New Zealand Plants and Their Allies — An Irish Overview©

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INTRODUCTION

Ireland lies on the margin of one of the earth's major land masses, with its western shores washed by the Atlantic Ocean. With its position, between 55.50° and 55.5° degrees north latitude, it lies rather nearer the North Pole than the equator which places the whole island well within the temperate climatic zone. The resultant benign if somewhat monotonous climate is extremely favourable for the growth of a wide range of trees and shrubs as well as smaller plants. At the same time the variety of rock types, land forms, and soils have created a pleasing degree of diversity in the landscape so the horticulturist may put his/her skills against the challenges of granite or limestone outcrops, hillsides or marshy plains, and peaty or alkaline soils.

Temperatures in Ireland vary on a day-to-day basis. In winter it is often experienced to have 8°C and rain all day and by 17.00 h it is dry and settling in for a reasonable night frost of -2°C only to revert to 10° with wind by morning. These types of conditions make life very tedious for your garden plants. Summer can see some pleasant sunshine, however, barbecues are never to be planned in advance as quite regularly by evening a stiff westerly is at hand to bring in a "soft" evening of drizzle or light rain. Such summer weather is of course very helpful in the culture of plants irrespective of their natural homes.

The influence of the Gulf Stream has quite a great deal to bear on plant cultures in Ireland and it does have an ameliorating effect on weather, however, it also can bring very strong winds in winter and in September and March in particular. It is only every 10 years that temperatures are driven down to lethal levels by winds from the North and North East creating devastating wind chill. Sadly, we experienced these winds in 2000 to 2001 and a great number of well established subjects died or were badly burned (from salt carried in the wind) which will take a few years to recuperate.

Rainfall is varied from a near drought in the East Coast of less than 50 mm to well above 150 mm in the hills of Kerry, Connemara, and Donegal. It is not an ill wind that does not blow some good for the high rainfall areas means there is a selective mild climate and in the County of Kerry we have great gardens such as Illnacullin, Rossdohan, Muckross, Derrine, Garnish, and Glanlean.

NEW ZEALAND PLANTS IN IRELAND

The above mentioned gardens are famous for their collections of New Zealand, Chatham Island, and Australian species. All is not confined to these areas and in Dublin, Cork, Donegal and many other areas, antipodean influences can be seen in the horticultural landscape. *Cordyline australis* and hedges of *Griselinia littoralis* are very much part of every day life, in the gardener's world, and indeed fine specimens can be seen throughout the country. Since their introduction in 1823, the former, gives a rather tropical appearance and the latter is too tender to survive in

many parts of Britain and continental Europe. In the southeastern area and in far west Connemara the first defences against the sea are planted with *Phormium tenax*, and indeed *Phormium* was introduced to manufacture fibre in Ireland back in the early 1800s.

HISTORICAL PLANT COLLECTING

Since Abel Tasman first set foot on New Zealand in 1644, very little plant collection was done until the late 1790 to 1830 period when Captain Cook sailed into the unknown and indeed much has been documented about his experiences both in Australia and New Zealand and that of the ill-fated HMS Bounty. It is ironic that the earliest interest in Australian plants developed in Western Europe while during colonisation there was a passion in cultivating plants from the "old country". There was a reciprocal traffic of plant material between Europe and the Antipodes. Early introductions in Australia of European plants strongly influenced the style of gardens which still exist, however, few New Zealand plants have become commonplace in Northern Hemisphere temperate gardens. This was due to New Zealand plants requiring a new set of growing conditions namely higher rainfall and milder climate as in Ireland. Present day New Zealand ornamentals would be regarded as a first generation of introductions, as they are chiefly species with only a few cultivars in evidence.

Ireland's contribution to plant exploration from New Zealand is rather limited and indeed any work done can be contributed to Henry Hammersley Travers and Milo Malahide (Lord Talbot de Malahide).

