenhouse, do you suppose that you would get initial root growth started much earlier? What would you imagine would be the result on saleability that first year?

DR. REISCH: In the study we ran last year we did protect some of them. There again, however, you get into added cost of handling. Whether or not it is practical is a very interesting question.

MR. SIEBENTHALER: They would have to be selected, high value plants.

DR. REISCH: I seriously doubt if you could get the money out of *Forsythia*. The problem of forcing comes up in the early flowering plants. For those that have to grow a couple of months before flowering such as *Abelia*, it will be an ideal situation.

MODERATOR COLE: The next paper is another one just along this line. Harvey Templeton will discuss the propagation and overwintering problems of viburnums.

Mr. Harvey M. Templeton, Jr., Phytotektor, Winchester, Tennessee, presented his paper. (Applause)

OVERWINTERING ROOTED CUTTINGS OF VIBURNUM

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As you know, propagation of most viburnums from cuttings is relatively easy and especially so from softwood cuttings under mist, although there is at least one notable exception. Since they are easy to