

# THE PRODUCTION OF RHODODENDRONS BY GRAFTING

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**Reasons for Grafting.** Most rhododendrons today are produced from cuttings but there are, however, still a few cultivars that have defied the plant propagator, making them virtually impossible to root. Grafting is then essential if the cultivar or species is to be propagated.

A second reason for grafting is the widespread problem of *Phytophthora* which causes sudden collapse and the death of the plant. Some rootstocks are less prone to this disease, therefore, scions grafted on these stocks have an advantage when grown under less favorable conditions.

**Selection of Rootstocks.** The choice of a suitable rootstock is very important and like all root understocks has a definite bearing on the future success of the plants.

The four rootstocks commonly used in this country are:

*Rhododendron ponticum*

*Rhododendron* 'Elegans' ('Roseum Elegans'? Bot. Ed.)

*Rhododendron* 'Sir Robert Peel'

*Rhododendron* 'Cunningham's White'

*R. ponticum*. In England and America *R. ponticum* is used extensively but here in New Zealand it has limited use. It is vigorous, has a large root system which develops well in soils varying widely in acidity but the great disadvantage is its susceptibility early in life to *Phytophthora*. This is most evident in areas of high rainfall. In areas where the rainfall is less than 32" per year, e.g. Hawkes Bay, *R. ponticum* could be considered as a rootstock because of the low rainfall.

Another disadvantage is that it produces an abundance of suckers which, if not removed early, can flourish at the expense of the scion. *R. ponticum* has a distinctive leaf type which makes it easy to detect if it puts forth basal suckers.

*R. 'Cunningham's White'*. This is a vigorous grower and will tolerate soils which are much less acid than most rhododendrons require thus enabling it to support in vigorous health grafted hybrids which could not otherwise be widely grown due to soil conditions.

*R. 'Elegans'*. This is not quite as vigorous as *R. ponticum* but is more resistant to *Phytophthora*.

*R. 'Sir Robert Peel'*. This is a strong vigorous grower and again more resistant than *R. ponticum* to *Phytophthora*.

**Other Rootstocks.** Briggs Nurseries, Olympia, Washington, U.S.A. is using *Rhododendron* 'County of York' hybrid as an understock. Although I haven't personally used it, 'County of York' cuttings root very easily, it is vigorous and, like its counterpart *R. ponticum*, has a distinctive leaf type which can easily be detected if suckering occurs.

It tends to form thicker plant material than some of the other understocks. This would have the advantage of better cambium contact on cultivars that produce thicker scion material, e.g. *Rhododendron loderi* 'King George'.

When grafting selected forms of the large-leaf rhododendrons, *R. falconerii*, *grande*, and *sinogrande*, understocks should be chosen from within the same species.

One rhododendron grower in New Zealand uses *R. 'Elegans'* rootstock for his large leaf species. Although the grafts appear to callus well, the scions are usually much thicker than the stocks and this may result in incompatibility problems later in the life of the plant. These large-leaf species can be grown from seed, therefore grafting stocks could be available within two or three years.

Scaly-leaved rhododendrons should be grafted onto seedlings of their own types. The "old fashioned" cultivar *R. 'Fragrantissimum'* has given good results on some of the epiphytic rhododendrons, e.g. selected forms of *R. lindleyi*, *R. dalhousiae* and *R. maddenii* series.

Whichever rootstock is chosen it should be well-grown and free of thrips and disease. The health and vigor of the stock is one of the main factors which influences the later success of the grafts.

### **Preparing and Producing the Understocks.**

David Leach states in his book, "Rhododendrons of the World", (1) "The matching of the natural growth periods in rootstock and scion is claimed to produce exceptional vigor in the grafted plants." Although I haven't proved this, I have no reason to disbelieve it.

Rooting of the understocks usually takes place in January, February or early March. Rootstock cuttings, usually 'Elegans' (because of the availability of material) are prepared in the same manner as any other rhododendron cutting. Bases are wounded and dipped in hormone powder to induce formation of roots. They are then set in the mist propagating house in a medium of half peat and half polystyrene beads.

