

Propagation of Acacias and Eucalypts

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The old saying that “the only people who made money during the gold rushes were the storekeepers” had quite a bit to do with our decision to establish our shelter nursery partnership during the heady days of New Zealand’s “horticultural boom years.” Driven by the Kiwi Fruit successes, New Zealanders were charging headlong into growing anything and everything from babacos to lychees. One of the first things all these ventures needed was shelter, and that’s where we came in with our container nursery. It’s interesting to reflect that in the Wairarapa nearly every horticulture venture has foundered except for pip fruit which is steadily expanding. Fortunately our nursery has survived, widening its scope, and eventually being sold as a going concern a few months ago.

I am a keen farm forester and a soil conservator by training and this has given me a special interest in eucalypts and acacias. It’s no surprise therefore that these species continued as one of the mainstays of our nursery. In this paper I will endeavour to pass on some of the techniques we used to propagate these species in our nursery.

SEED PROPAGATION

Seed Sources. Although seed is commercially available, we collected seed from local trees, and more recently from our own plantings on the property. Provenance is most important with eucalypts. *Eucalyptus obliqua* seed collected from trees growing at Rotorua or inland Southland is most likely to produce a good frost-hardy line of trees. Similarly the coppicing ability of *E. nitens* can vary depending on just where the seed originates in Victoria. The right source must be pursued if the intended use is for firewood production under a coppice system.

Collected eucalypt capsules can take some time to release their seed—warm dry conditions are required for release. Bagged seed put on top of the hot water cylinder always gave us good results. Eucalypt seed is very fine and is sown with the considerable amount of dross produced during drying.

Acacia seed is collected pods and all. Collection should not be delayed once the seed is ready as most pods can fall in one day of hot dry northwest wind. Hot dry conditions are again needed to release the seeds. Sieving is used to eliminate the chaff.

Stratification. The saying “some like it hot” certainly applies to acacias. We always achieved good results by covering seed with water that has just boiled and then leaving the seed to soak overnight—a total period of around 15 to 20 h.

Eucalypt stratification requirements are the opposite of acacias. Most require varying periods of cold-moist stratification to break dormancy and achieve an even germination. Generally the altitude at which the species naturally occurs relates closely to its stratification requirements. Higher altitude species, such as *E. delegatensis*, need up to 10 weeks while lowland/coastal species, such as *E.*

botryoides, require no stratification.

Such varying conditions require a planned stratification programme carefully worked backwards from late autumn when seedling growth slows, to pricking out, and back to sowing.

We achieved consistent results by stratifying eucalypt seed in coarse, damp river sand. After dusting the seed with Thiram, seed layers are alternated with sand in air-tight plastic containers. We put 15 g of seed per container and sow both sand and seed later in one large polystyrene seed tray. Containers should be carefully labeled with species and date for later sowing after stratification is completed. We apply masking tape to ensure containers remain air tight and then place in a refrigerator.

Sowing. We have always used a proprietary seed germination mix which is sterilised and has a low nutrient content. Trays are filled, well-watered, and left to drain.

Even sowing is most important with fine seeds, such as eucalypts. Use fine sand to ensure an even distribution. With stratified seed, sow with the sand used for stratification. Thinly cover the seed after sowing with a coarse grade vermiculite and lightly water.

With acacias, drain the seed and use vermiculite or dry sand to separate the damp seed for sowing. After sowing, cover with a 1 seed germination mix : 1 sand (v/v) medium, firm the mix, and cover with washed pea gravel. Pea gravel prevents crusting as the seedlings emerge.

Once placed in the glasshouse, the trays are each covered with white plastic that is held down with light battens. Each day the plastic is taken off, excess water shaken off, and replaced dry side down—this operation is repeated until seedlings emerge. We always avoided watering until germination to prevent damping off.

Pricking Out. Once the eucalypts and acacias have reached the first two-leaf stage above the cotyledons, pricking out into final containers occurs. Because they are Australian plants, high fertility is not a requirement,—phosphate must be particularly avoided. Our first efforts with acacias resulted in plants with a propensity to grow horizontally, the problem was overcome by leaving phosphate out of the mix. For both acacias and eucalypts our soil mix is a 7 stabilised granulated bark : 1 washed river sand (v/v) mix. Fertiliser was based on slow-release Osmocote and fritted trace elements. To ensure even mixing and resultant even growth of seedlings, we used a horizontal paddle mixer for mixing the soil mix and fertiliser.

After initially using peat pots, we made the change to Root Trainers with excellent results. The combination of root training and air pruning goes a long way to ensuring that each future large shelter and woodlot tree will have strong, well-balanced, multiple root systems. We used Shrub Trainers for the eucalypts and the deeper Hillsons for the acacias.

Careful pricking-out is essential. Seedlings must only be handled by the leaves—not the stem. This prevents subsequent stem breakage as the seedlings grow. Seedlings should be placed into a prepared hole with soil carefully “levered” against the roots. We used paring knives for this work. On no account should the soil be pushed downwards. This results in “S” shaped stems or stems with “pig tails” just below the surface. Trees with such weak points invariably break off below

ground level within a few years of planting.

After pricking out and replanting, the small seedlings soon resume vigorous growth. We use shade houses and judicious hand watering at this stage. The plants are kept under shade until they are about 10 cm high. They can then be placed outside, with a careful eye on watering needs. Direct exposure to autumn changes and falling temperatures is needed to develop frost hardiness before the winter.

Disease Control. The main insect problem we encountered is leaf roller caterpillar which is readily controlled with Maldison at half the recommended rate. *Botrytis* can be a problem under very wet conditions, particularly in softer species such as *E. botryoides*. Benlate or Captan can be helpful although the best answer is to keep the base of the plants free from litter and make sure they are not in the shade and receive full sunlight.