

must be fully understood. It is a plant that will not tolerate standard production techniques, i.e. standard propagation and potting composts, propagation procedures, and generally hard handling. *Garrya elliptica* will not tolerate root disturbance when actively growing, or high fertility.

Once the plant is established, it will grow away vigorously and, as long as the procedures described are adhered to, a profitable plant can be produced with minimum losses.

## CLIMBERS — SOME ASPECTS OF OUR PRODUCTION

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We are a small family firm growing a range of plants, but specialising in clematis and climbing plants. We grow 135 species and cultivars of *Clematis* and between 70 and 80 cultivars of other climbing plants, as well as many climbing roses and wall shrubs. Clematis are sold as bare-root liners, 7 cm pot liners, and 4 ft. caned plants.

**Propagation Facilities.** We have one 65 × 14 ft single skinned polytunnel, covered with white polythene. This has two 6 ft beds at ground level with a centre pathway. The beds are insulated with 2 in thick polystyrene wrapped in polythene, with 3 to 4 in of pea grit underneath for drainage. This is covered with a 3 in layer of durite sand beneath which there are five electric heating cables, each controlled by Camplex probe thermostats, giving a bottom heat of 68-70°F. We used to have a hand operated mist line, but now find it more convenient to use a fine sprayer on the end of a hosepipe. As the light intensity increases we cover the tunnel with a 50% shade material.

### **Propagation Methods.**

1) *Seed* — We raise only a few plants by seed: *Billardeira longiflora*, *Eccremocarpus scaber*, and the wall shrub, *Piptanthus laburnifolius*. Seed is collected from stock plants and sown in February-March in standard 2 in deep seed trays. They are pricked out into 7 cm pots and then potted on, after cutting back, into final pots.

2) *Grafting* — We do some grafting, mainly *Wisteria sinensis* and *W. floribunda* cultivars. We have established neither good stock plants nor surplus young plants and therefore find it difficult to get enough good scion wood. We still buy-in one year grafts and use their tops for scion material. Grafting is

done in February, using a side graft and binding with ½" polythene tape. These grafts are then plunged into peat in deep trays and placed in the propagation tunnel. When callusing commences, but before too much movement into growth, they are potted into 3 or 4 litre pots and caned. These are placed in an unheated closed tunnel. As growth progresses they are tied into a cane and the polythene tape is undone. They are stopped when they reach the top of the 4 ft cane, and generally produce enough good strong shoots to overwinter well. Thin-stemmed plants are cut back in the spring and grown on for sales later.

3) *Cuttings*. Most of our propagation is from leaf-bud cuttings, single or double, depending on the subject. Clematis is our largest crop; we take 100,000 cuttings between the end of April and the end of June. The following procedures, which apply particularly to clematis will also apply to the majority of our other climbing plants.

*Sources of cutting material are:*

1) *Liners* — 7 cm. These are overwintered in unheated poly-tunnels and are in Empot carrying trays. It is easy to collect material when the trays are routinely moved.

2) *Stock plants*. These are in 5 litre pots, housed in an unheated poly-tunnel. Each pot is labelled and also charted on a plan to avoid possible errors. The stock plants are pinched and/or cut back earlier in the year to encourage multiple stems and also to delay the production of cutting material until after the main batch of liner material is taken. By increasing the number of stems it helps to reduce internode length and also leaf size, which can otherwise be a problem.

*Compost* — We use a 10:7 peat/durite sand mix adding, as a precautionary measure, Aaterra and Aldrin.

*Trays* — We used standard 2 in deep seed trays, but if we are keeping cuttings for selling as bare root liners in February, we use 3 in deep trays. In both cases 100 cuttings per tray are inserted.

*Knives* — All our leaf-bud cuttings, including clematis, are made with a Vitrex Cuttey-A knife, with snap-off blades. These can thus be replaced as required.

*Procedures*. Collection of cutting material is made by the main propagator only. He is responsible for labelling, charting, and recording numbers, after care, and also recording any rogues in a 'rogue' book, hopefully reducing chances of mistakes. Material is brought into the shed and kept damped down. This is done throughout the day as required. None should be left until the next day. At peak cutting time several

women are employed. These are casual employees who generally work 3 to 3½ hours per day.

In view of the recent interest by both A.D.A.S. and the ATB in methods of handling, I thought our techniques might be of interest.

Each person has 8 filled seed trays, in addition to Seradix No. 2 rooting powder, a bucket of dilute Benlate, a strainer, a spare bucket, a knife and rubber gloves. The stem is picked up at its base. The first cut is made approximately 1¼ in below a pair of buds and the second removes the centre leaflet. If there are more than two buds, or the removal of a down hanging leaflet is required, then a third cut is made across the main stem above the buds. This cuts one leaf petiole simultaneously, leaving the stem against the knife. The completed cutting, in the other hand, is then dropped into the Benlate dip. This is continued up the stem until the soft tip is discarded. The finished cutting has approximately ¼ in of leaf petiole left on one side, ¼ in of stem above a pair of buds and one or two leaflets on the other side. No wounding is generally done unless the stock is in short supply and harder stems have to be used. When there are a good number of cuttings in the bucket, the bucket is emptied through a strainer, made of screening material, into the empty bucket. This is always done as a matter of course whether it is a change of cultivar or not. The strained cuttings are put into a clean seed tray to drain further and are then ready for insertion. We use both hands, but one hand is used for dis-entangling and feeding the cuttings into the other hand. The cuttings are dipped into hormone powder and inserted by this hand. We find this quicker than trying to stick with both hands. The trays are watered, stood onto a barrow and labelled. They are then taken to the propagation tunnel by the propagator. Usually 3,000 to 3,200 cuttings are stuck in a morning by four persons who work on a casual basis.

