

**NEW ZEALAND NATIVE TREES, SHRUBS AND PLANTS:  
COLLECTION AND PROPAGATION FROM THE WILD**

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With growing interest in New Zealand plants, both here and overseas, it is time to take a critical look at the New Zealand native plant material currently in production in the nursery trade.

Because of the desire of New Zealand's early settlers to have gardens that reminded them of their home country, great efforts were made to grow and propagate plants from all over the world. Many of those that grew well are, for the most part, on our noxious weeds list today, and a number of those early garden plants have been propagated continuously up until the modern time. While this was going on, New Zealand's natural flora was being destroyed during the process of clearing land for farming and horticulture. A number of New Zealand plant species were taken overseas, and to this day a few of our plants are more widely grown outside the country than they are in New Zealand. There are thousands of gardens in New Zealand that don't contain one indigenous plant. New Zealand gardeners have been slow to recognize the merits of New Zealand flora, and the nursery trade slower still. Many nurseries continue to grow plants which are difficult to propagate and grow, and are often unsuitable for the environment of their average customer. Yet, out the back of the nursery, on the hills, are rare and world-renowned botanical treasures being munched off by the local farmer's cows.

As a result of New Zealand's long botanical isolation, 80% of our flora is endemic — i.e. occurring nowhere else in the world — and of the remaining 20% most are locational variants of the species. Over 350 of our plants are now considered to be endangered, so that the old story about "familiarity breeding contempt" no longer has any relevance as an argument against the growing of New Zealand plants in gardens. New Zealand is a diverse land with thousands of miles of coastline, that varies from a sub-tropical north, to a sub-Antarctic, gale-lashed southwest. We have some of the wettest rain forests, with over 300 inches of rain per annum, freezing mountain slopes, and warm, fertile valleys. This incredible variability has given us diverse and exciting flora, which has suffered badly at the hands of man. We have spent years looking for plants that were once common — and some are on the brink of extinction.

Six years ago we set up a nursery to produce New Zealand native flora. Our entire production is retailed on the property. One of our earliest problems was obtaining quality propagating material of the plants we intended to grow — or, in some cases, finding any material at all. Material obtainable from existing nurseries was, for the most part, deviant cultivars with varieg-

ated leaves or other mutants, which in some cases are an insult to the species. Phormiums with pink and purple stripes are not the way nature would have it. Any seed commercially available usually proved to be of poor viability and, in our opinion, it was probably picked from the most convenient source, not selected from the best forms available. Some species in the past have been completely overlooked, only because poor types were obtained and proved to be unsuccessful.

We now travel many thousands of kilometres each year around New Zealand, and to some of our off-shore islands, in our quest for propagation material. During these travels, we have noted the tremendous variation of a plant species. It is truly incredible how much a plant can change from one end of the country to the other — the leaf size can vary up to 300%, or the flower have 100% more petal area. Because many kinds are not in seed when we find them, the taking of cuttings from wild plants has proved worthwhile, but not without problems.

**Seeds.** The most important aspect of seed collection is plant knowledge — i.e. knowing the location of a particular plant in its natural habitat. A diary must be kept with accurate dates of when the seed is ripe each year. Seed yields vary greatly from year to year. Some years are a bonanza, with plenty of good seed available from most species. However, this is more the exception than the rule, and it is general for some species to crop well in one location during one year, and not in another. If you are prepared to travel a few hundred kilometres, seed is nearly always available. Altitude has an influence on the seeding of many species. If you cannot find seed at sea-level, it may have seeded well at 1,000 feet. We have noted a number of species which, in some years, bear in a very narrow altitudinal strata.

Seed collection in itself is not difficult. However, an ability to climb trees is essential. It is important to pick the seed when the first of it is ripening on the tree — pick it too early and it is too green; too late and it may have lost its viability or the birds, wind or rats have beaten you. Before picking any seed, check on the health of a few by cutting in half with a pair of secateurs, and inspect for any obvious problems. It is a waste of time picking a lot of non-viable seed. We only select seeds from trees which have obvious superior character. However, what constitutes “superior character” is very much a matter of definition. One nurseryman might like a species with a small leaf and a dense, bushy habit; another may prefer it tall with pendulous branches. Good health and vigour are most important.