Henry Travers was born to William and Jane Travers in 1844, at Newcastlewest Co. Limerick, Ireland. This was a period in Irish history full of death, disease, and emigration brought about by the potato famine. At the age of 5 Henry and his parents migrated to New Zealand. The family spent many years travelling around New Zealand and in 1864 Henry's father sent him to the Chatham Islands to explore and study the natural history. Whilst there Henry collected from the scrub; *Coprosma*, *Dracophyllum*, *Olearia* and tree ferns, the native beauty *Mysotidium hortensia* as well as *Olearia traversii* and *Olearia* "semi dentata". He spent the next 50 years sending tree ferns to Glasnevin for one shilling and six pence per foot. He always asked Sir Fredrick Moore, the garden's curator for plants in return and introduced *Begonia*, *Caladium*, *Anthurium*, and rarer *Saxifraga* to New Zealand and the Chatham Islands. Today *Olearia* "semi dentata" is said to be an interspecific hybrid and renamed *Olearia* 'Henry Travers'.

Today with Ireland's wet mild climate it is thought to be ideal for nurseries to grow tender subjects like those introduced throughout the past century. Certainly it is an advantage, but all is not as easy as one would think and as with all vagaries of horticulture there are the ups and downs.

GROWING NEW ZEALAND NATIVES

At Glenbrook Nurseries we grow some 750,000, 2-, 3- and 5-litre plants. The majority of these are represented by New Zealand subjects like *Cordyline australis* and cultivars, *Hebe* in various cultivars, *Olearia*, *Griselinia*, grasses, *Leptospermum*, *Pittosporum*, *Lophomyrtus*, *Phormium tenax*, and *P. cookianum* hybrids, etc.

There are many old traditions in the culture of many of these New Zealand plants, particularly those used as hedges. Cuttings of *Griselinia* and *O. macrodonta* were

taken as hardwoods about 30 cm long and prepared from current seasons wood. These rooted by spring and were further lined out in the field and sold as bundles of bare roots the following winter.

With the advent of containerisation the culture has been sped up by direct sticking and *O. macrodonta* and *O. traversii* are taken as 10-cm cuttings and direct stuck into 9-cm pots in a tunnel within a tunnel. This is done in November and by March-April a well-rooted liner is grown. Potting on quickly one gets a well finished 2- to 3-litre 40/60 well-branched plant by the autumn. Some of the species of *Olearia* are very prone to attacks of *Phythophthora* species and frequent spraying with Aaterra WP (etridiazole) or adding furalaxyl can be a great help.

Leptospermum are becoming more popular every year particularly with the idea of patio gardening. At Glenbrook we take our cuttings in November and December of semi-hard current seasons growth. We insert these into plug trays and move on in June into P8-P9 pots where they are cut back and trimmed once or twice getting a stocky liner for potting on in the next May or June. These plants flower well in the following May and sell well at this stage. *Leptospermum* does not like drying out and can be killed very quickly should this occur.

Pittosporum tenuifolium and its various cultivars are becoming more and more popular both as shrubs and also for the cut foliage trade in Aalsmeer, The Netherlands, and in Spalding, United Kingdom. Rooting *Pittosporum* is not as difficult as is thought if a few rules are adhered to. The material should be mature and seasoned. We take our cuttings in September using the first seasons flush and discarding the top flush. The cuttings are nodal with a slice wound of 1 cm long and treated with 0.08% IBA. In early summer we pot up the rooted cuttings into 1-litre pots and grow on for an additional 1 or 2 years. Large *Pittosporum* in 5-litre pots are very popular but unfortunately very scarce.

Lophomyrtus is a genus of plants not seen very often in Europe but it has great potential as a foliage crop as well as a shrub for the garden. They are a lot hardier than thought. Nodal cuttings taken in September and direct stuck either as plugs or into P8 pots will quickly grow away after rooting.

Boronia and *Prostanthera* (Australian mintbush) though hardy in the south around Cork and Kerry are not hardy enough to market in the U.K. As a subject for the conservatory, both are excellent and are easily rooted from cuttings in September. *Botrytis* species and *Rhizoctonia* species can be a problem in their culture.

