



Topic 6: PROPAGATION of NATIVE PLANTS

Propagation System 1

This system creates an enclosure that maintains a humid environment ideal for propagating cuttings.

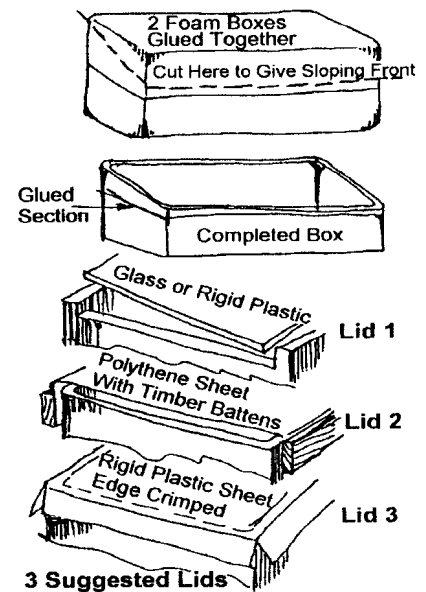
Method of construction

- Cut the undulating tops off two large foam boxes to achieve straightness to the sides.
- Glue one box onto the other, forming a box without openings.
- Cut the box on an angle as shown. The angled top allows condensation to run off and accommodates cuttings of different lengths. This gives a height of approximately 390 mm at the rear and a height of 230 mm at the front.

(d) Make a tight fitting cover for the slanting top of either:

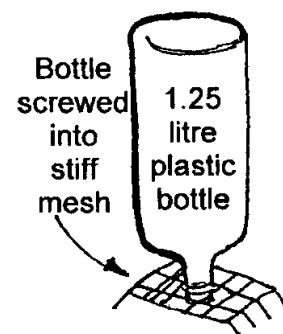
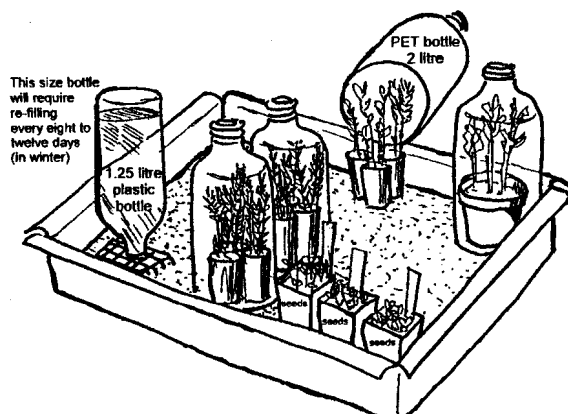
- glass or rigid plastic (lid 1),
- polythene sheet stapled to a frame (lid 2), or
- laminated plastic with a crimped edge (lid 3).

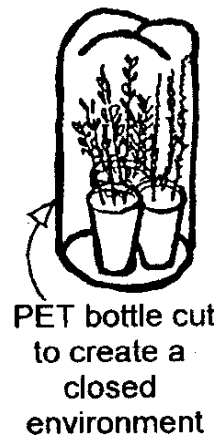
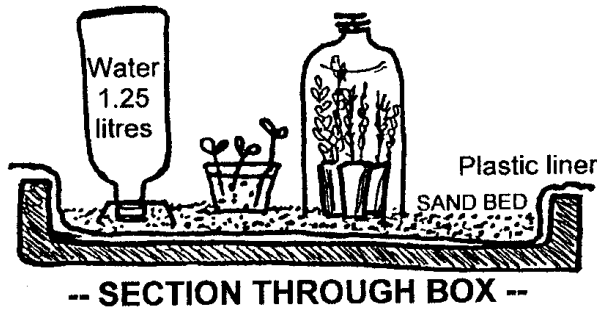
The completed foam box is kept permanently in semi-shade with minimal morning sun to prevent drying out of cuttings.