It is necessary to be almost fanatical about keeping cultivars true to name and, therefore, the head propagator checks *all* material before it goes into the shed. The workers make cuttings of the main cultivars, whilst the head propagator makes cuttings of all the smaller batches, the ones most easily mixed up, because of the small numbers.

When new stock plants are purchased we record where they came from and leave one shoot per plant to flower, to verify trueness to name. A weekly check is made by the head propagator and myself on cultivars coming into flower. We also mark separately the boxes of cuttings taken from liner material, as opposed to stock plant material. Rogue plants are

removed. Regretfully mistakes do still occur even after all of these checks.

Because we use hand misting we can treat batches individually and when cuttings have stood 3 to 4 days we can reduce the water. Some fibrous rooted species like *Clematis macropetala* are very sensitive to overwatering. In April and early May cuttings may take 3 to 4 weeks to root; as light intensity and heat increase, they root in 2 to 3 weeks. Weekly sprays of fungicides are used as a precautionary measure, and Rovral, Cuprokylt, Benlate and Thiram are used in rotation.

When cuttings are rooted we move them into another tunnel, with only one end closed. This has a centre sprayline which is turned on as required. Seven to ten days later the cuttings are top dressed with Vitax Q4 or Glasgro which is well washed in.

**Pot Liners.** When time permits, normally towards the end of July, the cuttings are potted into 7 cm pots with the exception of bare-root cuttings which are required for sale in February. The roots and tops of the cuttings are lightly trimmed, dipped in Benlate and stood into Empot carriers in a closed unheated polytunnel. We maintain humid conditions for the first few days and then gradually increase the ventilation. Shading with windbreak material is generally required to prevent scorching.

We find most clematis benefit from being potted before the end of August, when light intensity starts dropping. This allows good establishment before the winter.

The majority of the other climbing plants are handled in a similar way. *Actinida kolomitka*, *Aristolochia durior*, some *Jasminum* spp., *Solanum* spp., and *Vitis coignetiae* all benefit from being taken as early cuttings and being potted early before winter. Coarser growing plants, like some of the *Lonicera* spp. are taken later, overwintered in trays, and are potted directly into their final pots in the spring.

**Final Potting.** Most clematis and vigorous climbing plants are potted on in May or June. They are then placed outside within a windbreak protected area in rows of four. We used to string the tops of the canes, which is quick and cheap, but not so convenient if small quantities need to be taken out. This year we are trying cane clips. Less vigorous climbers, for example *Clematis* 'Mrs. Thompson' and *C.* 'Miss Bateman' or *Trachelospermum asiaticum*, are stood pot-thick in polytunnels. Other more tender subjects, like *Solanum* and *Campsis*, are also grown entirely in tunnels for winter protection.

If clematis are not sold in the autumn, then all cultivars,

except spring flowering ones, are cut back hard in January or February to produce good basal growth for the spring sales.

Due to the increase in spring and early summer sales, we also pot liners up in January and grow them pot-thick in polytunnels. This can work well but heaven help you if, due to sale pressure at that time, tying isn't kept up to date!

**Roses.** We are experimenting with various methods for producing climbing roses in order to service an expanding market. Some are simply field-grown and potted up; some are dormant-bud potted and some are from cuttings.

As the first two methods are well known I shall describe our cutting method of production. Nodal stem cuttings, consisting of three nodes, are taken in July and August. Most of the stock comes from field grown plants. Cuttings are made with secateurs; then dipped into a Benlate solution and Sera-dix No. 2 and inserted in 7 cm pots in Empot carriers. The removal of some leaves and basal thorns produce a wound which aids rooting. In the propagation tunnel routine spraying is carried out as with clematis; rooting occurs in 3 to 4 weeks. Ramblers, like Rosa 'Albertine' and R. 'Alberic Barbier', root well. Repeat flowering climbers such as R. 'Handel' and R. 'Golden Showers' are also good rooters. These are weaned in another tunnel and if time permits, top dressed in autumn, or alternatively, in spring.

If these are potted on in March-April and stood in polytunnels, growth is rapid and they should make good saleable plants by June or July. But how do you handle them if space is at a premium and they stand pot-thick? Last year we moved them outside in June and July and caned, tied, and cut them back. For vigorous cultivars, like 'Albertine', you need armour plating!

This year we are late in potting on and have decided, because of the handling problem, to stand them outside on a two-row system. Tying will be easier but will enough saleable plants be produced for the autumn?

In conclusion, may I say that I believe climbers to be a worthwhile and interesting crop but we have still to solve all the handling problems associated with them.