

work there 24 hours a day. She takes care of the place when Ed is gone which must be a lot of the time. But anyway, she is real fortunate to be able to work there with Ed. She is going to talk on the use of penetrants and what they are doing with them. Louise Zachry:²

BRUCE BRIGGS: Thank you very much, Louise. Our next speaker here is from Hazel Dell Gardens, Canby, Oregon. We have Myrtle Fish, who will talk on supplemental hormone applications. Myrtle:

SUPPLEMENTAL HORMONE APPLICATIONS

MYRTLE FISH

*Hazel Dell Garden Nursery
Canby, Oregon*

I have been asked to tell of my experiences in propagation and what I have learned through the years. I have had very good teachers in starting out. Ray and Irene Burden were very patient as I was learning. It has been a lot of fun and hard work. I have found, though, that there is more to propagation than just powdering the cuttings and sticking them. Along with bottom heat in the bench and watering, it all makes for good rooting; at least that is what I keep telling myself. We do have our losses, which makes us try harder the next year. Most cuttings root quite readily, but we do have some stubborn ones, at least they have been for me. We do a lot of experimenting with Jiffy Grow and the combination of Jiffy Grow and Hormodin powder.

Camellias usually root quite readily, although there are a few that are quite hard to root, as we root between 80 and 90 different varieties; there are always a few that are either slow to root or will not root at all. After putting them in with No. 3 Hormodin powder, we let them set for six weeks, then spray with a light application of Jiffy Grow 1:5; too heavy an application will retard the root growth.

²Louise Zachry discussed the use of penetrants in stimulating hormone activity.

In this case, the roots come out about $\frac{1}{4}$ to $\frac{1}{2}$ inch long and are very thick looking. They do not grow longer, they just seem to sit there; so a light application is very important. There are some varieties that always root quite readily so I usually just skip over them. The very hard to root varieties are put in with No. 3 Hormodin and let set until they start callusing, then we pull them up, remove the callus and put them back with No. 3 Hormodin again. The second time they root excellently. I have tried using a solution of Jiffy Grow, but haven't found one that produces better results. I do believe one should do his own experimenting before trying this solution on a large scale.

We have experimented with *Arbutus unedo*, as it has been a problem to root. We found that by taking the soft tip cuttings in the spring and putting them in with No. 3 Hormodin powder, under mist, they have done very well. Another hard-to-root plant is Parney cotoneaster. I use Jiffy Grow, 1:5, on these cuttings. This seems to do a pretty good job and we get many more roots.

By using mist spray in the summer time, we have found that many cuttings, which we had been rooting in the fall and winter, do just as well and sometimes better. When starting out using mist, we used the electronic leaf type, but found we were getting too much chemical build-up on the bars from the water, so we switched to a time clock, which works very well.

I was having trouble rooting kinnickinnick, not getting a high enough percentage; another propagator told me how he was rooting it. Now we use a Jiffy Grow solution of 1:7 and stick into bands with a medium of $\frac{2}{3}$ sand and $\frac{1}{3}$ peat. We stick two cuttings to a band. When rooted, they are ready to sell. This way they do not have a set-back as they do when they are taken up and potted. This saves a lot of work and time which is most important in greenhouse work, as every one knows. Pachysandra, which is easy to root, is another ground cover we put in pots to root, saving the time to pot them.

Each year the rooting process of the different cuttings is different; one never knows just how things will turn out. I can say I am certainly surprised at the results. That is what keeps things interesting, when propagating. There are so many things to take into consideration when trying to decide why this or that cutting didn't root. It could be the condition of the plant the cuttings were taken from, such as a winter injury compared to a good healthy plant. There are numerous things to watch for and then one doesn't always know the answer.

Magnolias are one of my favorites, when it comes to rooting. They are not hard to root, except a few varieties. The deciduous ones are put in under mist in the summer time with No. 3 Hormodin powder. It is very important when taking the cuttings, not to let the tips dry out. We keep them damp at all times. Evergreen magnolias

are started in November or December. For the few varieties of deciduous magnolias that do not root, we graft. This is very interesting work and is done in February. We use rooted cuttings as understock, as this gives a superior root development later.

