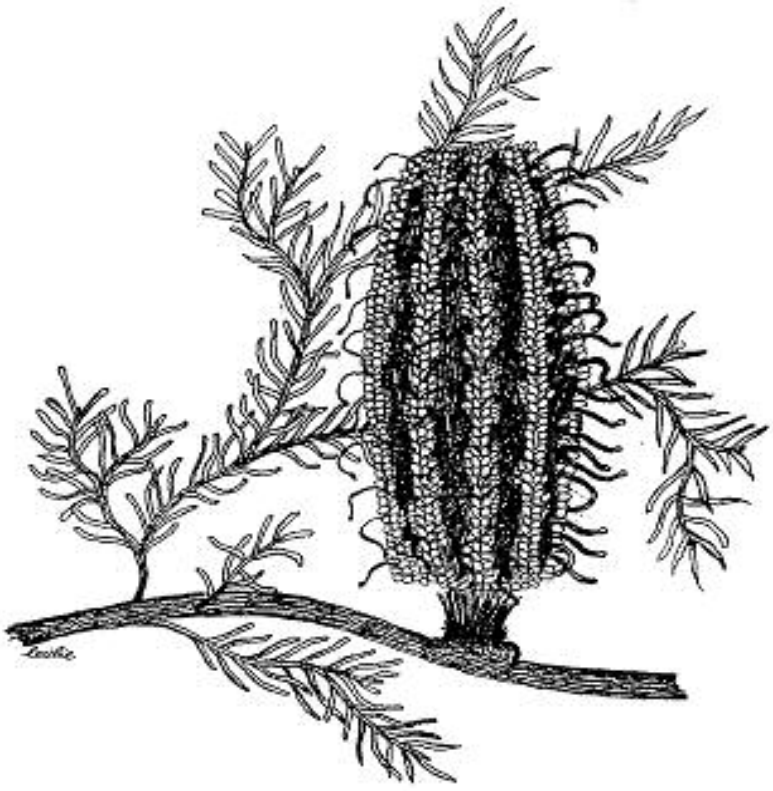
Getting Started

an introduction to growing and propagating
Australian Native Plants



Australian Plants Society NSW Ltd

Getting Started

An Introduction to Growing Australian Native Plants

Contents

1. Myths and Fables 3
2. The Soil 7
3. Selection of Plants 8
4. Plant Propagation 11
5. Potting On 21
6. Planting Out 24
7. Watering 25
8. Pest Control 27
9. Potted Plants 29
10. Further Information 31

Getting Started is adapted and updated from a series of short articles aimed at the new grower of Australian native plants and which appeared in the Society's newsletter *Native Plants for New South Wales* in the early 1970s. The original series was written by the late Arthur Cooper.

This updated version was complied by Brian Walters with assistance of Val Williams, John Wrigley, Ron Gornall, Cas Liber and Phil Keane. Illustrations are by Carol Roach and the late Susan Heins. The project was funded by the Australian Plants Society NSW Ltd through a Lisle Pearse Memorial Grant.

1 Myths and Fables

When most people talk about 'native plants', what they are really talking about is 'Australian plants' - ie. plants native to Australia.

Unfortunately such a broad definition leads to problems because:

- It tends to lump together all types of Australian native plants without any consideration of the wide variation in the plants themselves.
- It fails to recognise the great range of climates, habitats and soils that occur throughout the continent.

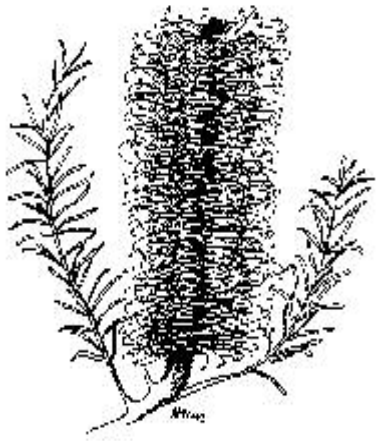
So, there's a fair bit of folklore associated with growing Australian native plants and, before ´Getting Started´, we should clear away some of the myths and fables.....

"Native" plants are a homogeneous group

Wrong!

Walk into most garden centres and you'll see the 'native plants' all neatly arranged together. "Well, that's logical", you might think...and perhaps it is, but it infers that all 'native' plants can be treated as a group that they all have similar growing requirements.

It just ain't so!



Leaving aside, for a moment, the fact that Australian plants occur over many climatic zones and in a range of habitats, the plants belong to a range of different plant families. They are not a homogeneous group like roses or azaleas so it's unreasonable to expect a *Banksia* to have the same growing needs as a bottlebrush or a eucalypt to have similar needs to a *Boronia*.

Of course, even within groups such as banksias or bottlebrushes there are differences in growing needs. But, hopefully, after you've read ´Getting Started´ you will be in a better position to appreciate the differences.

This idea that Australian plants form a homogeneous group is one of the two main reasons that people have problems in growing some Australian plants. The second reason relates to climate, habitat and soils.....

Native plants are adapted to the ´natural´ environment

Well, yes. But it's not quite that simple! The question to be answered here is...."What is the natural environment"?

The areas where Australian plants grow naturally are many and varied...deserts, wetlands, rainforests, mountains.....and soils vary from rich floodplains to nutrient deficient forests and woodlands . Even among plants which are native to one particular area, there will be localised differences in soils which may affect the way plants perform in the garden.

It should be fairly obvious that plants that occur naturally in tropical areas might find arid conditions a bit unpleasant (and vice versa). But we still tend to think of them all as 'natives' and plonk them into the garden with little thought as to their individual needs ... perhaps an arid zone emu bush next to a tropical rainforest plant with some alpine daisies neatly arranged in the front.

Not surprisingly...it often doesn't work! Either the copious water applied to the tropical plant will drown the emu bush or the alpine species will fry in the heat of the lowland summer!

This is not to say that plants won't survive in conditions much different to their natural habitat....a great many will and, hopefully, we can help you make the right selections for your particular garden conditions. It's not difficult, really!!

Never use fertilisers on native plants

All plants need nutrients for healthy growth and it doesn't matter if it's an Australian plant or one from the Amazon. So, does that mean that we can apply fertilizer to all Australian plants equally?

Well, no....

With the possible exception of rainforest species, many of the commonly grown Australian plants are native to nutrient-deficient soils, particularly soils with low phosphorus concentrations. The plants that grow naturally in these soils have become expert in efficiently extracting nutrients from them and the application of normal ‘balanced’ fertilizers can cause problems with these plants.

A particular group to be wary of with fertilizer is the Protea family (Proteaceae). Although proteas are not native to Australia, many members of the family occur here including *Banksia, Grevillea, Hakea, Isopogon, Persoonia* and *Telopea* (waratah). Most of these plants have specialised roots called 'proteoid roots' which are clusters of very fine roots designed to extract nutrients from infertile soils. The problem is that added fertilizer can result in these roots taking up nutrients in toxic amounts, with disastrous consequences to the plants.

There's more information on phosphorus sensitive plants in *Phosphorus Needs of Australian Plants* (see "Further Information") but the safest method of fertilizing is to use slow release (8-9 month) types during the growing season. These lessen the risk of 'over-fertilizing'. It's also possible to buy special, low-phosphorus versions of the slow-release fertilisers and these are probably best for the protea family plants, at least while you're ´Getting Started´.

