

WEED CONTROL

Our annual nursery crop is about 1 million plants, grown in 6 and 8 in. containers. Very few are sold in less than 5 months from potting and the man-hours spent in weed control would be the equivalent of approximately 60% of one person's time over a full year.

The practice we follow can best be described as discipline based on a very simple premise, namely that the pot next door is the greatest source of weed seed, and we act accordingly. Indeed, we go a little further by preventing seeding of weeds anywhere in the nursery grounds. The boundary is fenced and where possible the outside area is slashed to minimise seed drift and prevent seeding anywhere in the nursery grounds.

Before new crops are put out, the bays are checked and granular herbicide is often lightly applied, though this becomes less necessary after a few years of no seed. Because we pasteurise all potting soil we initially eradicate all but hard-coated weed seed.

PLANT PROPAGATION IN NEW ZEALAND

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It must be recognised that the establishment of the nursery industry in New Zealand by those nurserymen who arrived in the first two decades of the colony's history involved experiences that tested their skills and abilities to the maximum. Very few of them arrived with possessions such as bank accounts or other tools of trade to establish an industry in this new country.

When one studies the early days of the New Zealand nurserymen, it appears that most commenced their business as market gardeners, slowly moving their production in varying directions to the market demands of their districts. Those pioneers who arrived with tree seeds, cherry stones, apple and pear pips, and other horticultural plants combined the growing of one and another and slowly made a beginning of an industry in New Zealand. This, of course, was only one part of the story, because along with the production of plants came the potential customers. These were the farmers grappling with the land and the new problems of a land that was just beginning. A problem to overcome was a shortage of cash, so a system of barter was adopted between the man who produced from the soil, and the merchant in his office and warehouse. In these

early days of the industry, a man's word was his bond, and integrity and industry meant as much as silver and gold.

From the beginning of the settlement in the early 1840's, it was not until the age of refrigeration that New Zealand started to move from a struggling colony into commerce, and population growth commenced. This saw a new industry open up where fruit trees and the potential of their products could be shipped overseas to other profitable markets. Today we have an apple and pear export business which brings returns to the country measured in millions.

The distribution and selling of nursery plants in New Zealand has never been an easy process. This was particularly evident in the early years of the nursery business. In those days it was a free-for-all with people marketing wherever the need took them. Nevertheless, the future of the country and the desire for beautification is now marked by many monuments throughout the country in the form of magnificent tree specimens in parks and public domains, along with those in private gardens. Many of these have been noted by visitors from both New Zealand and overseas countries.

The New Zealand nurseryman and his propagation skill have earned him acceptance from the "trade" in many other countries. This has been proven more than ever over the last 10 to 20 years with the development of a sound export market for New Zealand ornamental plants and, especially, for some fruiting plants.

The climatic variations through our small country is vast, therefore the natural flora varies between the two main islands. Nurseries are spread throughout the main centres and are situated within the farming areas, supplying both shelter and specimen trees to the largely agricultural industry which covers much of our landscape.

Over the years we have seen a gradual move away from the general nursery which covered all lines from herbaceous plants, hardy woody plants, to bulbs and fruit trees, to more specialisation. This, in many ways, assisted the nurseryman but has brought about difficulties in the training of the student within the horticultural industry.

Training

New Zealand has been recognised, especially in the South Pacific, for the emphasis placed on its Universities and Technical Institutes, and now within our schooling, the training of horticultural students. We are very fortunate to have in New Zealand two universities that offer a range of both diploma and degree courses, the diploma being more practically orientated, to the scientist where degrees are available in horticultural science. In conjunction with this, spread throughout New Zealand many Technical Institutes offer comprehensive courses that cover all aspects of horticulture.

Over the past 5 to 6 years, with the recognition of horticulture

as a major export earner for our country, we have seen, in addition to Technical Institutes offering day-time courses, extra night classes being offered. More recently we have seen the introduction of horticulture into the schooling system, with exams being taken in the third year of secondary training.

Bedding Plant Production

The bedding plant industry is centred around several main areas throughout New Zealand: firstly, where large populations exist and Garden Centres operate and, secondly, in the areas where large scale vegetable production is carried out, for both local markets and the processing industry. New Zealand has a large fruit and vegetable base on the East Coast of New Zealand at Hawkes Bay, where one of the largest canneries in New Zealand operates. Within these areas are situated large producers of vegetable seedlings. Production is mechanised using plugs, as well as vacuum sowers to ensure quality, consistency, and the right product to the grower.

The Garden Centre industry within the main centres draws on large numbers of both flower and vegetable plants for the home gardener. The average New Zealander with his small piece of land adjoining his property, has always shown a keen interest in growing his own vegetables and flowers and, for this reason, the bedding plant industry has continued to prosper throughout New Zealand.

