

Appendix 15

Basic Propagation Methods

A15.1 Introduction

Propagation and culture of native plants is a specialist field and it is generally recommended that this is carried out by a suitably qualified and experienced person or contractor. This guideline, however, provides some basic notes on propagation and culture of native species. It will provide you with an understanding of how plants need to be handled to ensure that they are healthy and suitable for use in rehabilitation.

Some additional notes on the specific requirements of various species suitable for rehabilitation in KNP are included in Appendices 19-11.

A15.2 Hygiene

As with all aspects of plant handling, hygiene is important to prevent the spread of disease and potential loss of a great deal of stock. A simple disinfectant can be made from a mixture of 20ml of domestic bleach in 1 litre of water. This can be stored for up to a week and re-used during that period. The mixture can be used for disinfecting hands, pots, benches and other equipment. Pots and tools should generally be soaked for 5-10 minutes.

A15.3 Propagation Media

There are two broad kinds of propagation media;

- seed raising mix is used for germinating seed and rooting cuttings; and
- potting mix is used for raising plants once their roots are well developed.

Seed Raising Mix

Recommended seed raising mix blends include:

- 1:1 medium grade river sand and peat or coconut fibre (by volume); or
- 2:1 vermiculite and horticultural (not builders) perlite.

Seed raising mix should have a pH of 5 - 6.5, a fairly constant volume (whether wet or dry), retain moisture enough to minimise the need for frequent watering and be free from weeds, pests or diseases.

Potting Mix

Potting mix should:

- comply with AS 3743.1996;
- include native plant fertilizer with trace elements (e.g. Osmacote™ native plant mix);
- have a pH of 5 - 6.5;
- have a fairly constant volume (whether wet or dry),
- retain moisture enough to minimise the need for frequent watering; and
- be free from weeds, pests or diseases.

Potting mix should not contain soil unless it is required to contribute mycorrhizae for certain species.

Sterilising Propagation Media

Small quantities of propagation media can be sterilised so that it is free of weeds, pests and diseases, by moistening it, placing it in an oven bag and heating to a temperature of 60° for 30 minutes. Large quantities should be sterilised commercially.

Pots, germination trays, hands, work surfaces and tools can be sterilised in a bath of 20ml laundry bleach to 1 litre of water. Pots, germination trays and tools should be soaked for 5-10 minutes in the disinfectant.

A15.4 Germination Trays

Germination trays, about 150 x 100 x 50 mm are useful for germination of large quantities of seed.

A15.4 Breaking Seed Dormancy

Many native species will not germinate unless they are specially treated to break dormancy. Some notes on techniques to break dormancy in specific KNP species have been included in Appendix 2. Ralph (2003) provides useful information on propagation techniques for many native species (refer to resource list, Appendix 6). The two most common treatments used include heat treatment and cold treatment.

- Heat treatment involves adding the seed to boiling water and boiling for 1 minute before allowing it to cool in the water. Seed with a semi-hard coat may only need to be soaked in water that has boiled rather than boiling it.
- Cold treatment is commonly required for alpine species. There are two alternatives; either the seed may be stored for several weeks in the fridge before planting, or it could be sown before being covered in a plastic bag (to reduce drying) and placing it in the refrigerator.

In general, species that do not require special treatment will germinate at temperatures of 15-20°.

A15.5 Sowing Seed

Sow into moist planting medium by sprinkling evenly over the surface but not too densely. Expect a significant proportion of seed to succumb to pathogens. Very fine seed can be sown by mixing with sand or using a salt shaker. Once the seed is sown, it should be covered lightly – as a general rule, cover to the same depth as the thickness of the seed. For very fine seed an equally light sprinkling of sand will be necessary. Coarse seed can be covered with a mulch of grit or sand which will prevent a crust forming on the surface and make even watering easier.

Water each tray immediately and mark it with the name of the species it contains, where the seed was collected and the date of sowing.

