

Native Plant Propagation

Growing native plants on your property or investing time and effort into bushland rehabilitation has many benefits, both for wildlife and residents. There are obvious advantages of using species native to a local area as they are typically well-adapted to the local conditions. This means that they require less maintenance and usually have better survival rates. Planting local native species also makes an important contribution to conserving local flora and fauna. This Note provides some basic information about the propagation of native plants.

There are numerous books, websites and organisations that offer sound advice on collection and propagation techniques for different native species.



Native plants propagated in a home nursery.

Seeds versus cuttings

Plants can be propagated in two main ways, either through seed germination or by vegetative cuttings. Vegetative cuttings use the actual stems (and foliage) of a plant to reproduce genetically identical offspring. This can be very successful and sometimes quicker and easier than getting some seeds to grow. However, it means that genetic diversity is limited to the original plant and is often inappropriate in regeneration projects for this reason. Seeds collected locally act to reproduce the natural genetic diversity that would typically occur in a local vegetation community. The sourcing of seeds from a local area is referred to as “local provenance”.

Purchasing seeds

A wide range of Australian plant seeds can be purchased from commercial suppliers and co-operative seed banks operated by not-for-profit organisations such as Greening Australia and the Society for Growing Australian Plants. These can be a good place to start if you are uncertain of where to begin as they can provide seeds as well as tips on collecting and storage of seeds.

Collecting your own seeds

Probably the best method for obtaining seeds, and certainly the most inexpensive and rewarding, is to collect your own seeds. Remember that the collection of native seeds is restricted by law. Make sure that you have permission from the land owner if you are collecting on private land. The same applies to public land, although a permit is required from the Department of Environment and Resource Management. Species listed under the *Nature Conservation Act 1992* require a permit for collection, even on private land, due to their threatened status.



Many native plant seeds are easy to collect such as these Casuarina seeds.

So now you have your seeds - where to from here?

The seeds of many plant species germinate readily, only requiring warm moist conditions to do so, whilst others species can be difficult and need special treatment. Some seeds remain dormant until conditions are favourable and have physical or chemical inhibitors to ensure that germination does not occur at other times. In these instances inhibitors can usually be overcome by pre-treatment of the seed. Below is a list of some pre-treatment methods. Not all seeds require treatment, so try to start with the easiest ones first.

A general rule for native species is to germinate the seed about 3-4 months ahead of the intended planting-out date and when daily temperatures are sufficiently warm.

Home nursery - there are many designs, but a well organised and clean site is important.



Pre-germination treatments

Cold water soak

Pour cold water over seeds in a container and soak over night. Some species require soaking for 48 hours e.g. Lilly Pilly (*Syzygium* sp).

Boiling water

This method is used for seeds that have a hard seed coat that is impervious to water (e.g. *Cassia* species). Pour just boiled water over seeds in a container and soak. The time will depend on the species but can be up to 48 hours.

Scarification

This treatment can be used as an alternative to boiling water. The main aim is to prick or weaken the seed coat. This can be done by nicking the seed coat with a paring knife or by rubbing the seeds with sandpaper. An easy way to scarify seeds is to glue sandpaper to the inside surfaces of a small container, put the seeds in, and then shake vigorously.

Fermentation

This method is used with fleshy seeds usually found in rainforests such as cycads or palms. Place the seeds in a container of water and cover. Allow to ferment for between 2-3 weeks. This method can then be followed by leaching to remove chemical inhibitors.

Leaching

In some cases it is possible to remove a seed's chemical inhibitor by leaching it with various solutions. In the home environment, a simple treatment is to put the seeds in a mesh bag or nylon stocking and place them in the cistern of a frequently used toilet for 2-10 weeks. The seeds are then dried before planting. This is a useful treatment for palms, *Cordyline*, *Davidsonia*, *Endriandra* and *Pittosporum* spp.

Smoke treatment

Many species which respond to fire and heating respond equally well to smoke treatment. As smoke can be difficult to apply, smoked water is used as an effective alternative. Smoked water can be produced by bubbling smoke through a container of water for about 60 minutes, or alternatively, there are commercial products available that can easily be applied to seeds.



What should seeds be planted in?

Seeds can be planted in a variety of containers including pots, trays and re-usable household items. All containers should:

- Be well-drained.
- Provide adequate depth for roots.
- Be able to hold the number of plants you want to germinate.
- Minimise the use of seed-raising mix.

Large seeds such as Black Bean (*Castanospermum australe*) and plants that develop deep roots such as palms, can be sown directly into pots.

