

Exploring Chile for Plants with Cultivation Potential[®]

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INTRODUCTION

Working at Inverewe Garden for 6 years as propagator has given me experience of dealing with an extraordinary range of plants, a large number of which originate from the Southern Hemisphere. To develop my propagation skills I wanted to understand the environmental conditions some of these plants are adapted to and I planned an expedition to Chile to observe some of its native plants in their natural habitat. The expedition also offered the exciting prospect of discovering new taxa that could be grown at Inverewe, where the maritime climate favours many southern hemisphere plants.

Chile is a ribbon of land situated between the Pacific Ocean and the Andes, approximately 180 km wide at its widest and 4,329 km long. It has a land area of 756,626 sq km of which 22 per cent is forested, 18.2% pasture and 5.7 % cultivated, the rest being ice, desert or mountains. The length and climatic variety of the country are reflected in the diversity of its flora. To gain a good measure of this I visited as many climatic zones as possible in the 5 weeks I had available. I arrived at the beginning of November, Chilean spring.

THE ATACAMA DESERT, 22° SOUTH

Between the Peruvian frontier and Copiapo lies one of the most inhospitable rainless deserts in the world where the daytime temperature reaches 30°C and night temperature plummets to -10°C. Vegetation is found only on coastal-facing escarpments (where it obtains moisture as a result of the 'Camancha', a thick fog produced by the meeting of cool and warm air) and in oases where underground water supplies run from the Andes.

Much of the flora has adapted to survive such harsh conditions by developing tiny sclerophyllous leaves and becoming deep-rooted and spiny. I was able to identify desert forms of a few familiar plants such as *Calceolaria pinifolia*, *Azorella cryptantha*, *Fabiana viscosa*, and *Ephedra breana*. The wealth of flowers was startling amongst the sun-baked rocks. My favourite had to be the huge orange flowers of "mother-in-law's cushion", *Neoporteria curvispina*, a dumpy low-growing cactus. The dominant trees growing around the oases consisted of *Schinus molle*, a native of Peru; tamarugo, *Prosopis tamarugo*; quenoa, *Polylepis tomentella*; and *Acacia caven*, some of these being many centuries old and providing invaluable shade.

SEMI-DESERT REGION, 31° SOUTH

In this region there is some winter rainfall. Valley bottoms are cultivated under irrigation, but there are still vast tracks of land devoid of vegetation. Along the coastal fringes, where the sea mist provides moisture, remnant forests of evergreen species such as olivillo, *Aextoxicon punctatum* and arrayan, *Luma chequen*, can be found. The most eye-catching sight however was of many lime-green luminous-looking flowers of *Puya chilensis* interspersed by the huge candelabrum cacti, *Echinopsis chilensis* (syn. *Trichocereus chilensis*), with their white shuttlecock-like

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flowers, set against a startling backdrop of deep blue sea. The daisies that formed the carpet below these architectural plants were themselves a dazzling palette of colour. Sadly pollution is drastically reducing the number of places where such species can grow.

CHILEAN HEARTLAND, 33° SOUTH

Just a little further south and the country becomes a veritable Eden, an exceptionally beautiful countryside with a climate similar to that of the Mediterranean with dry summers and wet winters. This supports great farms and vineyards, and the majority of Chile's population. One of my greatest desires was to see the famous wine-palm or jelly-palm, *Jubaea chilensis*, which now grows in only two places — elsewhere the trees have been felled for their sweet sap, which is used as a source of sugar. The 8000 ha Parque Nacional la Campana, just north of Santiago, offered the opportunity to see them. I spent a whole day walking through towering grey trunks of palms and was delighted to note regeneration occurring in patches. It was also here that I saw *Gunnera tinctoria* and *Chusquea* species of bamboo for the first time in the wild.

A visit to this part of Chile would also not have been complete without a visit to the Nahuelbuta National Park to see the native monkey puzzles, *Araucaria araucana*. These statuesque trees looked like fossilized parasols, dripping with lichen, with their deeply fissured red-brown bark which has evolved to protect the trunks them from being damaged by flowing volcanic lava. Some of these trees were more than 30 m tall and around 2000 years old. The other prevalent tree being *Nothofagus dombeyi*, also of a similar age. We viewed the staggeringly huge alerce, *Fitzroya cupressoides* surrounded by lush ferns at Alerce Andenio National Park 42° South, also interspersed with plants such as *Saxegothaea conspicua*, *Crinodendron hookerianum*, and *Embothrium coccineum* all in flower.

ARCHIPELAGIC CHILE AND PATAGONIA, 53° SOUTH

A sparsely populated area where the climate is cold and stormy with torrential rainfall. This region has wild southern beech (*Nothofagus*) forests interspersed by mountains, glaciers, fjords and many inhospitable islands. The more southerly Patagonian and Magellanic forests are less diverse because of the lower temperatures, but are the most southerly forests in the world. They are dominated by three southern beech species: the evergreen *Nothofagus betuloides*, and the deciduous *Nothofagus pumilio* and *Nothofagus antarctica*, all incredibly resilient to wind. As a last port of call I visited the Parque Nacional Torres del Paine, an incredible natural wonder with weather-tortured pinnacles of rock and ice surrounded by milky turquoise glacial lakes and flowing grassland with valleys of southern beech and a wealth of wild flowers. To my delight a favourite of mine *Anemone multiflora*, was abundant, with the less abundant *Ourisia poeppigi* in flower, festooning a rockface. Many of the species seen in this area had potential for cultivation in the windy wet climate of western Scotland

CONCLUSION

It was truly amazing to be able to experience at first hand so many different climates and to see the diversity of adaptations plants have evolved to survive them. It leaves the traveller with a deep respect for one of the world's last remaining ar-

eas of rich wilderness. In addition to the plants any travelling experience rewards with experience of a rich variety of culture and the interaction with Chilean people, which gave me greater understanding of political, cultural, and economic issues.

I have already been able to put into practice at Inverewe some new propagating ideas developed from observations made in natural habitats in Chile, for example using smoke and heat treatments to stimulate germination of seed of some *Nothofagus* species. Any horticulturist should be encouraged to go and observe plants in their natural habitat for themselves, as it certainly alters one's outlook on plant husbandry back home.

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My full report "A Plant Exploring Trip to Chile" is available on loan from the I.P.P.S. Region of Great Britain and Ireland Region Office.

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Species investigated: *Viola* (pansy), *Helichrysum petiolare*, *Begonia* F1 Hybrid 'Nonstop Rose Petticoat', *Sedum spectabile*, *Geranium ×cantabrigiense* 'Cambridge', *Pelargonium* 'Red Mini Cascade' and *Plectranthus variegatus*.

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