Propagation System 2

This system creates a capillary bed as shown below, constructed from foam boxes lined with plastic sheet to make the box waterproof. Such boxes are available in fish, fruit and vegetable stores. (Note: broccoli and prawn boxes being waterproof do not need a liner). The bottom is covered with sand to a depth of 10 mm. The sand is kept moist by supporting an inverted 1.25 litre bottle of water as shown, screwed into a stiff mesh that is bent to a U-shape. The bottle will require refilling every 8-12 days in winter, more in summer. The box shown will hold 11 PET bottles and 33, in number 50 x 75 mm tubes.

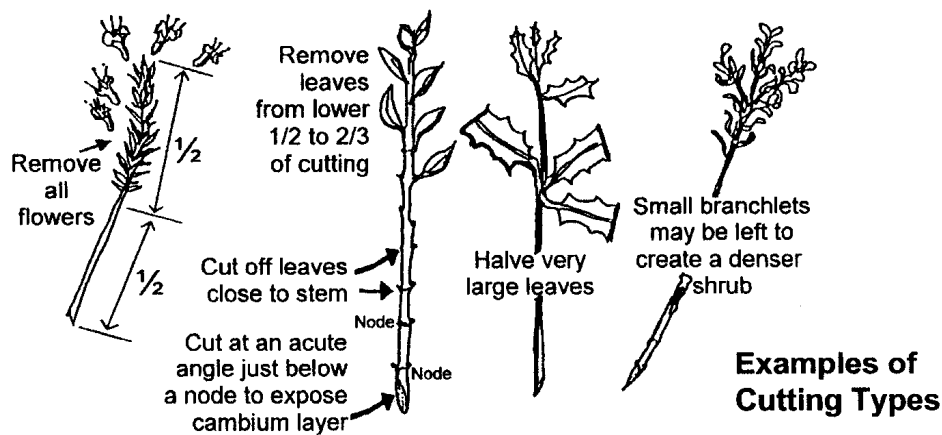




Propagation by Cuttings

My propagation mix is river sand or propagation sand from a nursery washed in a bucket to remove the silt. I also add coco peat up to 25% of mix, and decide the amount according to the coarseness of the medium, i.e. less if fine sand.

Cuttings may be collected at any time of the year. Each cutting averages between 80 mm and 250 mm selected from growing tips or side shoots and leaves are left up to half the length of the cutting. Select wood up to a year old, but before it has become woody. As a general rule, soft stemmed material strikes faster and harder material takes longer. The method is shown in the sketches below.



If you are not going to plant the cuttings straight away, then it is important to keep cutting material fresh. Place the material in a plastic bag, sprinkle water into the bag, swirl it about and upend to remove surplus. After closing the bag, store in a cool place or refrigerator for up to five days. Alternatively, the cutting material may be wrapped lightly in damp newspaper inside a bag or container for three or four days. In this form they may be posted. Cutting material can be put in a jar of water to restore moisture for a few hours or overnight.

When cuttings have been prepared, it is desirable, although not essential, to dip the end in a rooting hormone, a gel, powder or liquid, according to the manufacturer's directions. Such products include Clonex Gel or Yates Hormone Powder. Many propagators are now using Clonex Gel but I have not found it better than my old method using a cutting powder.