Please use fertilizers sparingly - excess just ends up in rivers and streams and leads to serious environmental problems.

You never need water native plants

Well...it depends on the climate and it depends on the types of plants...

During hot, dry periods you will certainly need to water plants during their first months in the ground. After that, if you have a reasonably reliable summer rainfall, this should be sufficient for plant survival, but during prolonged dry spells most plants will benefit from additional water. If plants are water-stressed for long periods, they will usually not flower well, if at all.

Selecting plants adapted to your particular conditions will help reduce water requirements. For example, if you are determined to establish a rainforest in western New South Wales, then you need a good, cheap water supply! On the other hand, selecting local plants or plants that grow naturally in climates similar to yours, will reduce water needs dramatically.

You can minimize the amount of water needed in several ways:

- Install drip or micro-irrigation to apply water precisely to the plants that need it.
- If hand watering, avoid the light sprinkling that average gardeners tend to apply. This tends to encourage the growth of shallow roots which are susceptible to heat damage. A good occasional drenching is better because it encourages a deep root system.
- Apply mulch to the soil surface around your plants to help retain moisture in the soil (but keep organic mulches away from the plant stems to avoid possible fungal attack.

Never prune native plants

Why on earth not???

If you aim to grow plants with a bushy habit, then annual pruning will encourage branching. An even better way to encourage branching is to regularly 'tip prune' during the growing season by pinching off the end few millimetres of the branches.

Some plants grow into 'leggy' shapes unless they are pruned. Callistemons (bottlebrushes), for example, often have a more attractive growth habit if the dead flowers are cut off annually as soon as flowering finishes. The additional branching that this causes will result in more flowering stems in the following season . It also eliminates the formation of permanent seed capsules which some people find untidy.

There are very few plants that won't tolerate some degree of pruning - after all most are 'pruned' in their natural habitats by grazing kangaroos and other native animals.

Most will tolerate pruning back by about one third, provided some green foliage remains on the pruned branches. Some will re-grow after cutting back completely to ground level but you should only attempt this after receiving advice from experienced growers.

Native plants must be planted out small

Small plants are certainly cheaper but you have to wait a bit longer for them to make an 'impact' in the garden.

Equally good results can be obtained from both large and small plants. The main thing to be careful about regardless of the size is the condition of the roots. If the roots are in a tight mass (pot-bound) you will need to do some root pruning to allow new roots to penetrate into the soil. Often you can loosen the roots with a piece of wire. Other times you will need to use a knife to cut away some of the older roots.

Native gardens need no maintenance

It should be obvious from what we've said above that this isn't the case. For example:

- Eucalypts will shed leaves that might block gutters and look untidy (but it's easy to learn to love fallen leaves! - especially if there is no lawn or paving underneath the trees).
- There may be occasional problems with insect pests such as scale and caterpillars.
- Despite taking all precautions a few plants might not thrive and have to be replaced.
- Some plants may grow larger than expected and nearby plants may need to be moved.
- There may be a drought (and water restrictions) requiring hand watering.
- Some weeding will always be needed.

No garden comprised of living plants is 'no maintenance'. It can, however, be 'low maintenance' with a little bit of forethought, such as....

- Minimize or eliminate lawn areas.
- Avoid concrete or rock borders between lawn and gardens - you will be endlessly trimming the lawn to keep it tidy.
- Choose shrubs that have a naturally bushy habit to minimize pruning (your specialist Australian plants nursery will help).
- Locate trees so that leaves don't fall on the roof of your house.
- Plant a range of shrubs of varying heights and textures to encourage a wide variety of birds - these will keep insect pests under control.
- Mulch to reduce weed growth and retain soil moisture.

Unless you like concrete - there will always be some maintenance needed!

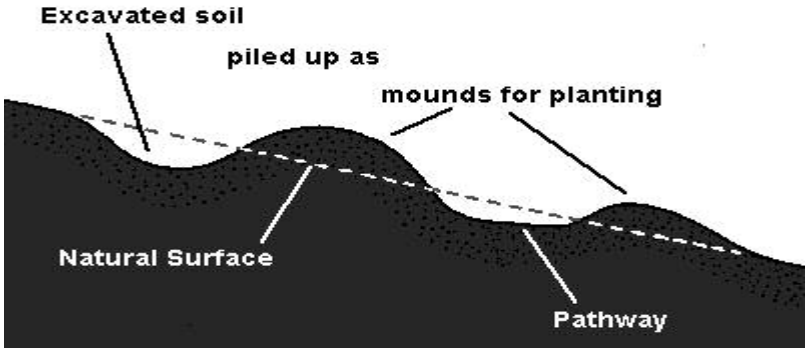
2 The Soil

Different sorts of plants need different soil conditions; there is no single set of conditions which suit all Australian native plants. So, before you start planning your native garden you have to decide whether you can live with the soil that you already have.

"But I've only got a few millimetres of loam over deep clay" I hear you cry! Or, "I've got deep sand that won't retain water". Well...there are plants that will grow successfully in both. Get advice from your local native plant nursery (or the bushland manager of your local Council) on what sorts of plants do well in your soil, and concentrate on those.

If you want to grow a bigger range there is one golden rule that just can't be avoided....**the soil must be well drained,** particularly in the top 30 cm**.** It's best if the drainage is vertical with the water soaking deep into the sub-soil. Where this is impossible, terracing is a help. But good drainage isn't just ideal for most Australian native plants; it's something which helps almost any garden.

Improvement in drainage can also be obtained by the 'cut and fill' method on most sites, whether they are flat or have some natural slope. This involves digging areas for paths and mounding the removed soil into 'hills' about 30 to 50 cm high for planting. Pathways should be designed to remove excess surface water to ponds or hollows. Importing some soil may also help but some care is needed. Thoroughly mix the imported and local soils so that rapid changes in texture are avoided. Imported soils may also result in the importation of weed seeds and pathogens.



If you're prepared to put in a bit of effort, your soil will probably repay some improvement. Very light sandy soils need organic matter and there are few species which won't do better with an addition of up to 10% of rotted or rottable organic matter to these types of soil.

If your soil is compacted and clayey, don't panic...additives such as gypsum and humus can help to improve the texture. Any additives must be mixed in with the

clayey soil as completely as your resources and your patience will allow. Using a rotary hoe to break up the clay into small particles and to incorporate the additives is probably the best method for anything greater than a few square metres of area. A useful reference on soil preparation is the publication *Native Gardens - How to create an Australian landscape* (see "Further Information")

Soil preparation is best done before planting and should include weed eradication from the garden area. This is particularly important if invasive grasses such as couch are present. A useful method is to put down thick layers of newspaper over the proposed garden area and cover with mulch. Any weeds that manage to work their way through the paper can be spot treated with a glyphosate weedkiller.

Mulch is very useful in conserving moisture in the soil and it will also break down over time to form a light loam.

Finally it's important to concentrate on species which do well in your sort of soil, especially at the 'Getting Started' stage.

3 Selection of Plants

Australian native plants are now so much a part of the nursery industry that there is an extensive selection available even at small general garden centres. Visit a specialist native plant nursery and the variety becomes almost bewildering!