Once back at the nursery, all seed must be cleaned thoroughly. Most seed will not germinate with any flesh present, and we go to considerable lengths to ensure that the seed is properly cleaned. Most of this is achieved with physical clean-



ing methods. We have also found hydrochloric acid to be a very useful chemical aid in seed cleaning and it appears to have good fungicidal properties as a bonus. Fresh seed can be immersed in concentrated hydrochloric acid without any apparent damage. Seed should be planted fresh and we now never bury any seed. It is spread evenly over the top of a propagating tray, containing a mixture of peat, sand, pine-bark and sawdust. We then press the seed firmly into the surface with a flat piece of wood, so that the seed is still clearly visible on the surface, but pushed in level. Germination has improved dramatically since we ceased burying seed and kept propagating trays in a cool, shady place. Once germination commences, a light sprinkling of propagating mix can be used to cover them.

**Cuttings.** Cuttings from the wild can be a very difficult proposition. However, they are well worth the effort, because of the desirability of bringing specific clones into propagation. Many of the superior plants in the wild may have no seed, or they may be natural hybrids. Many of our plants hybridize freely, and some excellent hybrids exist in the wilds that are going to be very good horticultural subjects. However, one must be careful with hybrids to ensure that only quality hybrids are propagated.

There are two major problems with cuttings from the wild. The first is getting them back to the nursery in good condition. As some of these botanical expeditions take a week, the cuttings are almost compost by the time you get them back to the nursery. The second is plant nutrition. Although a plant may look healthy out on a wind-swept mountainside, it generally is suffering from chronic malnutrition. Therefore, any cutting removed from it often collapses in the nursery before it has time to take root.

We prepare our cuttings, if possible, out in the wilds, and they are packed into plastic bags for easy transport back to the nursery. I like to remove the cuttings from the bags every day and wash in fresh water. Despite all the problems involved in taking wild cuttings, we have found it worthwhile, and some of the improved forms of plants we have obtained are most pleasing. Once we have a few stock plants back at the nursery, propagation is then routine, and rooting percentages jump impressively.

Very little effort has been expended on improving the flowering qualities of New Zealand flora, with the exception of *Leptospermums*. We, as yet, haven't started a breeding programme, but are continually on the lookout for improved flowering forms. Early flowering — i.e. the first year — is promoted by propagation from cuttings. The following species have flowered

for us in the first year — instead of the normal five to eight — and generally display a lower crown and improved form when grown from cuttings:

|                               |                               |
|-------------------------------|-------------------------------|
| <i>Ackama rosaefolia</i>      | <i>M. excelsa</i>             |
| <i>Alseuosmia macrophylla</i> | <i>M. fulgens</i>             |
| <i>Clematis paniculata</i>    | <i>M. kermadecensis</i>       |
| <i>Hebe species</i>           | <i>M. robusta</i>             |
| <i>Hoheria populnea</i>       | <i>Olearia cheesemanii</i>    |
| <i>Leptospermum scoparium</i> | <i>Parsonsia heterophylla</i> |
| <i>Metrosideros albiflora</i> | <i>Sophora microphylla</i>    |
| <i>M. carminea</i>            | <i>S. tetraptera</i>          |

**Alpine Plants.** We have recently extended our range to alpine plants. These flourish outside their alpine environment, even in Auckland's maritime weather. All that is required is to give up any concept of organic gardening and plant your alpines in gravel. We use scoria, and have found those reputedly impossible plants do very well. Any fertilizer used on alpines should be entirely 100% water soluble chemicals, and watered on as a foliar feed.

## CONCLUSIONS

In conclusion, I have no doubt that New Zealand native flora has a tremendous future for ornamental, shelter and general amenity planting. In a world so badly plundered of its natural resources, we, as horticulturists, hold the key to man's wealth and prosperity. We can clean up the air by planting great forests that, in turn, will provide us with our fuel, food, building materials, paper, plastics and medicine.

Plants are the future of mankind. We neglect them at our peril. New Zealand trees, shrubs and herbs have their part to play.

**Appendices.** It is not my intention to outline every New Zealand plant, but you might find the four attached appendices useful.

### **Appendix 1.** New Zealand trees and shrubs with excellent potential.

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|                                   |                             |
|-----------------------------------|-----------------------------|
| <i>Ackama rosaefolia</i>          | <i>Dacrydium colensoi</i>   |
| <i>Astelia banksii</i>            | <i>D. intermedium</i>       |
| <i>A. chathamica</i>              | <i>D. laxifolium</i>        |
| <i>A. fragans</i>                 | <i>Dysoxylum spectabile</i> |
| <i>A. grandis</i>                 | <i>Elaeocarpus dentatus</i> |
| <i>A. nervosa</i>                 | <i>E. hookeranus</i>        |
| <i>A. solandri</i>                | <i>Elingamita johnsonii</i> |
| <i>A. trinervia</i>               | <i>Eugenia maire</i>        |
| <i>Carmichaelia angustata</i>     | <i>Griselinia lucida</i>    |
| <i>A. ordorata</i>                | <i>Hoheria angustifolia</i> |
| <i>C. williamsii</i>              | <i>H. lyallii</i>           |
| <i>Chordospartium stevensonii</i> | <i>H. populnea</i>          |
| <i>Cordyline indivisa</i>         | <i>H. sexstylosa</i>        |
| <i>C. kaspar</i>                  |                             |

