Plant Improvement and Nursery Production Techniques in New Zealand

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New Zealand has given the British Isles many popular garden plants such as *Cordyline*, *Hebe*, *Leptospermum*, *Olearia*, and *Pittosporum*. With assistance from a Mary Helliar Travel Scholarship Award I spent one month in New Zealand looking at plant improvement schemes and production techniques.

The plant improvement schemes I studied concentrated on New Zealand's native flora. At Auckland Regional Botanic Gardens, a *Hebe* breeding programme started in 1982 by Jack Hobbs, has produced 12 named cultivars. Most names carry the "Wiri" prefix, for example, *H.* 'Wiri Joy' and *H.* 'Wiri Image'. These have a superior appearance and garden performance to other cultivars especially in the hot and humid Auckland climate where septoria leaf spot (*Septoria exotica*) and downy mildew (*Peronospora grisea*) are a problem (Hobbs, 1991). I am uncertain about their hardiness in the British Isles. Another notable plant introduction in recent years is *Weinmannia* 'Kiwi Red'.

Manaaki Whenua Landcare Research Ltd., near Christchurch, which primarily functions as a herbarium, has several breeding programmes. Currently it is trying to select for greater cold hardiness in *L. scoparium,* to expand the potential for export of New Zealand plants to Western Europe. Field trials of seedlings are being run by INRA, Station d'Amelioration des Especes Fruitieres et Ornamentals, Angers, France. They hope the selections will provide a basis for future breeding of this plant (Harris and Decourtye, 1991) Other work involves breeding whip-cord type hebes. They have named one of the seedlings, *H.* 'Karo Golden Esk' which is a *H. armstrongii* × *H. odora* hybrid. Interesting work is being carried out on producing half standard hebes. For example the prostrate growing *H. strictissima* has been top grafted onto a 1.2 m stem of *H. macrocarpa* var. *latisepala*. The result is an evergreen, weeping, half standard which has potential as a novel patio plant.

The success of these programmes may be a result of the comprehensive collections of botanically named species and cultivars held by the institutes. The new cultivars from both Auckland Regional Botanic Gardens and Landcare Research are now widely produced by the nursery trade, a result, perhaps, of the close links between the institutions and the industry. Revenue raised from Plant Variety Rights helps to fund further work, although the programmes are still largely dependent on Government money.

Individual nurseries are also selecting new forms. Mark Dean, of Omahanui Native Plants, in Tarangia, has named a compact *Clianthus maximus* with deep red flowers 'Kaka King' and a *Sophora microphylla* with rich yellow flowers 'Dragon's Gold'.

One horticulturist I visited had an alternative vision for the future of New Zealand native flora. Graeme Platt, of Auckland, believes that selecting hybrids for traits such as dwarfing habit and variegation is regressive evolution. Such hybrids,

he believes, are weak and disease susceptible and therefore make poor garden plants compared to the species. He preaches "excellence of the species and not mongrelisation." After 20 years of selection work on plant species, many of the superior forms are in general production and are marketed in New Zealand as Graeme Platt Selections. Currently he is involved in improving cold hardiness of shrubs by selecting plants from wild populations at high altitudes and more southerly latitudes. Several U.K. nurseries have this new material. Extensive selection and tree establishment work is being carried out on the native Kauri pines (*Agathis australis*). Platt hopes improved plant material and knowledge will enable this native species to displace the exotic *Pinus radiata* for timber production in its natural range in North Island.

Production techniques vary from those in the U.K. partly because of the difference in climate and the cost of natural raw materials. The warm maritime climate gives virtually all-year-round growing conditions in North Island. This results in a production cycle approximately three times faster than the U.K. for evergreen plants. Nurseries tend to use only polythene and glass structures for propagation. However, they do have to erect net covered structures for shading and the protection of liners from wind and heavy rain. Most nurseries grow in containers, although field growing and containerisation are used by some rhododendron nurseries. A pine-bark-based (*Pinus radiata*) container medium is extensively used as it is cheap and readily available—unlike peat. To improve the water holding capacity of the medium, pulverised bark fibre or saw dust is added. Silica gel has been trialled by some nurseries to help prevent the medium drying out. The addition of coarse river sand or pumice seems to be common practice, to maintain the air filled porosity of the medium as the bark breaks down. The nitrogen lock up associated with bark break-down is minimised by the addition of chelated iron and extra nitrogen to the medium.

I left New Zealand with a positive view of its horticulture. I especially enjoyed the diversity of outlooks on plant growing. There still seems a huge potential to produce competitively-priced, high-quality plant material for the world market. I also feel that there is still huge potential for new plant species and varieties to be developed as ornamental plants because of the plant diversity that exists there.

I would like to express my gratitude to all the New Zealand horticulturists I met and members of the Great Britain and Ireland I.P.P.S. Region for their help with this trip.

LITERATURE CITED

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