So...how do you select appropriate plants?

Don't be seduced by spectacular flowers!

It's very easy to want that crimson banksia (*Banksia coccinea*) - or something equally spectacular - to really impress the neighbours. But before handing over cash or card, ask yourself (or, better still, ask the nursery person *) "Will this plant grow in my climate and soils?"*

If your climate is New South Wales east of the great dividing range, the answer (for the crimson banksia, at least) should be a definite "No!". Why? Because its natural habitat is in the south of Western Australia where summers are very dry with little humidity - this species is very unreliable in areas with wet, humid summers, such as coastal New South Wales. In fact, in this area and in areas with a similar climate, it's as well to be suspicious of any plants native to Mediterranean-type climates (dry summer-wet winter). There are exceptions, of course, but plants native to such areas are often unreliable in humid climates.

This doesn't mean that your can't have spectacular flowering plants in humid areas! You just need to be careful of the origin of the plants you want to grow.

Grow local!

The best way to ensure that the plants you select are suited to your climate is to choose plants that are native to your local area. There is another important advantage as well: Local plants will not "escape" to become environmental weeds, as has happened with some "native" plants from other areas.

What is 'local'?

It depends....

Generally "local" refers to the vegetation type that occurs naturally in the vicinity of your property. This vegetation type most likely occurred on the property before it was cleared, so you could expect plants native to this "local" area to be successful in the garden.

It's not that simple, of course. If the soils on the property have been modified so that they are no longer similar to those of the "local" native vegetation, then they may no longer suit some of the local plants.

What is local provenance?

This is an important consideration for plants that not only occur in your local area but also occur in other areas as well. In these cases it is important when selecting local plants that they are propagated from material (seed or cuttings) collected from your local area. This is because plants of the same species will have a slightly different genetic composition in each of the localities in which they occur. If you grow local species which have been propagated from material collected elsewhere, there is a danger of the local population of this species being genetically contaminated.

Native weeds

Unfortunately it is a fact that several native plants have become weeds of bushland. There are two main causes of this:

- Plants grown out of their natural locality which have adapted to new environments. Examples include *Acacia baileyana* (Cootamundra wattle) and *Acacia saligna*, both of which have invaded bushland around Sydney and elsewhere.

- Local plants that have adapted to changed environmental conditions, such as increased water and/or nutrients. A prime example of this is *Pittosporum undulatum* (native daphne) which has spread widely in urban bushland areas.

If your property is close to bushland, please avoid growing known weeds. Remember, birds can carry weed seeds several kilometres from your garden to bushland.

Choosing plants

These days, most garden centres stock a good range of the more common native species and cultivars. However, for a wider range and expert advice it's worth visiting specialist native plant nurseries, including community nurseries which can be found in many areas (these are an excellent source of local and local provenance species).

The Society's publication *Buy What Where?* lists many of these specialists and can be obtained from: Australian Plants Society (NSW), PO Box 744, Blacktown 2148 (Phone 02 9621 3437)

Some popular choices

Here is just a sample of a few of the most popular native plants. These can be relied on to perform well in many areas - but try to choose local plants where possible!

Plant	Characteristics
Acacia	Wattles - small shrubs to trees; quick growing and quick to flower. Choose local forms to avoid introducing weedy species. Avoid larger, quick growing types as borer infestation is a problem.
Anigozanthos	Kangaroo paws - great for birds! 'Yellow Gem', 'Red Cross' and 'Bush Pearl' are colourful and reliable - many others available.
Banksia	*B.spinulosa* is a small to medium shrub available in a range of spectacular forms (eg.'Coastal Glow'; 'Birthday Candles'). Old man banksia (*B.serrata*) is a 'must' for any native garden
Callistemon	'Bottlebrushes' - numerous cultivars in colours including white, pink, red and purple. Medium shrubs to small trees
Eucalypts	Every native garden needs a gum tree*!* *Eucalyptus leucoxylon* 'rosea' is a good red/pink flowering species, while the massed white flowers of *Corymbia eximia* (yellow bloodwood) are eye-catching.
Grevillea	A bewildering range. 'Superb' is one of the best while the larger "Honey Gem' and "Moonlight' look spectacular with their orange and cream flowers, respectively
Leptospermum	'Tea trees' - Lemon scented tea tree (*L.petersonii*) has beautiful aromatic foliage. 'Merinda" has spectacular magenta flowers
Lily Pillies	Many to choose from. Try *Acmena smithii*, *Syzygium* 'Cascade' and *Waterhousia unipunctata* with its spectacular young foliage.
Melaleuca	'Paperbarks'. A wide range to choose from. Try *M.thymifolia*, a small shrub available in white pink or purple flowers
Orchids	Rock lily (*Dendrobium speciosum*) deserves a spot in any native garden. *D.kingianum* is great in a container.
Philotheca	Long-leaved wax flower (*P.myoporoides*) is an "oldie but a goodie"!

4 Plant Propagation

For amateur growers, the principal methods of propagation are seed, cuttings and division. Note that "*Getting Started*" doesn't cover propagation of ferns and orchids. These require specialised techniques which are beyond the scope of this introduction.

Before describing plant propagation methods in detail, there is an important difference between propagation from seed and the other methods that should be understood.

Just a little bit of genetics.....

Seed results from sexual interaction between plants due to transfer of pollen between male and female parts of flowers. This can occur in a number of ways such as pollen grains being carried by breezes or pollen being transferred by a pollinator such a bird or insect. Because seed contains genes derived from different plants, the plants produced from seed can vary significantly from the plant from which the seed was obtained (ie. growth habit and flower colour can be different).

Cuttings and division are called vegetative methods of propagation. With these, no gene transfer is involved and, in effect, they involve cloning - the plants produced have all of the characteristics of the parent (ie. growth habit and flower colour will be the same as the parent - unless there is a mutation, or "sport", but that's unusual).

What all of this means is that, if you want to propagate a plant because it has a desirable characteristic (such as a prostrate growth habit or spectacular flower colour) you **MUST** propagate it vegetatively. If you propagate the plant from seed it **MAY** come true to the parent but this can't be guaranteed. Because of this, all named cultivars (eg. as *Callistemon* 'Captain Cook' or *Grevillea* 'Misty Pink', to name two popular examples) **MUST** only be propagated vegetatively. If you do propagate named cultivars from seed, please don't give them the original cultivar name.

Plant collecting and the law

Native plants are protected in all national parks, nature reserves and on Crown land. Collecting material from these areas is illegal unless special permission is obtained. The best source of propagating material is from private land - with the owner's permission, of course!

Now....let's get down to business.....

Growing from seed

Many Australian native plants can be grown from seed but not all seed germinates easily. Some seeds have a physical or chemical inhibitor to germination designed so that the seed will only germinate in natural habitats when conditions are favourable. In many cases the inhibitor can be overcome by pre-treatment of the seed before sowing but there will still be cases where germination is almost impossible...eg *Persoonia* species (geebungs).

