

A NURSERY FACILITY IN THE BULLER AREA OF NEW ZEALAND

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Knights Nurseries was established on 16 March, 1968, on the West Coast of New Zealand's South Island in the county of Buller, close to the town of Westport. That a tree and shrub nursery was not established sooner was due, firstly to the heavy rainfall of the area, 2¼ million gallons to the acre, or 8½ ft. at sea level and, secondly, the soils in this area are classed Podzols with a very acid pH of 4.5. However, the development of container-growing overcame this second consideration.

The first requirement was to find a 20 acre block of freehold land. Land that could be drained, close to native subtropical rainforest for shelter as a setting, while still remaining close to the railhead at Westport.

Having found a suitable block of land, we designed a landscape plan of the proposed nursery, aiming for a low maintenance attractive layout. The time to use a bulldozer is before planting trees, so time taken in advance design is well spent.

The next job was to plant shelter and dig drains to a creek as the land was very swampy but with plenty of fall. We needed to drop the water table 4 ft. The shelter material we chose was *Populus nigra* and we planted 6 ft. poles at 2 ft. centres.

To make a gravel pad for containers and the access roads, we used a bulldozer to contour the land. There being no drainage downwards all rainwater must runoff, any hollows just fill with water. (The topsoil was pushed into a heap to be made into potting mix.) Gravel fill was pushed over the top to form a hard firm pad that could be used the year round and over this we spread a layer of rock chips to help prevent weeds and stop the roots of container stock penetrating the gravel pad.

An irrigation system was used, with overhead sprinklers on 4 ft. high, ¾ in. pipes to allow tall plants to be watered.

The first propagation facility we used was an A-frame type cold frame with 35% shade cloth, 24 ft. long, 6 ft. wide, using a mix of 60% crusher dust and 40% hardwood sawdust. this was very successful; we were able to root a wide range of plants.

We then progressed to a 30' x 40' propagation shade house with 10° sloping concrete pad, covered with 40% shade cloth,

with 4 rows of misting nozzles. We ran the misting system 24 hrs a day and, in mid-summer, we rooted ericas and callunas (in 2 to 3 weeks), rhododendrons and camellias. In fact, with high sunshine hours and warm temperatures, most cuttings rooted well and quickly. We use bottomless boxes placed in galvanised trays; the boxes are filled with the rooting mix, the cuttings are stuck, and then are placed in the outside propagator. The trays are slid out from under the cuttings ready for use under the next box. When the cuttings had taken, the tray was pushed under the box of cuttings for removal to the potting shed, with their roots holding the medium firm. When potting the cuttings from the tray, the box was removed allowing easy access to the cuttings with no roots through the base of the tray to contend with.

Various potting mixes have been tried. At present we are using sphagnum peat 10%, soil 50%, and sawdust 40%. The mix is a John Innes type, using steam sterilized soil, to eliminate weeds and fungus. We have used methyl bromide but found that this does not kill clover-type weeds.

Next we built a polythene propagation tunnel 60 x 20 ft. with a full concrete floor. This house can be used at a later date for retail sales by removing the irrigation system and sand beds. The propagator has timber-framed ends clad in polite sheets, two paths 2 ft wide with a central bed 10 ft. wide with 2 rows of misting nozzles and two 3 ft. beds down either side with one row of misting nozzles. At one end there are two 30-in doors and, the other end, a 7 ft. wide door to bring in machinery. Both ends of the propagator are vented.

Tanalized timber extends around the edges of the bed to retain 3 inches of sand base with heating cables for bottom heat. Propagation trays, tubes, or bottomless boxes can be placed on the sand base, this allows excess water to pass down into the sandbase and capillary action helps to keep them moist. This saves the need for constant watering. Sand beds hold heat in the water and give this off during the night, reducing heating costs. Heating is from a 2 Kw fan on a thermostat with a two-heat switch.

During the summer we maintain 30°C and a high humidity at 80 percent. In the propagator our rooting medium is sand — sawdust — sphagnum moss, in the ratio, 2-6-1. We mix Captan with the hormone powder at a ratio of 1-10. Cuttings treated in this way have very good clean roots.

In the mid-1970's poplar rust from Australia arrived on the wind. It started as a small orange blotch about ¼ in. diameter and soon was on all the trees. In the following years the rust defoliated the trees very early, new growth was stunted, and

the trees lost vigor. We cut out our shelter belts and looked for a suitable replacement. We have replaced these with *Populus flevo* and *Salix matsudana*.

Our potting shed was built in 1970 with 4 ft. concrete walls with a timber frame of 10 ft. x 26 ft. x 32 ft. All daily work is carried out in the potting shed and for soil storage and tractor storage we built a 45 x 38 ft. cyclone truss shed. This enables us to work 12 months of the year. Even with 6 months continuous rain, we always had dry soil.

For weed control the gravel pad is sprayed with Paraquat and Simazine for long-term weed control, using Roundup for any hard to kill weeds. For containers we use Simazine or Ronstar but not as an overall spray. We use a hand dosing gun with a spray tank containing Paraquat and Simazine or Ronstar. Tractor spraying is used around the base of trees or shrubs having mature stems only. A paint brush dipped in Roundup and Ronstar, wiped over the foliage of the weeds, is very effective, and is quicker than hand weedings.

POLYTHENE VS. ALUMINIUM FOIL FOR KEEPING PLANT MATERIAL FRESH AND HEALTHY

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Transparent and opaque polythene bags are extensively used by nurserymen and plant propagators. We put cutting material in them to keep them fresh, we store seeds and we even sell trees and shrubs nicely packaged in lovely polythene display packages. We also use them for a dozen and one other purposes and take it for granted they are doing the job well. Polythene bags are clean, cheap, don't go soggy, are reasonably tough, and competitively priced. About the only shortcoming transparent and opaque polythene bags have is that they don't do what they are supposed to do, i.e. keep plant material fresh and healthy. In fact, it is hard to find any container more useless for the storage of live plant material. Cutting material collapses, seeds lose viability, flowers wilt, fruit rots, and it all happens better and quicker in polythene bags. Waxed paper, waxed cardboard, wooden boxes, damp sacking, damp cotton, and even tin cans are all superior to polythene for the purpose of keeping plant material alive and healthy.

On the other hand, aluminium foil is the material which far outshines all others with regard to keeping plant material fresh during storage. In any comparison between these two