was first noted on carrots but is found in many ornamentals with large or modified stems or tubers. Wet conditions and high nitrogen levels are responsible for the build up of this disease. The visual symptoms are stunted growth at flowering time, followed by yellowing and drying of the leaf tips. Bulbs decay, and the organism spreads rapidly causing the collapse of the scale leaves into a dirty white smelly mass. The odor can be detected by those working the bulb store.

Only stored bulbs should be saved. These should be treated with mercuric chloride after harvesting of the bulbs. If the disease is found when working on propagating material in the dark room, the infected bulbs can be removed and placed in high light areas. Chloroplasts are produced and when the bulbs are in this condition the disease is retarded, so the bulblets can continue to develop. When these are planted there is no sign of the disease on the bulb.

Other minor diseases have been found on Hyacinth bulbs; these include; *Sclerotinia*; *Botrytis*; *Penicillium* bulb rot; and *Pythium*.

Nematodes. Nematodes are responsible for losses in bulbs and cause the problem known as Ring disease. They feed on the scale leaves and this can be seen when an infected bulb is cut open. Foliage and flowers become distorted. Nematodes can be controlled by a hot water treatment using water at 43 to 44°C for four hours, followed by rapid cooling and drying. This treatment also rids the bulbs of eelworm.

GRAFTING OF *EUCALYPTUS FICIFOLIA*

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When horticulturists from the East Coast of Australia saw the brilliant red flowers of the Western Australia *Eucalyptus ficifolia* they had to take this tree back with them, only to find that *Phytophthora cinnamomi* attacked the roots. Because of the desirable flowers, horticulturists have patiently tried various methods of propagating this difficult plant.

The flowers on mature trees grown from seed vary widely in colour from white to deep red. Selections of good red flower colour variants have been made and grafted onto *E. ficifolia* rootstock, but these have proved unsuccessful as these low-rainfall trees die in the heavier soils and high rainfall of the East Coast.

Eucalypts do not allow easy scion to rootstock combinations, even though their botanical and physical characteristics are often close. There have been many cases of graft rejection after periods of up to 8 years of seemingly compatible growth.

This brings us to the selection of rootstocks, taking into consideration compatibility, percentage of graft successes, and incidence of delayed graft incompatibility. There is a variation in the rainfall along the East Coast and different rootstocks will have to be experimented with for different areas. We have experimented with various rootstocks for *E. ficifolia* which may prove suitable for the central Queensland coastal area.

Using "A Key to the Eucalypts" by W. F. Blakely three possible rootstocks that were closely linked with *E. ficifolioa* and from areas of similar rainfall were selected, namely *E. calophylla*, *E. gummifera* and *E. intermedia*. All four species (including *E. ficifolia*) are in the Series Corymbosae — Peltatae and sub-series Neocorymbosae.

E. ficifolia is a small spreading tree from Western Australia having an irregular form with flame coloured to fiery red flowers. *E. calophylla* is a large tree with white or pink flowers, also from Western Australia. *E. gummifera* is a medium to large tree which occurs on the East Coast of Australia. *E. intermedia* is similar to *E. gummifera* in growth habit and distribution but grows in areas of much higher rainfall.

Grafting Method. Healthy young seedlings growing in 100 mm (or larger) pots are selected for rootstocks. The scion material is obtained when it is growing in a primary mature flush. This mature scion material must have the buds just ready to burst. The leaves on the rootstock have to be left on, as this greatly assists the graft. A top wedge graft is used and it is held in place with small clothes pegs. We find this is a most cost effective method.

When the grafts are made they are placed in a high humidity tank. This is comprised of a water tank with a layer of sawdust in the bottom. The top of the tank is covered with clear plastic to retain moisture. The tank provides a high humidity environment which favours good growth and prevents the grafts from drying out. This method is being used with the three rootstocks currently on trial.

With *E. gummifera* there have been problems with callus formation above the ground which induces suckers. These suckers rapaidly outgrow the graft if not checked. Observation suggests there is genetic variation in some of the rootstocks as they are not consistant in their performance, often developing a "bottle tree" effect due to incompatibility.

E. intermedia looks more promising as a rootstock. There is less suckering from the base and better uniformity in the grafts than with *E. gummifera*; it is also a suitable rootstock for the central Queensland area.

E. calophylla 'Rosea' also looks good but trials with this rootstock have only been going for 12 months.

In summary, we are in our second year of trialing *E. intermedia* and *E. gummifera* and problems with suckering and genetic variability have been encountered. *E. calophylla* has only been under trial for one year but early results look promising. All will take time but no definite success can be claimed until a significant number of grafts have reached at least 8 years of age.

THE NEW ZEALAND EXPERIENCE IN EXPORT OF NURSERY STOCK

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Horticulture in New Zealand is broadly spread across both the North and South Islands, which offers a diverse range of climate from subtropical in the Bay of Islands to a cold climate in Southland. The native flora is extensive as is the range of plant material being grown.

The New Zealand nursery industry is very fortunate to have a strong research base which is both Government and University funded. This gives support to the private nurseryman and to the industry as a whole.

Regardless of climate, soil, and the range of flora available the market demand in New Zealand is limited due to the small broadly spread population. Because of this, several New Zealand nurseries have sought markets overseas.

Traditionally New Zealand is a trading country recognized for its primary industry, and over the past 20 years considerable emphasis has been placed on horticulture. A great deal of this has been the result of the rapid growth of the kiwifruit industry and the international acceptance of this product as a valued fruit.

With the export of the fruit came the demand for kiwifruit plants. It was from this plant that the industry diversified and moved into the export of ornamentals, opening markets in the United Kingdom, U.S.A., and Japan.