♦ Seeds which don't require pre-treatment

Many seeds don't have any dormancy problems and, while there will always be exceptions, seeds of the following generally don't need any special treatment prior to sowing:

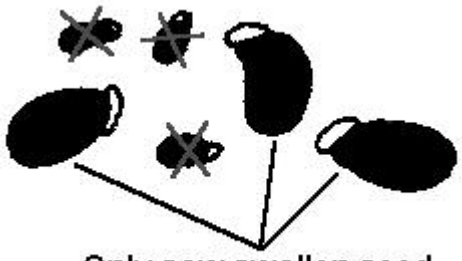
Allocasuarina and Casuarina (she oaks), *Anigozanthos* (kangaroo paws), *Banksia, Callistemon* (bottlebrushes), daisies, eucalypts, *Hakea, Leptospermum* (tea trees), *Melaleuca* (paperbarks).

♦ Seeds which require pre-treatment

There are several pre-treatment methods that can be used depending on the species concerned.

Boiling water

This is the most common pre-treatment method and is used with seeds where a hard seed coat forms a physical barrier which is impervious to water. Species that usually respond to this method include *Acacia, Senna* and the members of the "pea-flowered" family such as *Dillwynia, Kennedia, Hardenbergia, Pultenaea* and *Swainsona*. These plants are often native to areas where bushfires occur at regular intervals - the heat of the fire cracks the hard coat and allows moisture to reach the embryo inside. Pouring boiling water over the seeds simulates this effect.



The seeds to be treated are placed in a container, covered with boiling water and allowed to stand overnight. Seeds that soften and swell to 1.5-2 times their original size can be sown; those that don't swell need to be retreated.

Abrasion

This can be used as an alternative to boiling water. Seeds are abraded between two sheets of fairly fine sandpaper to reduce the thickness of the seed coat. This can be cumbersome - an alternative is to glue sandpaper to the inside surfaces of a small plastic container, put the seeds in and then shake the container vigorously.

Stratification

A type of seed dormancy encountered with some species native to alpine or semi-alpine habitats is the need for a period of cold conditions prior to germination. This can be achieved by placing seed in a closed container (with

some moist vermiculite or similar) in a refrigerator for 1-3 months before sowing. This is called "stratification" and examples of seed requiring this treatment are *Banksia canei, B.saxicola, Eucalyptus kybeanensis, E.pauciflora, E.regnans* and *E.delegatensis*.

Fire

Seeds of plants which come up in their thousands after a bushfire can be difficult to germinate but may respond to a "simulated bushfire".

There are no guarantees with this method....it is really used as a "last resort". If you want to give it a go, sow the seed in a terracotta pot (not plastic for obvious reasons!) and set fire to leaf litter and twigs placed on top. The fire should be maintained for 7 - 8 minutes. Once the ash has cooled, the pot is watered and maintained as for any other seed raising container.

Seeds that MAY respond to this treatment include *Boronia, Eriostemon, Zieria, Leucopogon* and *Ricinocarpos.* Seeds of *Actinotus helianthi* (flannel flower) often respond to burning, but only for 2 or 3 minutes.

Smoke

Recent research has shown a favourable germination response of some seeds when exposed to smoke prior to sowing. In some cases germination has been achieved with species that have proved almost impossible to germinate in the past (eg. *Calytrix, Conostylis, Dianella, Eriostemon, Geleznowia, Lechenaultia, Philotheca, Pimelea, Stylidium, Verticordia*.)

The easiest method of applying smoke treatment is to use “smoke water” as a pre-treatment; seed is soaked for 12 hours in a 9:1 water:smoke water solution. If you’re keen, smoke water can be produced by bubbling smoke through a container of water for about 60 minutes after which the solution is frozen until needed. Smoke water can be purchased under the trade name "Regen 2000".

♦ The sowing medium

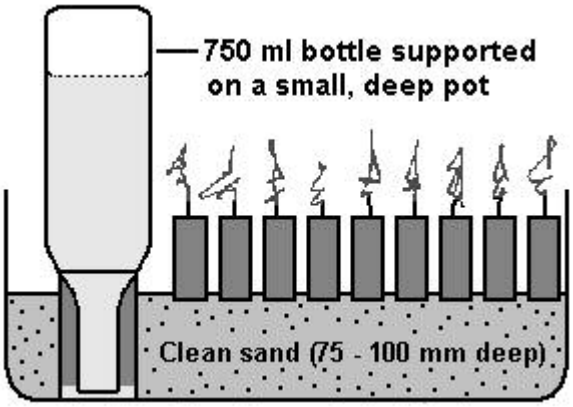
A good medium both for seed raising and for subsequent potting-on consists of 80-85% washed river sand and 15 - 20% coco peat (which is preferable to natural peat due to the ecological damage associated with peat extraction).

Of course, commercial seed raising mixes can also be used. The medium should be reasonably moist before sowing the seed.

♦ Sowing the seed

Seed may be sown in punnets, pots or shallow fruit boxes. 75 mm depth of seed raising mix is sufficient. The seed is normally covered to a depth of about double the seed diameter. Fine seed is usually sprinkled over the surface of the seed mix and need only be pressed down firmly onto the mix without being actually covered. Large seed needs to be well spaced to facilitate later

transplanting. The use of individual small pots or tubes is an advantage when only small quantities of plants are required. This allows large seed to be sown one to a tube while fine seed can be thinned out as germination occurs to leave the strongest single seedling.



If using shallow boxes, you can sow several different sorts of seeds together. Divide the box with narrow strips of wood or plastic to keep different seeds separate.

All containers must be well drained and be sure to label each group of seeds. You'd be surprised how easy it is to get them mixed up!

♦ When to sow?

Generally spring and summer are the best seasons although most annuals prefer early to mid autumn. This is not to say that you can't sow at other times; only experience and experimentation will tell you which season best suits a particular species.

♦ Germination

This can range from a few days in the case of some annuals to 3 months or even longer....

As a rough approximation, the following usually germinate within a few weeks in warm weather: *Acacia, Banksia, Callistemon*, native daisies, *Eucalyptus, Hakea* and *Melaleuca*. But, even with these there are exceptions, so don't be too eager to declare a failure!

The first pair of leaves that appear on germination are the "seed leaves" or cotyledons. These will often be quite different in appearance to subsequent leaves (the "true leaves").

♦ While you're waiting

The containers in which you've sown the seed should be in a position to get plenty of warmth and light; full sun in spring and autumn, provided they never dry out. They need shelter from rain, which disturbs the seeds. A sheet of glass or perspex, large enough to cover several containers, is a good idea - it keeps the mix moist while protecting it from rain - but be sure to remove it as soon as the seedlings appear.

With overhead watering, a fine spray is necessary to avoid damage to small seedlings. A good method of watering for small quantities of seed is a capillary bed (as shown in the diagram). This avoids overhead watering and the seed and seedlings can be left unattended for 2 or 3 days (up to a week or more in cooler weather). The seed mix in the containers needs to be fairly moist before the containers are placed in the capillary bed otherwise the capillary action may not occur.

A similar method is the so-called "bog method" where the pot containing the seed is placed into a saucer of water until germination occurs.