|   |   |
|---|---|
| <i>Ixerba brexioides</i>  | <i>P. fairchildii</i>   |
| <i>Laurelia novae-zelandiae</i>                                       | <i>P. huttonianum</i>   |
| <i>Leptospermum ericoides</i>   | <i>P. kirkii</i>  |
| <i>Libocedrus bidwillii</i>   | <i>P. ralphii</i>   |
| <i>L. plumosa</i>   | <i>P. umbellatum</i>  |
| <i>Metrosideros carminea</i>  | <i>P. virgatum</i>  |
| <i>M. fulgens</i>   | <i>Plagianthus betulinus</i>  |
| <i>M. robusta</i>   | <i>Planchonella</i> (Syn.: <i>P.</i>  |
| <i>M. unbellata</i>   | <i>novo-zelandica costata</i> )   |
| <i>Neopanax colensoi</i> (Syn.:<br><i>Pseudopanax colensoi</i> )      | <i>Podocarpus acutifolius</i>   |
| <i>Nestegis cunninghamii</i> (Syn.:<br><i>Gymnelea cunninghamii</i> ) | <i>P. ferrugineus</i>   |
| <i>N. montana</i> (Syn.: <i>Gymnelea</i><br><i>montana</i> )          | <i>P. hallii</i>  |
| <i>Nothofagus fusca</i>   | <i>P. nivalis</i>   |
| <i>N. menziesii</i>   | <i>Pomaderris apetala</i>   |
| <i>N. solandri</i>  | <i>P. kumeraho</i>  |
| <i>N. truncata</i>  | <i>P. oraria</i> var <i>novae-zelandiae</i>   |
| <i>Notospartium glabrescens</i>                                       | <i>P. phyllicifolia</i> var <i>polifolia</i>  |
| <i>Olearia albida</i> var <i>angulata</i>                             | <i>P. rugosa</i>  |
| <i>O. avicenniaefolia</i>   | <i>Pseudopanax chathamicum</i>  |
| <i>O. coriacea</i>  | <i>P. discolor</i>  |
| <i>O. paniculata</i>  | <i>P. edgerleyi</i>   |
| <i>O. traversii</i>   | <i>P. ferox</i>   |
| <i>O. virgata</i>   | <i>P. lineare</i>   |
| <i>O. virgata</i> var <i>dartonii</i>                                 | <i>Quintinia acutifolia</i>   |
| <i>Pachystegia insignis</i>   | <i>Q. serrata</i>   |
| <i>Pittosporum colensoi</i>   | <i>Rhopalostylis cheesemanii</i> (Syn.:<br><i>baueria</i> var. <i>cheesemanii</i> ) |
| <i>P. cornifolium</i>   | <i>R. baueria</i> var <i>cheesemanii</i>  |
| <i>P. dallii</i>  | <i>R. sapida</i>  |
| <i>P. ellipticum</i>  | <i>Senecio hectori</i>  |
|   | <i>S. perdicioides</i>  |
|   | Many ferns are also excellent subjects  |

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## Appendix 2. Plants for indoor pots and planters.

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|---|---|
| <i>Astelia banksii</i>                            | <i>Neopanax colensoi</i> (Syn.:<br><i>Pseudopanax colensoi</i> )                            |
| <i>A. chathamica</i>                              | <i>Persoonia toru</i>   |
| <i>A. fragans</i>                                 | <i>Pittosporum cornifolium</i>  |
| <i>A. grandis</i>                                 | <i>P. pimeleoides</i>   |
| <i>A. nervosa</i>                                 | <i>Podocarpus ferrugineus</i>   |
| <i>Arthropodium cirratum</i>                      | <i>Pratia angulata</i>  |
| <i>Collospermum hastatum</i>                      | <i>P. physaloides</i>   |
| <i>Cordyline australis</i>                        | <i>Pseudopanax discolor</i>   |
| <i>C. kaspar</i>                                  | <i>P. ferox</i>   |
| <i>Corynocarpus laevigatus</i>                    | <i>P. lessonii</i>  |
| <i>Elastostema rugosum</i>                        | <i>Pseudowintera axillaris</i>  |
| <i>Entelea arborescens</i>                        | <i>P. colorata</i>  |
| <i>Fuchsia procumbens</i>                         | <i>Rhopalostylis cheesmanii</i> (Syn.: <i>R.</i><br><i>baueria</i> var <i>cheesemanii</i> ) |
| <i>Heiliodendron brunonianum</i> and<br>cultivars | <i>R. sapida</i>  |
| <i>Jovellana sinclairii</i>                       | <i>Tecomante speciosa</i>   |
| <i>Libertia peregrinans</i>                       | <i>Xeronema callistemon</i>   |
| <i>Macropiper excelsum</i> var <i>majus</i>       |   |