Viburnum davidii cuttings are easy to root with No. 2 Hormodin powder, but have tried Jiffy Grow 1:9 solution and found that the roots are much heavier and the cuttings also root quicker.

Photina glabra and *P. x fraseri* have been quite a problem in the past as they are hard to root; usually we could root only 1/3 to 1/2 the first time, then we restrike them. I used No. 3 Hormodin powder and a solution of 1:5 Jiffy Grow and sprayed the leaves, hoping this would cause rooting; it showed some results but not enough to be encouraging. We decided then, to use a combination of different solutions of Jiffy Grow and Hormodin powder. I used four different solutions, straight Jiffy Grow — Jiffy Grow 1:5 — Jiffy Grow 1:9 and No. 3 Hormodin powder — and Jiffy Grow 1:7 and No. 2 Hormodin powder. The first and second solutions did not help, but the third solution (Jiffy Grow 1:9 with No. 3 powder) caused rooting with a good heavy root system. This took approximately four weeks, whereas with No. 3 powder alone, the cuttings were in the bench for eight weeks with nothing but large calluses and very few roots. On that experiment, we used 1,000 cuttings each of *P. glabra* and *P. x fraseri*; out of the *P. x fraseri* we potted 836 and the *P. glabra*, 902. We were quite happy with the results. Whether this will work for us every year remains to be seen.

In one of our propagation houses, we use electric cables, so the heat is distributed evenly throughout the bench; the other house is heated with hot water, so one end of the bench is cooler than the other. This makes a difference with some cuttings as to the strength of powder to use. The cooler bench will take a stronger powder, so when putting in juniper cuttings I must watch the hardness of the cutting as well as where they are going to be placed. We use all three strengths of Hormodin on juniper, depending on the cutting and where it goes in the bench.

BRUCE BRIGGS: Thank you very much, Myrtle. I was delighted to hear that you also received a response to the amount of hormone in relation to the temperature. We ran into this a few years ago. In the morning it's cold, possibly 60° F and in the afternoon the hormone liquids you're dipping into might be 80° F. There is a big difference in the temperature of the liquids. So it is a big factor.

The next speaker we have works at Bill Curtis' Nursery — Linda Rungay. Bill has been good enough to let her go to many short

courses and she has worked up through the channels too. She went to work with Bill and actually I'm not sure who is the boss there now. Anyway, Linda:

HORMONE POWDER MODIFICATION

LINDA RUMGAY

Wil-Chris Acres

Sherwood, Oregon 97140

The topic, "Hormone Powder Modification" includes the very effective "H.P.M. Formula" which is the basic point for the information that is to be presented. At Wil-Chris Acres we have been using the following formula for rooting cuttings:

Hormodin No. 3	— 10 ounces
Benlate	— 1 ounce
Indolebutyric acid	— 5 grams (2 heaping tsp.)

These component parts are put together and shaken for 20 minutes to insure thorough mixing. For absolute mixing that has been used effectively place the ingredients in a container that can be put on a paint shaker. Expansion is involved in this blending, however, so be prepared with extra space in the container for fluffing. It is understood that Hormodin No. 3 does have a high IBA level already but our "H.P.M. Formula" gives yet another boost of indolebutyric acid.

Below is a summary of our research results:

I. Deciduous plants, such as *Euonymus alatus* 'Compacta'

- A. In 1970, out of a flat of 150 cuttings, 75 rooted giving 50% rooting.
- B. In 1971, H.P.M. was used; out of a flat of 150, 135 rooted, giving 90% rooting.
- C. We have tried cuttings also from such plants as quince and the deciduous magnolias, *M. stellata*, *M. x soulangeana*, *M. liliflora* 'Nigra', *M. s.* 'Rubra', and *M. s.* 'Rustica Rubra'.

II. Rhododendrons.

- A. Rhododendrons treated with H.P.M. showed a better root system.
- B. We root the hardier rhododendrons — many varieties from A to Z, 'America' to 'Nova Zembla'.