♦ Pests and diseases of seedlings

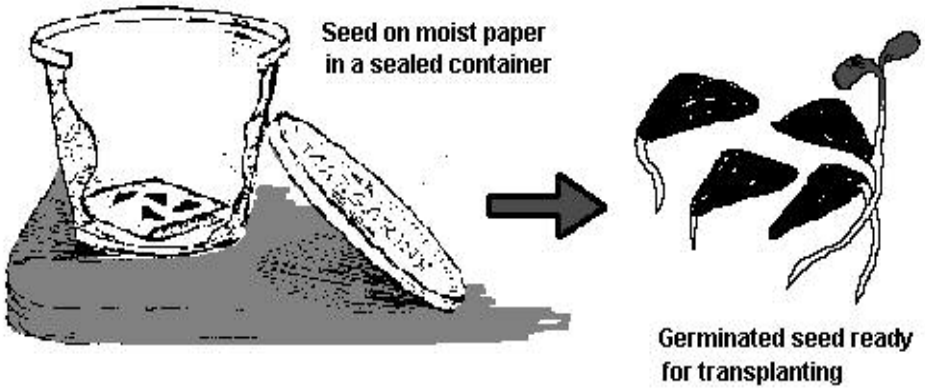
'Damping-off' causes rotting of the stems of seedlings at soil level, particularly in seed mixes that are over-wet and it can be difficult to control without the use of a fungicide. The most effective ways of minimising the problem is to use sterilized seed raising mixes and sowing so that seedlings are not crowded.

Snails and slugs can cause rapid destruction of small seedlings. If these can't be controlled by physically removing them, the usual baits should give protection. Any caterpillars that appear are best removed by hand.

♦ Pre-germination

This is a useful technique for large seeds (ie. those that can be handled easily).

Sow the seeds into a sealed container (see diagram) that has a layer of moist vermiculite or even a moist paper towel - any required pre-treatment needs to be carried out as normal before sowing. Then place the container in a cool, dark place and check every week or so until germination commences. Carefully remove and pot up any seeds that have germinated into small pots or tubes as described below. Re-seal the remaining seeds in the container and check every 1-2 days as the remaining seeds will usually germinate quickly.



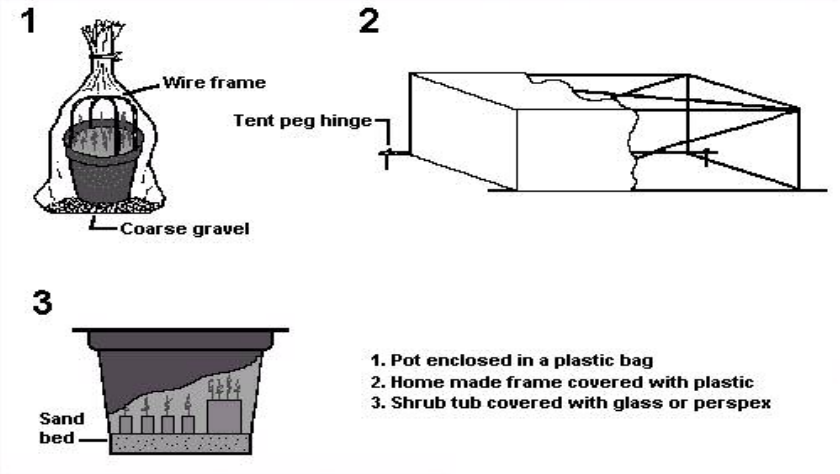
Using this method, seed can be sown during the colder months when outdoor temperatures may be too cold for effective germination.

Propagating from cuttings

As already mentioned, cuttings are clones of the parent plant and will be just like the parent in foliage, growth habit and flowers. Another advantage of cuttings over seed is that cuttings taken from a mature plant will generally flower several years earlier that a seedling of the same species.

♦ Equipment

The main requirements are a clean, sharp knife or blade and a "cold frame" to maintain a humid environment while roots are developing. As shown in the diagram below, the 'frame' could consist simply of a plastic bag tied around a pot of cuttings. For larger quantities a small frame could be built or a large, perspex-covered tub could be used.



♦ Containers and the growing medium

Cuttings can be placed into either individual small tubes or a number of cuttings of the same species can be placed into a single "community" pot. A potting mix consisting of 75-80% washed river sand and 20-25% coco peat has been found to be suitable as a general purpose mix for cuttings. In time most growers develop their own mix "recipe" to suit their individual needs.

♦ Collection of material

Cuttings should preferably be taken from firm, current season's growth. Both hard, woody material and soft, 'floppy' growth are likely to be unsuccessful.

The suitability of the material can be tested by bending the stem through 60-90 degrees. If it springs back to its original position, it's suitable, but if it breaks or remains limp, it's best avoided. Sometimes, however, the only material available will be less than ideal and it shouldn't be rejected...successful cuttings can sometimes occur from the most unlikely looking material. When trying to propagate a particularly valuable species, any cutting is better than no cutting!

Cuttings can be taken at any time of year but root formation is very slow in the colder months.

Preparing and setting the cuttings

The following step-by-step guidelines should be read in conjunctions with the similarly numbered diagrams:

1. Take a piece 75-150 mm long by snipping (a tip cutting - "a") or by tearing off a side shoot (a heel cutting - "b"). If the material is suitable, two or three cuttings can be made from the same piece of stem.

   The lower end of tip cuttings is usually cut directly below a leaf/stem junction (a node) as this is claimed to promote more reliable root formation. Whether cutting below a node is absolutely essential is debatable but it's a good rule to follow if possible.

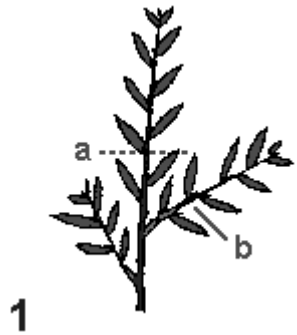
2. Remove flowers and buds, then strip off all leaves from the lower half if this can be done without tearing the bark. Otherwise cut the leaves off carefully.

   Large leafed species should have the area of the remaining leaves reduced by about a third.

3. Slice a small sliver of bark off the bottom 5 mm of tip cuttings ("a"). This is called 'wounding' the cutting and it often encourages root formation over a larger area. However, this is not an essential procedure.

   If using a heal cutting ("b"), carefully trim the end to remove any torn bark.

4. Make holes with a pencil or skewer in the damp propagating mix - to about one-third to half the length of the cuttings. This prevents damage to cuttings that might occur if they are pushed directly into the mix



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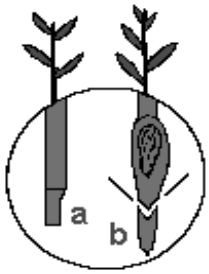

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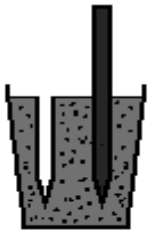
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5. Dip the bottom centimetre or so of each cutting into a root -promoting hormone, place the cuttings in the holes in the mix and press the mix firmly around them.

5

The use of hormones often results in a stronger root system and may also produce earlier root formation. Hormones are available as a powder, a get or as a liquid and are applied to the base of the cuttings. The 'medium' strength is recommended for most applications. Many experienced propagators regard the liquid or gel preparations as being more effective than the powders.

Hormone preparations should be kept in a refrigerator when not being used as they have a limited shelf life. It is also recommended that a small quantity of the hormone be taken from its container for each propagation session and any residue not be returned to the original container.

