# PROGRAMME OF THE PROPAGATION SYSTEM USED AT ARDMORE NURSERIES LTD.

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Our nursery is 12.5 hectares in size. One hectare is used for containers and as a growing-on area and for buildings, the rest is open ground consisting of consolidated peat. We produce about 80 to 85 percent of our own plants from cuttings or seed.

**Cutting Propagation.** All our evergreen cuttings are made in March/April and are taken mostly from plants growing in the open ground which will be lifted for sale in June/July.

The genera of plants we propagate from cuttings are:

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| *Azara* | *Cytisus* | *Pittosporum* |
| *Boronia* | *Erica* | *Photinia* |
| *Calluna* | *Euonymus* | *Senecio* |
| *Chamaecyparis* | *Griselinia* | *Spiraea* |
| *Choisya* | *Hebe* | *Teucrium* |
| *Coprosma* | *Hypericum* | *Viburnum* |
| *Corokia* | *Juniperus* | *Weigela* |
| *Cotoneaster* | *Nerium* | *Westringia* |
| *Cryptomeria* | *Phebalium* | |

All cuttings are treated the same way. We make heel cuttings or otherwise cut under a leaf node. Cuttings are made as large as is practical; for example, *Cryptomeria elegans* cuttings are up to 20 cm long. All cuttings are put in boxes of pumice and sand, the latter from the Waikato River. The trays we have used mostly are wooden boxes, 300 × 450 mm by 100 mm deep. One sheet of newspaper is put in the bottom to stop the sand going through the spaces. The sand is dusted with lindane to control nematodes. We put 160 cuttings to a tray using a prodder, which is a piece of 25 mm thick wood having one hundred sixty 150 mm nails sticking out of it. This is pressed into the tray of sand leaving 160 holes ready to put the cuttings into at the right depth. After insertion of the cuttings the trays are then watered down and tapped at the same time; this firms the sand down around the cuttings. Most of the conifers, *Photinia*, and *Pittosporum* go into a tunnel house, 35 m long and 4.5 m wide, with Sarlon cloth at each end to allow for air circulation. The tunnel house has a sand floor and all trays are placed on this. There is one 50 mm pipeline down the middle of the tunnel house with a 25 mm upstand every 2 m which is 1 m high, having a winspray sprinkler on top.

Watering is controlled by a time-clock which can be set to come on from once an hour to 60 times an hour; one can water from 1 second to 60 seconds each time, depending on the setting. We have to alter our settings according to the weather.

Also we have another clock which turns off all the time clocks at 5 p.m. and turns them on again at 8 a.m. We set this according to the time of year and adjust for daylight savings time.

Our hardy cuttings are made the same way but go into the Sarlon, or shade house, with the same watering system, but which is used a lot less in wet weather. Most cuttings will stay in that position through the winter until spring when they are brought out to harden before planting or potting.

All cuttings that are planted in the open ground are taken out of the trays and planted straight out. Hence the reason for making large cuttings. Cuttings which are not planted in open ground go into 6 cm square peat pots or 8 cm round peat pots and are grown in these until ready for putting in planter bags or, in the case of a slow grower, they may be left until the following autumn or spring to be planted in the open ground.

We get 90 to 100% success in rooting cuttings of most plants with our system of propagation but we are growing mostly the hardy type plants.

**Seed Sowing.** The main genera we grow from seed are:

*Acer*
*Agonis*
*Albizzia*
*Banksia*
*Betula*
*Boronia*
*Callistemon*
*Casuarina*
*Cordyline*
*Cryptomeria*
*Cupressus*
*Dodonaea*
*Eugenia*
*Feijoa*
*Grevillea*
*Hoheria*
*Liquidambar*
*Liriodendron*
*Melia*
*Metrosideros*
*Nandina*
*Neopanax*
*Phormium*
*Pittosporum*
*Pseudopanax*
*Rhus*
*Schinus*
*Taxodium*
*Virgilia*

Our seed comes from New Zealand, Australia, and Italy. We use mainly hygiene trays for sowing the seed, except for the larger seeds for which we use a deep plastic tray, 150 mm deep. We use our potting mix which is a 1:1 peat/sand mix, with added manures. This mix is used for all our potting, etc. The mix is firmed in the tray and the seed is sown on top with grade 2.5 vermiculite used to cover the seed. The tray of seed is then watered with a watering can. Terrozole is mixed into the water to control "damping off". The trays then go into a tunnel house. Frequency of watering is controlled by a time switch. After the seed has been germinated for a few weeks, depending on the cultivar, the trays are moved outside for a week then the seedlings are pricked out into other trays, using 80 plants to a tray.

The seedlings are grown until they are large enough to be put in 8 cm round peat pots. We are finding that this is the best way to grow our plants until they are ready to plant out or to be

put in planter bags. This gives a saleable plant quickly with the least amount of growing area being used.

We are very concerned in avoiding plant roots going around in circles in containers and not getting out of this "merry-go-round" as the plants mature, hence our large use of peat pots and our practice of not leaving plants in plastic tubes when we receive them from another nursery.

## "COSTING" A GROWING MEDIUM

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In general terms I am not keen on the process commonly called "costing", although I am happy to admit that cost-accounting, correctly applied, can make a valuable contribution to business management. Too often, however, the process commonly referred to as "costing" is not carried out in accordance with sound cost-accounting principles, and the results so obtained are frequently misused to produce conclusions which may be economically unsound. This approach to costs has recently been focused on growing media for container grown plants.

The true costs of a growing medium are made up of a number of factors, some of which are not easy to measure. The most important of these are:

(a) *The raw materials.* The material costs of a growing medium are fairly easily determined. Table 1 sets out the on-site-cost per $M^3$ of some commonly used materials, while Table 2 sets out the materials cost of three mixtures made from these, including the costs of a fertilizer programme. These costs will vary from nursery to nursery, and are included here merely as an illustration.

**Table 1.** Material costs, per cubic meter, delivered on site to the New Zealand Nursery Research Centre.

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|---|---|
| Soil, good quality loam | $ 8.75 |
| Sand, river, washed | $ 7.50 |
| Sawdust, pine | $ 5.75 |
| Peat, baled Hauraki | $23.00 |

To the casual observer the difference in price is considerable, with the most expensive mix raising growing media costs by 77% above the cheapest.

(b) *Storage.* When materials are delivered to the site they must be stored, and storage represents a cost. Soil needs to be