It is recommended to sow seeds in trays when viability is unknown, germination is slow or large numbers of plants are required. Seedlings germinated in trays must be transplanted or 'pricked-out' (this term is used to describe the transplanting of seedlings into pots) and put in pots. Sowing into trays uses less seed-raising mix and saves nursery space.

Use pots or tubes that have vertical ribs or rough internal surfaces to encourage plant roots to grow down rather than around. Discarded household containers such as waxed cardboard cartons can make low cost alternatives, but make sure you provide adequate drainage holes.

Seed-raising mixes

Soil, by itself, does not make a good potting medium as most soils quickly lose their structure and are prone to water logging. They can also contain fungal organisms which can lead to diseases of young seedlings such as damping off. Seed-raising mixes and potting mixes are designed to allow for rapid growth and typically include a mix of wood mulch or peat, river-sand and vermiculite. There are established standards for retail potting mixes, so look for the Australian Standards logo. Also make sure you buy an Australian native mix.

How are seeds planted?

Step 1 - Planting

Fill your chosen container to about 10 mm from the top with moist seed-raising mix and level. Different sized seeds will require different sowing methods.

- Large seeds (more than 10 mm) should be pressed half to two-thirds of their depth into the mix and left partially uncovered.
- Medium seeds (such as *Acacia* spp.) should be covered to a depth equal to their thickness.
- Small seeds can be sprinkled lightly over the surface and then covered to a depth equal to their thickness.
- Very fine seeds can be mixed with dry sand and lightly sprinkled over the mix using a salt-shaker or similar container. The same rule of covering the seed to a similar depth as the size of the seed applies.

You should immediately label the container with the species name, place where the seed was collected and the date of sowing.

Step 2 - Watering and heating

Water the seeds carefully with a fine mist. The mix should be kept moist but not wet, do not allow it to dry out. Automatic watering systems can make this task much easier however you will need to ensure that it is working well. Most seeds germinate quickly during warm conditions. Providing a heat source in cooler conditions can help speed up germination. Commercial heat beds are readily available or you may choose to build your own.

Step 3 - Transplanting

The best time to 'prick-out' seedlings and transplant them to pots is once the first true leaves have developed. Choose only the healthiest seedlings for transplanting into pots. Use a 'dibbler stick' (e.g. a thin piece of dowel sharpened on one end) to create a hole large enough for the roots in the centre of the pot. Individual seedlings can be gently prised from the mix with the dibbler stick. Carefully place the seedling roots into the hole previously made in the pot, making sure that the roots are not kinked or twisted, as this can cause premature death or stunting to the plants. Gently firm the potting mix around the roots using the dibbler stick. The seedlings should be planted in the pot at the same level on the seedling stem as it appeared in the tray. After planting, gently and thoroughly water the seedlings to eliminate air pockets around the roots.



Callistemon seedlings being grown-on in tubes.

Hardening off

Hardening off is the method used to prepare plants for the harsher conditions they will experience once they are planted out.

It is a process of gradually exposing the seedlings to more sunlight, taking care not to expose the plants initially to too much sun and making sure that they have adequate water.

Once the plants have been hardened they are ready for planting. As all plants and localities differ it is often valuable to try different techniques to find what works best in your area. Chat to your Land for Wildlife Officer about propagating native plants in your local area.

References and further reading

Bloombery A & Maloney B (1994) *Propagating with Australian Plants*. Kangaroo Press, Sydney.

Edmanson J (1991) *Cheap and Easy Propagation*. Lothian, Melbourne.

Ralph M (2003) *Growing Australian Native Plant from Seed* (2nd edition). CSIRO Publishing.

Ralph M (2006) *Seed Collection of Australian Native Plants*. CSIRO Publishing.

Wrigley J & Fagg M (1998) *Australian Native Plants: a manual for their propagation, cultivation and use in landscaping*. HarperCollins Publishers, Melbourne.

www.anbg.gov.au/PROPAGATE/plant01.htm

www.sgapqld.org.au/growers.html (this site lists all registered native plant growers in Queensland).

www.diversityplants.com.au/Scripts/default.asp (online suppliers of seed).



Tubes that have vertical ribs encourage good root development in plants.



Leaving plants in pots for too long and smooth internal surfaces can contribute to plants becoming rootbound.



*Large seeds such as Black Bean (*Castanospermum australe*) can be sown directly into tubes, pots or even straight into the ground.*

Land for Wildlife is a voluntary program that encourages and assists landholders to provide habitat for wildlife on their properties. For more information about Land for Wildlife South East Queensland, or to download *Land for Wildlife Notes* free of charge, visit www.lfwseq.com.au

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