

superb dark foliage.

*P. j.* 'White Cascade' — long racemes of white flowers; good grower.

*Pieris* 'Grayswood', (*P. japonica* × *P. taiwanensis*), often sold in the past as *P. taiwanensis*, a superb plant with long racemes of white flowers, dark winter buds, and coppery young growth. I believe that this should be much more widely grown.

*Pieris* 'Purity' is another of my favourites, placed at the end because in my mind there is doubt that it is a true *P. japonica*. It looks like a compact *P. taiwanensis*. However, it is far superior, with a profusion of erect white racemes in March or April.

### **Pests and diseases**

a) *Vine weevil*. Easily controlled by incorporating Aldrin dust into the compost at the rate of 2 Kg c.p. per 1.3 cu. metre.

b) *Red spider*. This is only troublesome where plants are grown under glass or polythene protection. Spray with Plic-trant 600F as soon as mites are observed.

Apart from the above, *Pieris* plants are remarkably free from pests and diseases.

## **CONCLUSIONS**

I feel that this crop is well worth growing as it presents a challenge to the nurseryman. Good cultural practices are required in order to produce a dense, shapely plant with plenty of flower buds for spring sales. Alas, not enough plants of this quality are seen. The production of larger plants in containers up to 10 litres also presents a challenge. The production of quality plants and marketing at the optimum time should increase sales of this beautiful genus.

## **PROPAGATION AND PRODUCTION OF *GARRYA ELLIPTICA***

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*Garrya elliptica* is listed as one of the most difficult plants to propagate, and many growers are reluctant to attempt production because of the numerous problems which can make it an uneconomic proposition. However, it is possible to overcome these problems with the equipment and facilities now available, and to achieve successful propagation.

The most important cultivar grown in Great Britain is the

male cultivar *Garrya elliptica* 'James Roof', which produces catkins 300 mm long.

### IMPORTANT CONSIDERATIONS WITH *GARRYA ELLIPTICA* PRODUCTION

1. It is often difficult to achieve an economic rooting percentage. Therefore stock plant maintenance, selection of cutting material, porosity and hygiene of rooting compost, and correct management of the propagation facility is of paramount importance in achieving acceptable results.

2. *Garrya* reacts unfavourably to root disturbances, therefore special attention must be given when handling the rooted cuttings.

3. High fertility in the potting compost must be avoided. *Garrya* naturally grows in arid conditions with low soil fertility.

### PROPAGATION

**Stock plants.** The stock plant is an essential consideration in the successful propagation of *Garrya elliptica*.

The hedge system for growing stock plants, with the hard pruning tactics to promote vigorous young growth, should not be used. This encourages the wrong type of growth for rooting *Garrya elliptica* cuttings. The growth produced is overly vigorous, forming many strong "water shoots".

Older, well established stock plants of known rooting performance of good form should be used. These are planted in a situation where they can be allowed to develop naturally and given light pruning to contain them in their allotted space. A biennial pruning method could be adopted for the stock hedge system.

The selection and preparation of cutting material is also an important consideration. Tip nodal cuttings, collected from late summer to December, approximately 10 cm long, or side shoots taken with a heel should be used, ensuring with both types that the terminal bud is well developed. Thick, vigorous "water shoots", displaying a flush of autumn re-growth should be avoided.

Wounding is optional; if carried out, then a light wound should be made, approximately 2 cm long. Deep wounding will often result in loss of cuttings by fungal infections.

A rooting hormone has shown to be effective but use powder formulations only, i.e. Seradix No. 3 (0.8% IBA). The damage which is often caused to exposed cells at the base of cuttings with liquid formulations (alcohol, acetone), will en-

courage decay to spread rapidly, to which *Garrya elliptica* is particularly prone. Cuttings should begin rooting within 6 to 8 weeks and be well rooted after 12 weeks.

**Rooting Compost.** As stated above, excessive root disturbance must be avoided; therefore, the compost medium should hold on to the very brittle root systems, thus forming a "plug". However, its moisture retentiveness should be at a minimum.