A variation in stem thickness of the stocks is desirable for future selection when grafting, as quite often, scions on some

cultivars produce predominantly thick material, e.g. 'Molly Coker', 'Grand Jury'.

When growing rhododendrons from cuttings they root better if the material is thin and of the current season's wood but in my experience, because of the vigor of the understocks used for grafting, there doesn't appear to be any difference in the rooting ability between thick or thin stocks.

A careful watch over the next 4 to 6 weeks is important. As this is the warmest period of the year strict attention must be given to ensure that water stress does not occur. If this does occur withering of the stem results and the stock becomes useless. As soon as small roots are observed on the stocks grafting can commence.

**Incompatibility Problems.** Some cultivars are very difficult to grow even when grafted. This could be due to a compatibility problem. *Rhododendron lacteum* and *R. souliei* are both extremely difficult to root or graft and have not given very satisfactory results on stocks of 'Elegans'. However, on other stocks they may give better results. It is a matter of experimentation to determine which stocks are compatible with which scions.

**Collecting and Preparing the Scions.** Scions are collected early in the morning when the turgidity of the plant is high. They are lightly syringed and placed in sealed plastic bags for preparation later in the day. Scions are prepared in the same manner as cuttings. They are then dipped in a Captan/Benlate solution ready for grafting.

**Type of Graft Used.** Although there are several types of grafts than can be used, I prefer to use a side graft.

**The Grafting Procedures.** The grafts should be made as low on the rootstocks as is convenient thus reducing the area from which suckers can later arise. This also encourages the plants to form roots from the scion area.

Stocks are carefully lifted from the pits and placed in trays in preparation for the grafting procedure. All dormant buds on the rootstock, below where the graft is to be made, should be cut out to reduce the number of suckers. Care should be taken to match the cambium on both stock and scion as evenly as possible, particularly the bottom of the graft as it is here that callus formation first begins.

In "Rhododendrons of the World" by David Leach (1), he quotes, "The more quickly the cambium layers of scion and understock can be induced to form calluses which join them the more certain will be the grafting operation." The life of the scion cannot be preserved for any extended period and if it falters for lack of atmospheric moisture there will be no union

with the understock.”

As soon as possible after grafting, the grafts are returned to the glasshouse and plunged back into the propagating medium to a depth just covering the graft union. Under no circumstances should the grafts be allowed to dry out. They are then given a drenching of Benlate or Terroazole to guard against attacks from any soil borne diseases.

**Aftercare of Grafts.** Regular attention to humidity and the amount of moisture given is very important as too much water can be disastrous.

Hygiene in the propagating pits is of the utmost importance and any dead or decaying material should be removed at once. Regular applications of fungicides should be used (e.g. every three weeks). The grafts are left in the pits for approximately two months with bottom heat to help stimulate callus formation. At the end of this period, when a good callus has formed, the grafts are lifted from the medium, stocks cut off and the grafts replunged into the medium for a further three weeks to recover. After this time the grafts should be ready for potting.

**Conclusions.** Once plants are potted up they are returned to the glasshouse where they are gradually weaned off the mist. They will eventually be transferred to the shade house. One point which is very important is that the new plants are very susceptible to bumps and knocks and so the rubber budding strips which bind the scion to the stock are not cut off at this stage but are left on until planting time. This is usually straight after the first flush of spring growth.

#### LITERATURE CITED

1. Leach, D.G. 1961, *Rhododendrons of the World*. p. 335-337. Chas. Scribner's Sons, New York.

### **FEIJOAS: SELECTION AND PROPAGATION**

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**Abstract.** A series of trials in 1978 and 1979 showed that the rooting ability of feijoa cuttings was influenced primarily by the parent tree. Some parent trees produced cuttings which showed high rooting percentages whilst others produced cuttings of very low rooting ability. Other factors, such as the position from which the cuttings were taken from the tree and the size of the container in which the cuttings were grown, also influenced rooting ability. Longer exposure to indolebutyric acid in alcohol as a dip did not increase rooting ability. The taking of cuttings in late winter as opposed to late autumn had less effect than the parent tree on rooting ability.