House Plant Production

Again this area of plant propagation is centred around large, modern, well-equipped house plant producing nurseries. Production has been of conventional means, both by seeds and cuttings but, more recently, the association of some of the larger operators with tissue-culture laboratories, both in New Zealand and Australia, has seen tissue-cultured plants entering the New Zealand market in large numbers.

From New Zealand has always been a keen desire to export house plants throughout the Pacific as well as to the Asian countries of Singapore and Hong Kong. Although not large by world standards, regular shipments are supplied to many plant shops in these areas. The difficulty that has to be overcome by all New Zealand producers irrespective to the product that he grows, is the distance he is from the market.

Field Production

Across the length and breadth of New Zealand can be found field production of ornamentals and fruit trees, as well as timber crops. In the central part of the North Island are large scale timber producing nurseries, both private and Government owned. These supply seedlings throughout the country; seeds are produced in seed orchards in the case of *Pinus radiata*. The production of roses and their acceptance on the market place has always been considerable

and, again, throughout New Zealand rose production has played an important role for the field producer.

The Taranaki district, with its ideal climate, soil types, and world recognition for its rhododendrons, has always been a centre for one of the largest nurseries, that of Duncan & Davies Limited. With its large-scale field production, it has supplied New Zealand with some of the world's best cultivars of rhododendrons and azaleas, along with a complete range of other field-produced crops. It also is one of the largest producers of conifers and camellias for the U.K. market.

Ornamentals

Propagation of ornamental plants within New Zealand is carried out as both small and large scale operations. The range is extensive depending on the climatic zones, moving from the top of the North Island with semi-subtropicals, down to the alpine areas at the base of the South Island. The range of products produced and the skills needed to be applied to such a wide flora range, test the ability of the New Zealand propagator to a maximum. This has always captured the imagination and interest of all horticultural visitors to New Zealand, and it is for this reason that we have seen a steady and expanding market for ornamental plants from New Zealand. Through our Universities and Government Departments, research is undertaken to free viruses from many plants, and these are now world recognised. Two that are of great importance are nandina and daphne and, in addition to this, many roses and ornamental cherries are currently being worked with.

Although some 12,000 miles away from its Northern Hemisphere customers in Europe, the regular supply by sea and air of ornamental liners has become an accepted part of the New Zealand nurserymen's business for a limited number of growers, but the continuity and expertise developed over the years has now seen a strong base and, in some cases, joint venturing between two nurseries in respective hemispheres.

Tissue Culture

This is one of the newest forms of propagation to enter New Zealand. Currently there are approximately five commercial tissue culture laboratories operating in New Zealand, but in association with this there are many small owner-operators who service other growers, especially in the orchid industry.

With its limited markets, especially with house plants, it is very easy to saturate these markets. New Zealand propagators have called upon the assistance of scientists from both Government and the Universities. This has assisted many laboratories into entering new fields that have not been touched on in other countries of the world, such as *Pinus radiata*, proteas, and bulb crops such as nerines and zantedeschias.

There is no doubt that tissue culture is here to stay as a means of propagation and the association of commercial laboratories with nurseries to carry out transfer operations, along with research for the future, has ensured a strong base for commercial tissue culture.

FRUITING PLANTS

There is little need to explain the role of kiwifruit within the New Zealand market. This plant, which was introduced many years ago from mainland China as the Chinese gooseberry, and now named kiwifruit (which is internationally accepted), has possibly been the driving force behind the recognition of horticulture. The skills that have been applied by the propagator to produce the traditional grafted plants, to rooted cutting, and more recently, tissue culture plants, have seen kiwifruit recognised as one of the leading plants within New Zealand for both local and export markets. Today it is a multi-million dollar earner both for fruit and plant exports, and large nurseries producing many hundreds of thousands of plants can be found spread across New Zealand.

The apple industry has always played a major role, and, as a result of new cultivars, rootstocks, breeding work, and selections introduced from overseas, the propagation of apple rootstock from tissue culture is now playing an important role in this continuing multi-million dollar earner for New Zealand.

The range of fruit crops that are planted throughout New Zealand varies from sub-tropicals such as feijoas, citrus, and avocado, to the recent introductions of persimmon and nashi (Asian pears).

The horticultural industry is wide, varied, and exciting in New Zealand. The ability of the propagator to develop skills, be prepared to change, and to accept the challenges of this industry will always ensure that those people coming on have as much to conquer as those that have passed through our industry. Truly our New Zealand propagator has a goodly heritage. Let us care for it, cherish and maintain it.