A suggested compost is 60% medium moss peat, 40% 5 mm crushed grit or perlite. Ideally, this medium should be sterilized; *Garrya elliptica* cuttings are very prone to pathogenic infection.

**Propagation facilities.** Either intermittent mist or film plastic (19  $\mu$ m, 75 gauge), both systems with basal heat (15° to 18°C).

**Mist** — Reduce the incidence of mist to a minimum. This can be achieved by turning off the mist at night and manually operating during overcast days. Keep cuttings from direct rays of the sun, as the combination of water globules and sun will cause excessive scorch to foliage.

**Film plastic** — No special treatment; use the system as with other crops.

#### **Pest and disease control.**

**Pests** — take precautions against sclerid fly larvae; suggest 2 to 3 drenches during rooting of demeton-S-methyle (Metasystox 55), diazinon, (Basudin 40 wp), or diflubenzuron (Dimilin).

**Disease** — Routine application in strict weekly rotation of captan, Benlate, and Rovral.

## GROWING ON

**Systems preventing root disturbance.** The greatest problem with growing on rooted cuttings of *Garrya elliptica* is that they react unfavourably to any root disturbance and it is to this point that special care and attention must be given.

**Unit Containers.** Rooting should be carried out in some form of unit container system, thus avoiding root disturbance when potting off.

Preformed propagation block systems should be avoided, i.e. Jiffy 7s or 9s, root blocks, etc. The medium, from which they are formed holds too much moisture resulting in poor rooting; they are also expensive and take up large areas of propagation space. For such systems to be effective, virtually 100% rooting must be assured.

A "trough" system, with dividing walls between each compartment is advised, enabling one to adjust the rooting medi-

um accordingly. Example: The "Quick-Pot Propagation Trays" from P and G Horticulture Ltd. Tray type with 77 compartments, 40 × 40 mm overall tray size.

**Over-wintering.** Once rooted, remove trays from propagation area and place in a cool growing house; keep as dry as possible. *Garrya* can adapt to drought conditions very well but if kept wet and cold the rooted cuttings will damp-off quickly.

**Potting off.** Wait until the rooted cuttings complete their first spring flush of growth. This first extension growth should be kept to a minimum; do not encourage it with excessive watering or liquid feeding. Do not handle the rooted cuttings until this growth hardens up and produces a terminal bud.

To pot off during "full-flush" can result in high establishment losses. The whole plant is under stress; it is physically in a very vulnerable condition, the roots are fully active, supplying water to the extension growth to maintain turgidity. To disturb the young plants at this stage is to damage the extremely brittle roots resulting in the young growth collapsing, turning black and dying. Very rarely does the plant recover from this shock. This condition is less of a problem if a unit container system is used.

Only handle the rooted cutting when the demands on the root system by the foliage is at a minimum.

**Subsequent Growing on.** *Garrya elliptica* rooted cuttings can be grown as a one or two year crop, the latter being preferable.

*One year production.* Pot rooted cutting direct into its final container (2 or 3 litre), and place in a polythene structure. The day temperatures and humidity can be allowed to get "quite high" before ventilating. Harden off during July. Plants should be pinched back to encourage at least 3 stems to break low down on the plant. Plants may require support with a 60 cm split canes. Fertility in the compost should be kept to a minimum, i.e. half-rate Osmocote is ideal, without supplementary liquid feeding. This method should be used only if the cuttings are rooted directly into a unit container system, combined with other precautions as mentioned.

*Two year production.* Pot rooted cuttings into 9 cm pot then grow on under protection — pruning back to encourage branching. Pot on the following May into 2 to 3 litre containers. Grow on under protection — harden off by end of July. A well branched plant should be produced which may require a 60 cm split cane for support. Sell that autumn at about 60 cm overall height.

To successfully produce *Garrya elliptica* its requirements

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

DENIS J. BRADSHAW

*J. Bradshaw & Son — Busheyfields Nursery  
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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