Once the cuttings have all been prepared, place the pots into a cold frame in dappled shade. The frame should be kept closed to maintain humidity and should also be kept as full as possible for the same reason. If insufficient cuttings are available, empty areas can be taken up with open containers of water.

The aim is to keep the potting mix moist (not wet) and the foliage of the cuttings cool. In hot weather a light spray, sufficient only to wet the foliage, can be applied at least morning and evening and a more thorough hosing given as needed. The frequency of hosings depends on the circumstances but is unlikely to be more than twice a week in hot weather. The foliage spray should be minimized for cuttings with hairy leaves (eg flannel flowers) as rotting may occur. If fungal problems develop, any affected cuttings need to be removed from the frame and discarded. If the problem persists, the use of a fungicide spray may be unavoidable.

♦ How do I know if cuttings have "struck"?

Most cuttings will 'strike' (ie form roots) in 4-8 weeks in warm weather. Some species, however, may take much longer...up to 12 months or more in certain cases. If a cutting remains green and healthy it can be left in the frame for as long as needed (or until the propagator runs out of patience!).

Roots may appear through the drainage holes in the pots or root development may be checked by gently tapping out the soil mass from the pots.

♦ Hardening of struck cuttings

This is an essential step. Many struck cuttings are lost in the few weeks after removal from the propagating frame due to inadequate hardening. This can be carried out using a similar (though often smaller) frame to that used to strike the cuttings. The hardening frame, however, is kept closed during the day and

propped open at night. After two weeks of this treatment struck cuttings will be sufficiently hardened to be removed from the frame and placed in a shaded position for another two weeks. They can then be moved into the open.

♦ Which plants should I try?

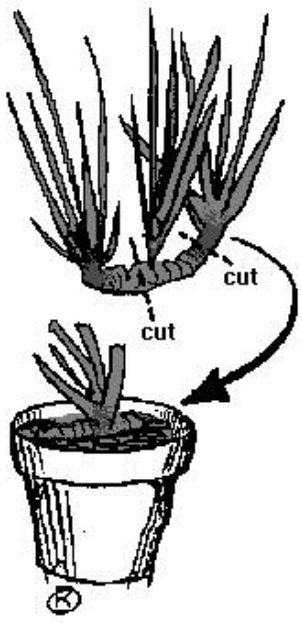
It's worth trying most things, but start with something likely to succeed such as *Bauera, Prostanthera, Crowea, Melaleuca, Callistemon* or *Leptospermum*. Don't start with the hard ones like *Acacia, Boronia, Persoonia* and *Eucalyptus*...the last two are virtually impossible to strike!!.

♦ ...and some hints

- Get cuttings into their pots as quickly as possible. If you can't work on them straight away, plunge the cutting material straight into water, shake off excess and store them in a plastic bag in a cool place...eg. a refrigerator.
- No plant food is necessary in the propagating mix because the cuttings have no roots to take in food.
- Don't get discouraged by initial failures. With time you will develop methods which "work" for you.

Propagation by division

Division is a term loosely applied to a number of propagation methods where a plant is split into two or more pieces, all of which have roots attached. "Division" means exactly what it says. At its most vigorous it means driving a spade through a clump, pulling one half of the plant out of the ground and planting it somewhere else. Provided adequate water is provided, it's surprising how many plants will tolerate this barbarism!



Division is used with plants which form grass-like clumps, those that sucker and those that naturally layer (ie. develop roots where their branches touch the ground).

♦ Grass-like clumps

These generally have strap-like leaves arising from an underground rhizome (a thickened underground stem). The best known Australian plants in this group are the kangaroo paws (*Anigozanthos* species and cultivars). Less well known are *Dianella* and *Stypandra*, both with spikes of small blue flowers, and *Lomandra*.

The technique involved in this group is quite simple. Once the clump is dug up (or tipped out of its pot), it is divided into segments that comprise a piece of the rhizome, some leaf shoots and some roots. Dead leaves and dead roots should be removed.

If you just want a few plants for your own use, the best sized division comprises three or four leaf shoots with a good section of rhizome and healthy roots. With these, the humid environment of a greenhouse or similar shelter is probably unnecessary - just a sheltered position and regular watering.

If a greenhouse environment is available, the divisions can be quite small, comprising only one set of leaf shoots. Once potted into individual small pots, these are kept in the greenhouse for a few weeks (4 to 6 weeks in the warm part of the year; longer at other times). Divisions of this size will also need to be "hardened" after the roots have developed.

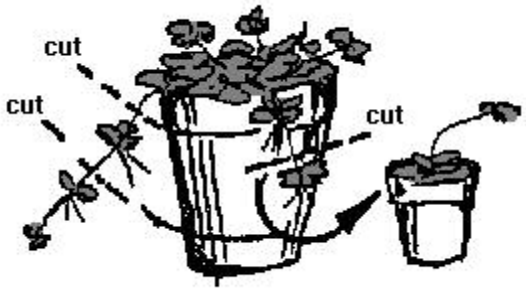
♦ Plants that sucker

Among Australian plants that spread by producing suckers from their root systems are *Dampiera* and the related *Lechenaultia* as well as some species of *Lobelia* and *Peperomia*. Even genera such as *Grevillea* and *Acacia* have occasional suckering species.

All you need do with this group is to dig up small pieces (making sure that there are roots attached), pot them into individual containers and place them into a greenhouse or sheltered position for a few weeks.

♦ Layering species

Layering is a technique where a branch is pegged down, covered with soil and then severed from the parent plant when roots have formed. There's a bit more to it than that, but in some cases, the plants do all of the work for us by self-layering!



Several *Hibbertia* species are in this self-layering category. *H.pedunculata*, for example, often forms roots at many points along its branches. Propagation is simply a matter of lifting the branch, cutting it into segments (each containing some roots), potting the segments to small pots and treating them in the same way described for the "grassy clumps".

Another group of plants which fall generally into the layering category are those that send out stolons (lateral, above ground stems which form roots at the leaf nodes). These usually form small plantlets where they touch the ground and these can be cut off and potted up. The well known exotic "Spider Plant" (*Chlorophytum*

comosum) is a good example of this type of growth but many others (including some of the Australian *Conostylis* species) do much the same thing.

If you don't have access to a greenhouse, you can propagate layering species in-situ. Just place a small pot of mix under the branch and place the roots into it. If necessary, peg the branch down with some wire to prevent the roots being pulled out of the mix by the wind. After a few weeks the roots should be well established in the mix and the new plant can be severed from its parent.

♦ When to divide

The best time for dividing plants depends on the climate. In warmer areas, virtually any time of year is suitable. Without doubt, though, the best time is in the warmer months. Divisions taken in late summer should develop strong roots well before the onset of winter. Divisions taken in the cooler part of the year will often show little sign of development until the weather warms up. In very cold districts, little success is likely unless some form of greenhouse is available.

5 Potting On

If you've propagated some of your own plants, the time will come when you must transplant them into larger pots. This time is:

- When seedlings have produced their first few pairs of "true" leaves.
- When cuttings or divisions have been hardened.

Potting-on is essential, but it can cause unavoidable damage to the roots and this can retard the growth of the plants, or even kill them, if not carried out carefully.

