

The final hardening-off can be done outside in a cold frame and while the shift is being done the young grafts can have their snags removed by the use of a pair of sharp secateurs and the wound waxed over.

Shading will probably have to continue according to the weather, but every effort must be made to ensure that the lights are removed on dull overcast days.

Until the dangers of frosts are over the lights should be placed back on at night for their protection. When the danger of frost is over they should be planted out in well prepared soil and staked.

A MEMBER: Do you still use grafting wax on your grafts?

PETE DUMMER: No. By covering the entire bench with a kind of polythene tent this is not necessary but you must be careful with the air in the beginning.

### **PROPAGATION OF SOFTWOOD SHRUB CUTTINGS FOR JIFFY-POTTED LINING OUT STOCK**

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*Requirements:—*

Preferably a glasshouse, with benches fitted with soil-warming and overhead mist. Alternatively, a range of double-glazed cold frames may be used, either on their own, or in conjunction with the glasshouse.

A ready available supply of potting compost, either "John Innes", "Levington", or the "U. C. Soilless Composts".

I use "U. C. Mix D", to which is added slightly more lime for the general line of shrubs and  $\frac{1}{4}$  in. shingle at a ratio of 1 part shingle to 3 parts U.C. mix. A medium grade of sphagnum peat is used throughout.

The jiffy pot used is No. 425, size  $2\frac{1}{2}$  ins. round x 3 ins. deep, the extra depth is an asset to shrub production.

Last but not least, a good supply of cutting material, which alas, is not readily available on most nurseries. It is a good idea and I feel, a must, if one is contemplating producing large numbers of shrubs in variety to have a "Stock Block" planted in the vicinity of the greenhouse or frameyard, with the required number of plants of each variety. This is an assured way of keeping the varieties true to type and nature. All too often, one finds nurserymen and propagators taking cuttings from young plants lined out in the field, without knowing if they are true to variety, resulting in mixed stock. Also, if a large quantity of cuttings are taken of a certain variety, the plants are rendered unsaleable for that season.

*Propagation:—*

Cuttings of the popular shrubs, e.g. Forsythia, Deutzia, Spiraea, Philadelphus, Hypericum, Weigelia, Kerria, Leyces-

teria, to name a few, may be taken from the first week in June, depending on weather conditions and growth rate.

Selected growing tips of the current season's wood, about 6 - 8 ins. long, are removed. These should not be too sappy, nor too hard. The lower 2 ins. of the cutting stem is stripped of leaves and trimmed to a node.

The growing tip is removed and in varieties with a large leaf area, the leaf may be cut by up to half if necessary. This tends to reduce transpiration loss in the cutting and also, you can get more cuttings per square foot of bench. The lower end of the cutting is then dipped in a root promoting hormone and stuck in the propagating bench.

The rooting medium should be a coarse grade of washed river sand. After the cuttings are inserted, they are well watered in with a hose and the mist turned on. This should be intermittent, controlled by an electronic leaf.

It is better if the bench heating has been turned on to pre-heat the rooting medium, to an optimum temperature of 68°F, prior to insertion. The glasshouse should have a light shading material applied.

In addition to the mist it is advisable to hand water the cuttings two or three times weekly, as you often get dry patches of cuttings, which the mist hasn't reached, and these will not have rooted with the remainder of the cuttings if left dry.

#### *Weaning:—*

Assuming the greenhouse is filled by 2nd or 3rd week of June, the process of weaning can commence approximately 10 days after the first cuttings were inserted.

The first stage of weaning by hand is to shut the mist off at night and gradually shut it off earlier at night and turn it on later in the morning, until finally the mist is off completely. This takes about another 10 days to achieve at which time the bottom heat is also shut off completely. Full ventilation is given at this stage.

#### *Potting:—*

The cuttings are dug from the bench with a trowel and potted into 2½ x 3 ins. peat pots. They are then plunged into the same potting mixture in prepared sleeper beds, or frames. After a good watering, they are shaded by means of lath shading and if the weather is sunny, an overhead sprinkling 2 or 3 times a day is beneficial, for a few days, until the cuttings become established.

After 2 or 3 weeks the shading may be removed and the cuttings allowed to develop naturally. An occasional liquid feed is given at fortnightly intervals, until the end of September, when all feeding should cease. After the first frost in October, or early November, the lath shading is replaced for the winter. This serves as an extra protection for the young plants, against the worst of the elements. In spring, remove the shading as soon as all danger of hard, prolonged frost has



gone. If this shading is left on too long in spring, it has the tendency of delaying new growth of any plants under it. Once the shading is off and the plants are growing nicely, liquid feeding can be resumed at 10/14 day intervals.

Planting can commence any time after mid-April, until end of May, or even early June. It is usual for the nursery-men to plant their "bare-root" stock first and leave the jiffy-potted liners until last.

It is most important, from the initial potting stage, to planting, that the peat pots are not allowed to dry out as this will hinder the formation of roots and result in a stunted plant. Almost certainly, just prior to planting, each batch of potted liners should be given a thorough soaking, preferably the night before and once again in the morning.

When planting, make sure the peat pot is buried below soil level, as any part of the peat pot which is exposed to the weather will act as a "wick" and even though the surrounding soil looks wet, the roots of the plants will suffer from dryness. I have had excellent results from jiffy-potted liners, even when planted during a drought in May, without irrigation, whereas the bare root stock planted one month earlier, had succumbed through lack of moisture. The potted liners continue to grow without check and result in a heavier and quicker maturing plant, well worth the extra effort.

I hope to continue the series with further articles on jiffy-potted Conifers, bed raised Rhododendrons and Azaleas and "Long Tom" potted shrubs, showing how the greenhouse propagating benches can be utilised for the full 12 months.

### **'TAKING HARDWOOD CUTTINGS'**

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For those subjects which will respond, the propagation of plants from hardwood cuttings is undoubtedly the cheapest and most effective system of production. But the technique depends on a satisfactory level of productivity, otherwise resources are wasted by having to bulk up by other propagation systems. The object of this paper is to show how a technique can be developed for taking hardwood cuttings so that maximum productivity is achieved — for every cutting made and inserted represents expenditure and it is therefore important that the highest possible number regenerate in order to reduce costs to a minimum per liner produced. With 'easy' subjects this usually presents no problem but it is with those subjects which show only variable or marginal success that attention to detail can produce an economic system.

To do this it is necessary to look at all the factors affecting the regeneration of plants from hardwood cuttings and by