Probably the most popular New Zealand plant in Europe is the *Hebe*. There has been extensive work done in Denmark on new cultivars and breeding disease-free cultivars. The great problem is with *Pseudoperonospora* species (downy mildew) but constant spraying with Aliette™ (Rhone-Poulenc) (fosetyl-aluminium) can help keep the disease at bay. It is also a good idea to culture resistant varieties.

We grow some 110,000 *Hebes* annually in some 14 cultivars. We grow the small-leaved cultivars like 'Verncosa', 'Emerald Green', *H. topiaria* 'Cobb Valley', *H. pinguifolia* 'Sutherlandii', and *H. diosmifolia* 'Charming White', and the medium-leaved cultivars like 'Oratio Beauty', 'Nicola's Blush', 'Red Edge', and 'Pink Fantasy'.

We take our cuttings from saleable stock in November and insert into Quick Pot Tray 96 cells (HerkuPlast-Kubern GmbH, Germany). Rooting is quick after 8 to10 weeks, and the trays are put out into well ventilated tunnels until potting up into 2-litre containers in June-July. We find earlier potting can have the crop ready too soon, whereas our market is geared for March-April. From cutting to saleable plant takes

only 15 months. *Hebe* is a very large commercial crop in Germany and Denmark where they are produced in glasshouses and sold for Grave Day November 1st.

Dr. Michael Woods asked at a career's guidance night to my class in 1969. "Boys do you know the difference between a farmer and a gardener?" Open mouthed we did not answer. "Well", he says, "the farmer if told he cannot grow something will accept it however the gardener will spend the rest of his life trying to prove you wrong". We will stay with New Zealand plants until they kill me.

Micropropagation of *Syringa*: Tree vs. Shrub Lilacs©

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INTRODUCTION

Lilacs have always been a mainstay of the ornamental shrub repertoire in the temperate zones of the U.S.A. Rapid clonal propagation using cuttings was always a challenge. Increasingly, micropropagation has solved this problem and is being used to generate both stock plants and liners. With the increased interest in lilacs, stimulated both by new introductions and a consumer demand for heirloom plants, lilac propagation using micropropagation has become even more important.

One series of new introductions is the Fiala lilacs (Fiala, 1988). Father John Fiala was a Roman Catholic priest who bred lilacs and crabapples for 50 years in his garden in Ohio. In 1989, Fr. Fiala asked Knight Hollow Nursery, Inc. (KHN) if we would micropropagate his lilac selections and introduce them to the commercial market. We happily agreed since these are really superior selections. Over the years we have added many other members of the genus *Syringa* to our catalog, including both shrub and tree forms.

LILAC MICROPROPAGATION AT KHN

We are currently micropropagating nearly 30 different lilacs (Table 1). Some selections are relatively easy while others present major challenges. In general, the shrub forms are relatively easy to establish in culture and have rapid multiplication rates. A 4-week subculture cycle with a minimum 3-fold increase for the *S. vulgaris* cultivars is common. These rates can also be achieved with the *S.* ×*hyacinthiflora* cultivars. All *S. vulgaris* and *S.* ×*hyacithaflora* cultivars are cultured on 1 µM zeatin with an agar and Gelrite™ (agar substitute) (Monsanto Company) (1:1, v/v) mix as the gelling agents.

Syringa ×*chinensis* 'Lilac Sunday' has proven more difficult even though this plant is a cross of *S. laciniata* × *S. vulgaris*. The most serious problem is the tendency to produce vitreous tissue. Vitreous shoots will not root and simply degrade when stuck in a rooting medium. Two simple changes made significant differences in the growth of 'Lilac Sunday'. First, we changed the gelling agent from a mix of agar and Gelrite™ to straight agar and second, we utilized vented B-caps.

Syringa julianae 'George Eastman' has also been more recalcitrant in culture. Growth in culture is much slower and a subculture cycle of 6 weeks is common. We also find that axillary buds do not break uniformly. We are currently doing some experiments with different hormone levels to see if we can improve growth.