them off the node, leaving two base rings on the node This is where the next lot of cuttings came from — in many cases two cuttings were obtained from each node. This process was repeated each time the cuttings were 3″ to 4″ long. I have been using the same trays of node cuttings for two years, still without disease.

All cuttings taken from the nodes are rooted individually in 2″ tubes in 50% perlite and 50% peat moss; from here they are potted into a 4″ pot and then into a 7″ pot, being sold when approximately 1 ft high.

All stock plants and cuttings, etc are sprayed every 14 days for fungus and insects. I use the following fungicides and insecticides.

Captan, 83% wettable powder at the rate of 125 grams per 100 litres water for fungus, also Rovral at the rate of 100 grams to 100 litres water, Matical at the rate of 1½ ozs to 9 gallons water for mealy bug, and malathion 50 for aphis, mixing 5 mls in 3 litres water

By the method outlined above, a large area of stock plants is not required. Sixteen trays of nodes are used to produce 1200 plants yearly.

PROPAGATION OF *DAPHNE ODORA*

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Kenny Lane Nurseries specialise in the wholesale production of rhododendrons, camellias, azaleas, conifers, and daphnes. Approximately 10% of the total cutting production is in daphnes This represents an annual production of 50,000 daphne cuttings per year. Of these 20,000 are grown-on at the nursery and the remainder are distributed to other wholesalers

The stock plants are grown in a red clay loam soil at the nursery at a spacing of 1 foot between the rows and the plants. This is now thought to be inadequate; ideally the spacing should be 2 ft in each case. The stock plants are fertilized each spring with Nitrophoska "slow release" (15·4·12) which is broadcast around the plants at the rate of 1 kg per 4 square metres. In summer the plants are given a further dressing of sodium nitrate at the same rate.

The first cuttings are normally taken at the beginning of December (early summer) according to their hardness. Most of

the cuttings are taken from the tips of the shoot with at least 6 nodes per cutting Stem cuttings are also used if there is enough growth.

The cuttings are taken in the morning and kept moist all of the time, either in plastic bags or open cardboard cartons which are frequently watered. The latter method is preferred. When sufficient cuttings have been taken for the day they are all removed to the propagation shed.

The first procedure is to cut the cuttings into lengths and remove the basal leaves so that 4 to 6 leaves remain The cuttings are then completely immersed in a solution of Previcur at the rate of 1½ mls per litre of water. A slice is next made at the base of each cutting removing a strip, approximately ½ inch in length, of both bark and cambium so that the pith is exposed. The cuttings are then dipped (quick dip) in a mixture of NAA (20 ppm) and Previcur 1.5 ml/litre. The NAA is freshly made up every day but the Previcur can be used for 2 days.

Immediately after dipping, the cuttings are inserted into a medium consisting of 2 parts sand, 1 part fine polystyrene, and 1 part perlite which is contained in bio-degradable "Net Pots", held in specially designed polystyrene trays These pots are 5 cm deep and the cuttings are inserted to depth of about 2.5 cm.

When full, the trays are removed to a heavily whitewashed, well ventilated glasshouse (380 sq. metres in area) They are placed together at ground level on about 5 cm of sand which is treated once a month with a drench of Benlate (400 g) and Previcur (1 litre) per 540 litres of water. No bottom heat is necessary but automatic misting, controlled by a moisture senser, is used until the cuttings have callused. This takes about 2 to 3 weeks. The automatic mist is then switched off and the medium is kept moist by manual control because excess moisture at this stage can lead to decay No fertilizer is used until after the roots are formed

After 2 months the cuttings are sorted. Ideally, those showing root growth are immediately potted in 125 cm pots and removed to a polyhouse. If this is not possible then the trays are removed to another polyhouse where they are placed on a layer of coarse river sand In this house the plants are liquid fed with Aquasol once or twice a fortnight. Under these conditions, there is some root growth into the sand but because of the open, loose nature of this material, the trays can still be lifted with a minimum of root damage.

The growing-on medium consists of a mixture of 2 parts pine bark, 1 part scoria, and 1 part brown coal (all media in

grades of 6 mm and less). The plants are fed with a top dressing of Nutricote and regular liquid dressings of Aquasol The bulk of the plants are sold in the spring some 9 to 10 months after the cuttings were first taken.

EFFECT OF AUXIN COMBINATIONS ON ROOTING *PERSOONIA CHAMAEPITYS* AND *P. PINIFOLIA* CUTTINGS

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Abstract. The effect of indolebutyric acid (IBA) alone and in combination with naphthaleneacetic acid (NAA) and/or 2, 4 dichlorophenoxyacetic acid (2,4-D) on the rooting of *P chamaepitys* and *P pinifolia* was investigated The highest percentage rooting was obtained following treatment with a combination of all three auxins Retreatment of the cuttings with auxin *after a period of time under mist further stimulated rooting A possible* explanation for the findings is presented

A basic system for root initiation and development was proposed more than 25 years ago (1). In the intervening 25 years much evidence has been gathered in its support and it is on the verge of being proved correct. The endogenous auxin indoleacetic acid (IAA) was identified in 1934 and was soon being added exogenously to promote the rooting of cutting. Synthetic auxins, notably indolebutyric acid (IBA) and naphthaleneacetic acid (NAA), were soon developed and because of their greater stability and mobility were found to be of greater commercial use. Generally IBA has proved the more effective auxin. With some species, however, NAA has proven superior to IBA in promoting rooting while with a few species a combination of IBA and NAA has been shown to be superior to either auxin alone These findings suggest that the two hormones may not have the same site of action.

Furthermore, 3-methyleneoxindole, formed by the oxidation of IAA (6) has been shown to be at least 10-fold more effective than IAA as a plant auxin (9). Subsequently Haissig (4) suggested 3 methyleneoxindole rather than IAA to be the compound that conjugates with a phenolic cofactor to form an auxin cofactor complex responsible for triggering root initiation (Figure 1). However, 3-methyleneoxindole can be inactivated by reduction to 3-methyloxindole by a group of enzymes, 3 methyleneoxindole reductases, which show differential sensitivity to the synthetic auxins NAA and 2,4-dichlorophenoxyacetic acid (2,4-D) (8). With two of the reductases, which could be separated completely by column chromatography, one was found to be strongly inhibited by NAA,