Potting mixes

For potting on, the potting mix should be of open texture so that it will drain freely. Potting mixes that have been used successfully include a coarse river sand/coco peat moss mix in the ratio of 3:2 and a mix of coarse river sand/coco peat moss/sandy loam in the ratio of 5:4:3.

If you make up your own mix, add some slow release fertilizer at the rate recommended on the pack. Most native plants don't require any special fertilizer, however, some are sensitive to excess phosphorus and should be fertilized with special "native plant" fertilizers.

A good reference on potting mixes generally is the CSIRO's booklet *Potting Mixes* (No.9 in the "Discovering Soils" series). The principle in the CSIRO's approach is to have a balance between water holding properties and air in the root zone of the plant. You can increase the amount of air in the mix by adding coarse material such as gravel (5-10 mm particles) or pine bark chips which have been stored and watered frequently for about six weeks to remove potentially toxic compounds (see box - "What is AFP").

You can also purchase bagged "native plant mixes" from nurseries and garden centres. Look for quality mixes manufactured to the specifications of Standards Australia.

Transplanting seedlings

Seedlings growing in punnets or the like can be potted into individual tubes (or small pots) when they are large enough to be handled. This is often when the second pair of leaves appears. For species with very small leaves, it may be easier to leave transplanting until several sets of leaves have appeared.

Carefully remove individual seedlings from the seed bed using a knife or narrow spatula. Each seedling should be placed into a partly filled tube and potting mix gently firmed around it preferably using a gentle water spray from a hand-operated spray bottle to minimize damage to the fine roots.

After transplanting, the seedlings need to be placed in a protected position for a couple of weeks and gradually moved into a situation where full sun is available for at least part of the day. This known as “hardening. The seedlings must not be allowed to dry out and the tubes containing the seedlings could be placed in a capillary bed to minimize this possibility.

Seedlings resulting from seeds sown individually in small pots don't need to be transplanted at this stage - they can be left growing in the small pots until the plants are several centimetres high. They still need to be hardened by gradually moving them to a less protected location.

What is AFP?

AFP is "Air Filled Porosity". This is the fraction of air in a mix after it has stopped draining. It is an important factor for container grown plants because, if there is too little air (as in mixes comprised of very fine particles), plants will "drown". This is often the result when straight garden soil is used as a potting mix.

Standard methods of measuring AFP are available but, to get a rough idea of the AFP of your potting mix, try this:

- Take a 150mm pot and calculate its volume (the size is not critical but you must use the same pot for all tests as AFP depends on the depth of the pot).
- Compact the mix into the pot and submerge the filled pot in a bucket of water for an hour or so.
- Quickly lift the pot out of the bucket and support it over an empty container to collect the drainage water.
- Measure the volume of water collected after about an hour. This volume represents the amount of air that has now entered the mix.
- Calculate AFP (%) as:
  $$\frac{\text{Volume of water collected}}{\text{Volume of pot}} \times 100$$
- Generally the AFP measured in this way should be around 20%.

Transplanting struck cuttings and divisions

Cuttings and small divisions in individual tubes are best hardened before potting on. This is done by gradually exposing the tubes to more sun.

In cases where a number of cuttings are in the one pot, the soil mass must be gently broken up so that root damage is minimized; struck cuttings are transplanted into individual small pots for hardening and those without roots are reset and placed back into the propagating frame.

Some cuttings (eg. *Grevillea* species) often produce a single thick root which is easily broken off while the cuttings are being separated. If this happens, don't discard the cutting. Simply reset it in the propagating mix and place it back in the propagating frame - the root will usually re-establish.

Moving plants into larger pots

After 1-3 months, tubed seedlings, cuttings and divisions will be ready to transplant into larger (125 - 150 mm) pots.

To minimise damage to the root systems of the small plants, it's wise to transplant the whole potful of soil (the "root ball"), with as little disturbance as possible. One method of doing this is:

- Moisten the soil in the pot and leave it for an hour or two to get it damp right through so that it will hold its shape.
- Take your new pot (clean, of course) and loosely fill it with your potting mixture.
- Take a pot similar to the one that your plant is in, place it in the mix in the new pot and firm the mix around it. You should now have an impression roughly the size of the root ball of the plant you wish to transplant.
- From thin sheet metal (such as old can) make a scoop which will fit around half your present pot; tap the pot to loosen the plant and slide the plant and earth complete into the scoop;
- Slip the scoop into the hole in the new pot and slide the plant and its earth into the hole.
- Sprinkle potting soil into any gap around the plant and gently firm it down.
- A light watering and you've done the job without handling the ball of earth, with the attendant risk of squeezing and crushing the roots.

If you leave potting on until too late, the roots of the plant will have formed a tight, spiralled mass in the pot. It's no use re-potting the plant like that; those roots will remain spiralled and will make it difficult for the plant to produce fresh roots. It's usually best to admit that these roots are doing no good and to cut them off. You can reduce the risk of root-spiralling by using deep pots.

Potting-on can be a shock to your plants. Help them to overcome it by keeping them for a few days in the environment in which they lived before potting-on.

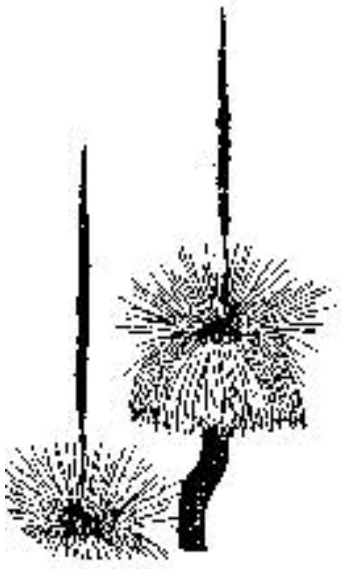
6 Planting Out

Before you start, carefully study your land. Where are the sunny and shady areas? Which parts are damp or exposed to wind? Or frost....?

Plants will be ready for the garden when good root development has occurred. This can be checked by carefully tapping the plant out of the pot. The roots should not be allowed to develop into a tight, coiled mass (ie. become “pot bound”). If this does occur, some root pruning will be needed so that the roots can easily spread into the surrounding soil. Certain groups of plants such as *Boronia* and *Prostanthera* (mint bushes) are prone to become pot-bound fairly quickly.

The best time for planting is undoubtedly autumn. During this period there is still warmth in the soil and the plants will have 8 or 9 months to become established before the following summer. You can successfully plant out at other times but if you're going to plant in spring or summer you will have to take special precautions to ensure that sufficient water is provided during hot spells.

- The garden soil must be moist. Dig a hole slightly deeper than the pot and about twice as wide and fill it with water. If there is still water in the hole after 10 minutes, the drainage isn't ideal and you will have to either improve the drainage or use only plants that are tolerant of such conditions.
- After the water has completely drained away, put a teaspoon or two of slow-release fertiliser in the bottom of the hole and mix the fertiliser with the natural soil.
- Loosen the plant from the pot by tapping the sides and bottom, slide the ball of earth out - if the plant is well established and the potting mix is moist, the root ball will not fall apart. With a bit of experience, it's quite easy to upend the pot, tap the plant out into your hand and carefully lower it into the hole.
- Once the plant has been placed in the planting hole, pour loose soil around the plant and firm it down with the fingers - keep adding more soil until the hole around the plant is completely filled and firmed. It's important that the final soil level is at the same level as the top of the potting mix - if the soil is allowed to cover part of the stem of the plant, rotting may occur.