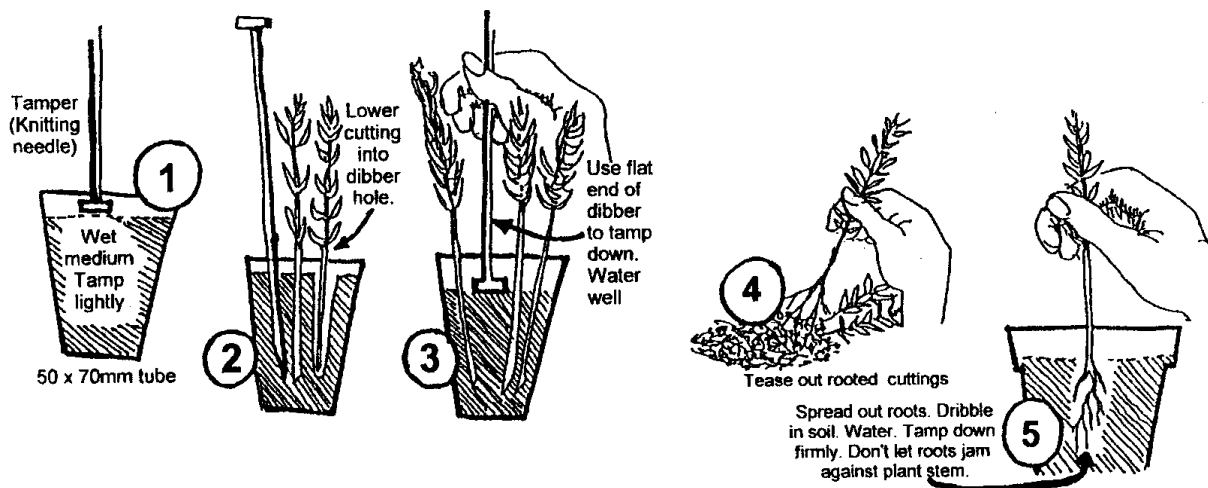
A PET bottle is placed over three tubes. 11 bottles with 33 tubes fit within the box. I get best results with PET bottles with the base cut out and the cap discarded but occasionally the reverse is used creating a closed environment as shown.

Place the box in a glasshouse, bush house, igloo, cold frame or a morning sun position on a veranda. Without heat or misting the system is maintained over the whole year and apart from the rooting time slowing up in June, July and August, no ill effects from temperatures down to 9° C have been noticed. Under these conditions I have propagated a wide range of plants including many *Ericaceae*.

Some Pointers for Striking Cuttings

Patience is required as native plant cuttings of soft wood may take four to eight weeks, but some hardwood cuttings may take between 12 weeks and at least a year, to root. Be warned - a few species are so difficult that raising from seed is to be preferred. Flannel flowers, *Eucalypts*, *Banksias* and *Hakeas* are examples. A short cut some *Scaevola*, daisies and soft stemmed species strike more readily in a jar of water than in a propagation mix.

The five diagrams below show the process from preparing the propagation mix to potting on the struck cutting.



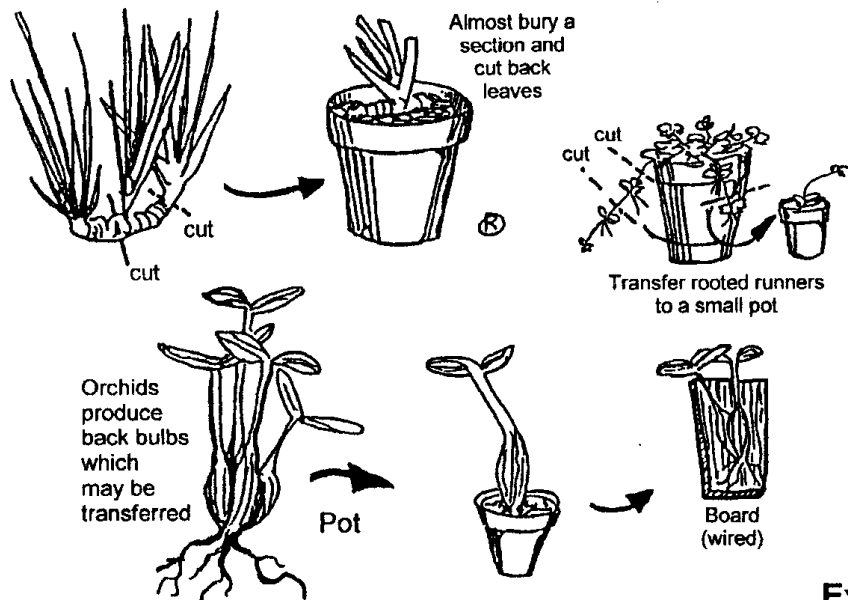
Advantages of Cuttings

There are many advantages to growing plants from cuttings. These include:

- Plants are true to the parent in all respects.
- Plants flower sooner in most cases than seed grown plants.
- Species difficult to grow from seed are often easily grown from cuttings.
- Seed is often unobtainable due to insect destruction, as in many pea flowers, or out of reach on a tree.
- As opposed to seed, cuttings may be collected at any time of year.

