

percentage is not particularly good, we feel that the over-all quality of the finished plants is of much more importance, that the first year field survival will be better, and customer satisfaction will be greater. It would not be difficult to improve our rooting ratio by using inferior cuttings. However, we prefer the higher profit record to the higher rooting record.

MODERATOR CURTIS: Our next speaker is from Marion, Oregon, which is right close to Salem. He is doing an exceptionally fine job with azaleas and rhododendrons. Most of his material, I think, is sold by mail order. He has a number of new varieties. Here is Mr. Robert Comerford, who will speak to us on Exbury azaleas.

EXBURY AZALEA PROPAGATION

ROBERT COMERFORD

Comerfords

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I joined this organization to learn but after six years as a member here I am up front, and 10 minutes is a long time with nothing new to say. I shall have to take a review approach. But, the more I worked on this topic the more I felt it was needed.

I now have a specialized mail-order business selling rhododendrons and azaleas directly to the home owner at retail. Rhododendrons root well in the fall and winter and Exbury azaleas root well in spring and summer, so I can keep my benches full the year around. I have no sure-fire rooting method that has worked well three years in a row.

I have tried almost every new idea in deciduous azalea propagation through the years. I try to grow about 80 different deciduous azaleas, of which some 60 are named Exbury azaleas. A few are rather easy to propagate but, as usual, most of the best yellows, reds, and some pinks are "bearcats" to propagate.

Using a glass-house, I have tried everything from a plastic tent, plastic tent plus mist, mist only, outside mist, heating cables, no cables, coarse sand, fine sand, fine sand and peat, fine sand and peat plus Sponge Rok, sand and Sponge Rok, etc. Then Hormodin #1 and #2, Cutstart 1/2X-X-XX-XXX, Jiffy Grow #2, and none at all. I have used liquid fertilizer injections into the mist lines. I have tried lights during rooting. I have waited stubbornly for nine months to see if the cuttings would root in spite of me.

I have yet to root the deciduous azaleas in a commercially acceptable percentage by any method three years in a row. In other words I dare not stick my head out in the wholesale arena. I consider no one method the best as yet. I have tried the winter forcing — then rooting — technique mentioned

last fall in the Plant Propagators' Proceedings but I fell flat on my face. Perhaps because, as a trial, I converted part of a cool house to heating and forcing, the warm air heat I had available dried out the stock plants too much.

With summer propagation a "Fail-Safe" mist system is needed. This summer my main fuse box went out for about ½ hour and I got tip burn on everything. However, I seem to have about 50% rooting so far this year. A competitor friend says his percentage is quite high this year. He uses rows of modified Nearing frames. He also took his cuttings very late in June. Our season was extremely abnormal this spring — very late. Last year I took cuttings April 7th but this year I took them May 10th and later.

Withholding fertilizers from stock plants seems to help but I can't see maintaining a large planting of half-starved stock plants as a sound commercial venture. If I had to do this I feel I should go back to layering. In the current issue of *The Plant Propagator*, Vol. 12, No. 4, the article on "Root Propagation of Native Azaleas", by Fred Galle makes one get excited. Of course one has to lift the plants, etc. but 100% rooting is quoted, with 70% as sure-fire. I am sure this is possible but the exact way to do it on a large scale must still be worked out.

I feel one of the main problem of propagation is the broad geographic origin of the plants used for today's azalea hybrids. Here is a brief history. About 1730, two American azalea species were introduced into England — the swamp honeysuckle — *Rhododendron viscosum*, and the pinxterbloom — *R. nudiflorum* followed in 1800 by the flame azaleas — *R. calendulaceum* and the oconee — *R. speciosum*. This quartet of American species was then combined with the East Europe plant of the Pontic apalas — *R. luteum* (syn, *R. flavum*). This group formed the Ghent azaleas introduced in 1825. Apparently, about this same time, similar species were used by others, but thought to be included are the Chinese form of *R. molle* and our native sweet *R. arborescens*. About 1850, Waterer of Knaphill Nursery, England, began breeding, using forms of the Chinese *R. molle* and *R. calendulaceum* with the Ghent Hybrids and later with the North American, *R. arborescens* and our West Coast native *R. occidentale*. We now have a total of eight species, plus hybrids, in the development of the Knaphills and a race of azaleas with untold possibilities genetically — and the need of an IBM computer to determine the parentage. This is where Lionel de Rothschild started. His estate was called Exbury, hence the name given to his group of azalea hybrids. His breeding program lasted about 40 years. He could afford and did get the better forms, made hundreds of crosses, and raised thousands of seedlings. So, at this point, we now have Azaleas with much larger flowers (some in trusses or clusters), hardiness, fragrance and an extended blooming season. It is very dynamic group but ex-

tremely difficult to propagate. Everytime I get over-confident and think I have the answer, I all flat n my face.

In conclusion, here is what I think works best for me:

1. Take cuttings as early in the year as possible — April if you can — and so soft they are almost limp. Take them very early in the morning and quit by 10 A.M. Water the stock plants the day before.
2. Dip the cuttings in Jiffy Grow #2, diluted 20 to 1. Do not wound but water in well.
3. For a rooting medium use $\frac{2}{3}$ coarse sand and $\frac{1}{3}$ Sponge Rok, medium grade.
4. Use a plastic tent about 3 ft. above the bench, primarily as a "Fail-Safe" system in case the mist goes off.
5. Mist lines: Use your own judgement as to mist interval. The leaves are coarse and hairy and with this type of leaf there is likely to be more leaching through the leaves.
6. I put heating cables down but don't use them until the nights become cool.
7. At about 10 weeks I give a foliar spray of Jiffy Grow #2 at 25:1 dilution.
8. If the cuttings are very slow to root, inject liquid fertilizer into the mist lines for a day. I use Liquinox 10-10-5 because of it's detergent type action for wetting the coarse leaves.
9. When you think you can't wait any longer, transplant the cuttings to a cool house for the winter then move the plants out to full sun the following spring.

I now stick 10,000 cuttings a year and have had 70% rooting as my best effort. I believe that someday these will be rooted by the hundreds of thousands. It has been said that the rhododendron is the King of shrubs. The Exbury azaleas then are the aristocracy.

MODERATOR CURTIS: The next topic on the program concerns factors influencing rooting of rhododendron cuttings. Mr. Johnson, our next speaker, has a B. S. degree from Colorado State University. In 1964 he spent a year in Copenhagen, Denmark, and then returned to Oregon State University in 1965. Mr. Johnson.

LEAF AND APICAL BUD REMOVAL AS A MEANS OF STUDYING THE INFLUENCE OF FLOWERING ON ROOTING IN RHODODENDRON

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Both internal and external factors are important in adventitious root formation. We are interested in the endogenous physiological factors, particularly the influence of flower initiation on rooting. Although flowers are viewed mor-