A15.6 Watering

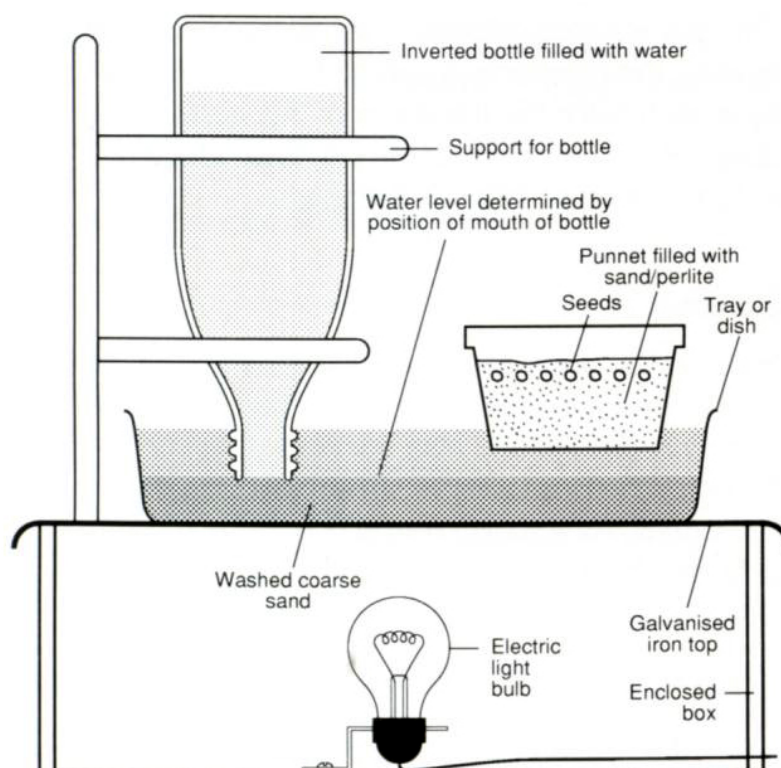
The seed raising mix should be kept damp but not overly wet. With some very fine seed and seedlings, overhead spraying can be damaging therefore an alternative is to create a 'bog' in which the germination tray sits and draws up water from below. This can be done using the method shown in Figure A15.1.

Once seed has germinated, watering once or twice a day, to keep soil moist, should be adequate. Avoid over-watering as this is likely to encourage disease.

A15.7 Light

Once seed has germinated it should be placed in a location with warm, gentle, even light. Inadequate light may produce weak, leggy seedlings. Too much light can result in the seedlings drying out.

Figure A15.1 Alternative method for keeping fine seed moist



Source: Greening Australia (undated brochure)

A15.8 Ventilation

Good air circulation is necessary to minimise the potential for disease. Too much wind, however, may be drying.

A15.9 Fertilising

While they are germinating seedlings generally do not require fertiliser, however, once they are pricked out, weekly fertilising may help the plants to establish and grow more vigorously.

A15.10 Pricking Out

When they germinate, seedlings generally produce one or two special seed leaves (cotyledons) first. After this the first set of real leaves appears. Generally, once a small shoot appears above these (or the plant is 1-2 cm high), the plant is ready for 'pricking out', or transplanting to an individual pot.

A small poker or 'dibble stick' (e.g. an old knitting needle) can be used to remove the plant from its tray. To avoid damaging it, hold it by a cotyledon. Try to distribute the roots evenly when planting the seedling – avoid placing them so that they become kinked as this can impact on the long term survival of the plant (particularly trees).

A15.4 Sizing Tubes and Pots

When they are first pricked out, seedlings should be planted first into tubes (pots) with a diameter of 4-5 cm (1.5 – 2 inches). As a general rule, they can be grown in these until their height nears that of the tube, after which they should be potted up with the size of the pot chosen in proportion to the rate at which the plant grows. If a pot that is too large is used, the unused soil in the pot may become 'sour' before the roots of the plant reach it.

Plants should be grown on to 7.5 cm pots for planting out, although 5cm pots or tubes may be adequate for forbs, sedges and grasses.