Propagation by Division

Plants that produce runners, offsets, suckers, stolons or rhizomes may be reproduced by division i.e. Kangaroo Paws, *Patersonia*, Native Violets, *Dianella*, grasses, *Lomandra* and some orchids.



Examples of division

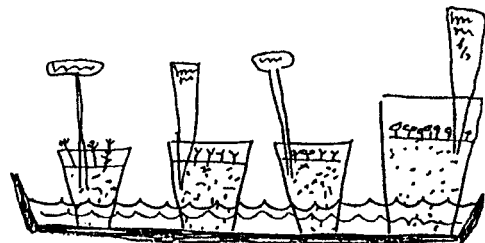
Propagation from Seed - the Bog Method

This method is especially suited for plants of *Myrtaceae* such as: *Eucalyptus*, *Callistemon*, *Melaleuca*, *Kunzea*, Tea-trees, myrtles etc.

Pots with seeds for germination are stood in a tray where the water level is maintained at eight mm deep.

Take seedlings out of water at 10-12mm high, then water from the top to avoid damping off.

Pot the seedlings on into individual pots when their first true leaves emerge and then resume normal watering.



Prepared by Ross Doig for the Australian Plants Society NSW Ltd

GRAFTING

Basics: The basic principle in grafting is to ensure contact between the cambium of the scion and the rootstock.

Time to perform grafting: - Generally spring, when cambial activity in both stock and scion is reasonably active.

Type of material: - Half hardened material. Select the healthiest material possible. Wherever possible, the scion material should be the same diameter as the rootstock material.

Housing and care:

- Humid atmosphere and sheltered position.
- Warmth essential (25° C is good).
- Water the pot, not the graft.
- Reasonable air flow

Types of grafts

Grafting consists basically of joining two wounded pieces of plant material, by aligning cambium layers.

Several techniques are possible. In all, the alignment of the cambium layer is essential.

1. Cleft Graft (or Top Wedge Graft)

(There is a tendency for the top to dry out.)

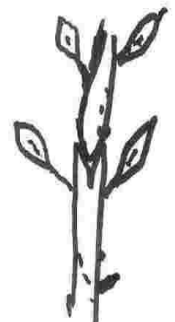
Cut the scion to a wedge tip and cut a slit in the rootstock to fit.



Top Cleft



Wedge tip



Scion + Rootstock

ready for binding

2. Saddle Graft.

Cut a V in the scion and a wedge tip in the rootstock.



Prepared Scion



Rootstock



Scion + Rootstock

ready for binding

Whip and Splice Graft

Cut the scion at an angle and the rootstock at a corresponding angle. In all grafts Nesco (or Parafilm) film or Teflon plumber's tape is then wrapped around the join to hold the scion and the rootstock firmly together.



Prepared Scion Rootstock

Scion + Rootstock
ready for binding

Materials

Grafting knife to trim the scion and cut the rootstock. (Razor blades or scalpels may be used on thin or small material).

Binding film: Nesco film, Parafilm or plumber's tape to hold the graft together.

What happens in a graft?

When the stock and scion are cut, fresh tissue is exposed. This tissue will attempt to repair itself by formation of callus tissue by the cells of the cambium. They will 'intermingle' providing the initial graft union. These cells will multiply and form the vascular tissue necessary for conducting water and 'food' in the combined plant.

Successful Grafts: The genera *Grevillea*, *Hakea* and *Prostanthera* have been some of the most successful.

Tips

Do not touch the graft with your fingers.
Sterilise your knife.
Do grafts as quickly as possible.

Terms

Scion: the upper part which becomes the ultimate plant desired.

Rootstock: The part used as the roots of the ultimate plant.

Cambium: The part of the stem in which the vascular system is located.

Callus: The layer of repair tissue formed at the graft.

Additional Information

<http://www.australianplants.org/fs0fifte.htm> (for seed propagation)

Produced for Walks & Talks, Australian Plants Society-North Shore Group
RD 2009 / BJ 2011.