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### Appendix 3. Plants for outdoor tubs and planters.

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| <i>Ackama rosaefolia</i>   | <i>Phachystegia insignis</i>                                     |
| <i>Agathis australis</i>   | <i>Phormium cookignum</i> and cultivars                          |
| <i>Anthropoedum cirratum</i>                                     | <i>P. tanax</i> and varieties                                    |
| <i>Astelia banksii</i>   | <i>Phyllocladus glaucus</i>                                      |
| <i>A. chathamica</i>   | <i>Pittosporum cornifolium</i>                                   |
| <i>A. fragans</i>  | <i>P. eugenioides</i>  |
| <i>A. grandis</i>  | <i>P. kirkii</i>   |
| <i>A. nervosa</i>  | <i>P. ralphii</i>  |
| <i>Cordyline</i> species   | <i>P. tenuifolium</i>  |
| <i>Corynocarpus laevigatus</i>                                   | <i>P. umbellatum</i>   |
| <i>Elingamita johnsonii</i>                                      | <i>Planchonella novo-zelandica</i> (Syn.:<br><i>P. costata</i> ) |
| <i>Griselinia littoralis</i>                                     | <i>Pomaderris oraria</i>   |
| <i>Libertia perigrinans</i>                                      | <i>Pseudopanax crassifolium</i>                                  |
| <i>Melicope ternata</i>  | <i>P. discolor</i>   |
| <i>Meryta sinclairii</i>   | <i>P. ferox</i>  |
| <i>Metrosideros excelsa</i> and cultivars                        | <i>P. laetum</i>   |
| <i>M. kermadecensis</i> and cultivars                            | <i>P. lessonii</i>   |
| <i>M. robusta</i>  |  |
| <i>Neopanax colensoi</i> (Syn.:<br><i>Pseudopanax colensoi</i> ) |  |

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### Appendix 4. Hybrids having a good potential.

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| <i>Brachyglottis repanda</i> × <i>Senecio greyi</i>     | <i>Metrosideros excelsa</i> × <i>M. robusta</i>      |
| <i>Cordyline australis</i> × <i>C. banksii</i>          | <i>M. excelsa</i> × <i>M. umbellata</i>              |
| <i>C. australis</i> × <i>C. indivisa</i>                | <i>M. robusta</i> × <i>M. umbellata</i>              |
| <i>C. australis</i> × <i>C. kaspar</i>                  | <i>Pseudopanax crassifolium</i> × <i>P. arboreum</i> |
| <i>C. australis</i> × <i>C. pumilio</i>                 | <i>P. crassifolium</i> × <i>P. lessonii</i>          |
| <i>Fuchsia excorticata</i> purp. × <i>F. procumbens</i> | <i>P. discolor</i> × <i>P. crassifolium</i>          |
| <i>Leptospermum ericoides</i> × <i>L. sinclairii</i>    | <i>P. lessonii</i> × <i>P. discolor</i>              |
|   | <i>Pittosporum tenuifolium</i> × <i>P. ralphii</i>   |
|   | <i>Sophora microphylla</i> × <i>S. prostrata</i>     |

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*Hebe*, *Coprosma* and *Carex* hybrids exist in great legions. Many of these natural hybrids have horticultural merit. Both *Astelia* and *Olearia* hybridise and are worth further investigation.

## SOME ASPECTS OF *CEDRELA SINENSIS* PROPAGATION

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*Cedrela sinensis*, commonly known as the Chinese Toon, is one of the most handsome of spring foliage trees. Its growth habit is straight and erect and it has large, ash like leaves up to 60 cm long, finely divided into ten or more leaflets.

As the leaves unfold and develop they are a beautiful shade