- Even though you've tried to keep the roots from harm, they'll have been disturbed and they won't be able to take up water as they should. So you must keep the plant well watered for a week or so. Keep the soil moist, not soggy.

To stake or not to stake?

If you've planted in an exposed position, winds can move the plant about and loosen the roots. Put in a stake near the plant at the time of planting (you may damage the roots if you do it later) and tie the plant gently to it. It's probably best to use two stakes, one on each side of the plant. This allows the plant some movement which will enable it to develop a strong root system but avoids the possibility of the plant becoming dependent on staking. The stakes should be removed once the plant becomes established.

Frost protection

In areas subject to frost, some protection may need to be given during the first winter, even to species which are frost-hardy when older. A simple method is to put a few stakes around the plant and place a plastic bag over the plant at night. However, the bag must be removed during the day.

7 Watering

Plants can be trained to develop deep roots and become more tolerant of dry conditions. But, as already mentioned, not all are drought tolerant and watering shouldn't be neglected for any of them, particularly in the first year after planting out.

The ideal situation is to give your plants the same sort of conditions that they experience in nature. A good start is to select plants which are native to your region (ie. “local” plants). Once these plants have been in the garden for 1-2 years, there should be little need for artificial watering unless there is a prolonged dry period during summer.

If you are growing plants from other climatic regions, the amount of water that the plants get in nature can be the starting point from which to judge how much you should give them. For example:

- Plants from the southern areas of western Australia are accustomed to very dry summers and wet winters. Plants from those regions may need watering in winter and in spring and as little water as possible in summer if they are to survive in east coast gardens.
- If you are establishing a garden of rainforest plants, the local rainfall may not be sufficient to provide ideal conditions. Many rainforest species are surprisingly tolerant of dry conditions once they are established but they still perform best if their water requirements are met.

Get to know the plants in your garden and find out the ones which are the first to show signs of distress when they aren't getting enough water. The "Mint Bushes" (*Prostanthera* species) are among these "indicator plants". As soon as they start to show signs of wilting, then it's a signal that watering is needed.

Another factor to remember is that hollows and ponds incorporated into the garden (see Section 2) design will control stormwater and slowly release water to the soil (as well as providing additional habitats for plants and water for wildlife.

Water conservation

In most of our cities the demands on the water reticulation systems are steadily increasing and water authorities are moving to implement "user pays". So, when you must water, do so thoughtfully...otherwise the wallet and the environment are both likely to suffer serious pain!

Certainly don't do what most gardeners do and walk around the garden with a hose, giving a light sprinkling to each plant. As mentioned earlier, give the beds a real soaking, so that the water gets deep into the soil.

A sprinkler which scatters the water gently over a large area, so that it soaks in faster than it arrives, will give the best effect. Too concentrated a flow (as often occurs with a hand-held hose) will run off and be wasted. Some thought in placement of sprinklers is needed though, to avoid too much spray falling on impervious surfaces and running off into gutters.

The other common mistake is to water at the wrong time of day. How often have you seen sprinklers operating at midday in the middle of summer? The loss of water to the atmosphere by evaporation is extreme under these conditions. The best time for watering is early in the morning or in late afternoon. Watering at night can leave the foliage and soil surface moist and lead to fungal diseases.

Even better than sprinklers is drip irrigation. This takes a bit of time and planning to install but it is the most effective way to make sure that water is delivered to the places that it is needed. And the water bill should be a little less frightening.

Another bonus of drip irrigation is that it can reduce weed growth - this is because water is only delivered to specific locations and not to the whole garden area. As weeds are encouraged by moist soils, the re is less suitable areas for weeds to become established.

On the minus side...it's easy to forget where the irrigation pipe is laid and put a spade through it.....

Watering problem soils

There are some problem soils which need special treatment. Clay is one. Heavy watering can easily lead to water-logging of the soil which will kill many plants. You

must ensure that the drainage is as good as you can make it and then you must water gently so that the water will soak in fast enough to prevent the formation of pools. This is not easy, but the intelligent watering of clay is the secret of success. It can be attained more easily with trickle-watering.

Some sands and sandy loams are also a problem, particularly in hot, dry conditions. When you try to water them the water forms into droplets, runs off and won't soak in. This is a surface tension problem; the soil particles repel the water. On a flat surface heavy watering will overcome this resistance but sloping surfaces are more difficult. Mulches will help to overcome this and the use of a "wetting agent" such as small concentrations of soap or detergent also work well...the accent, though, is on the word "small"; we wouldn't want to contribute to pollution of our creeks and rivers. There are also some commercial wetting agents which may be worth considering.

8 Pest Control

Like any plants, Australian native plants are subject to a wide range of potential pests and it would take a lot more space than we have here to cover all the individual types. So let's briefly look at three broad groups - chewers, suckers and rotters!

Chewers

These are usually the larvae of beetles, moths, butterflies and other insects. In a mature native garden (one with a good diversity of healthy plants) foliage chewers are rarely a serious problem as they will be controlled by the wide range of birds that will be attracted to the garden. There will certainly be chewed leaves visible on some plants but they won't be especially noticeable once the garden is several years old. Insects and birds are part of a balanced ecosystem and, provided things stay in balance, you shouldn't particularly worry if you notice the odd caterpillar chewing away happily!

However, there may be times when a severe infestation of caterpillars can cause serious damage to individual plants. Two examples are:

- Sawfly larvae – there are two main types of concern. Steel blue sawfly larvae usually feed on eucalypts are can often be seen in closely packed groups. Bottlebrush sawfly larvae can rapidly skeletonize the leaves of callistemons. Sawfly larvae should not be handled as they can secrete an irritating liquid onto the skin when disturbed.
- Webbing caterpillars - these create a protective web around themselves made up of leafy shoots and their own waste products. The webbing makes these pests difficult to treat with chemicals sprays.

In both cases the best course of action is to physically remove the insects - a strong jet of water from a hose is usually sufficient to dislodge them from smaller plants and, once they hit the ground, they rarely return. Alternatively you can flick them off with a (gloved) hand.

If the plant is a bit larger, you could spray with a relatively safe insecticide (pyrethrin based) but really, if the plant is too large for physical removal of the pests, it's probably big enough to look after itself - provided it's otherwise healthy.

Another group of insects that can be classified as chewers are borers. These burrow into the stems and trunks and can often be discovered by the sawdust like material that accumulates near the entrance to their burrows. Usually inserting a piece of wire into the hole will kill them.

Suckers

The most common types of sap sucking pests are aphids and scale. Both of these affect the vigour of plants and can make them susceptible to other types of pests and diseases.

Aphids are small, usually dark and about the size of a pin head. They often accumulate on flowers or young foliage. The strong jet of water treatment will often dislodge lodge them but you may need to be vigilant and repeat the treatment as they re-occur. Pyrethrin-based insecticides can be used if infestations are severe.

Scale will be observed as clusters of waxy bumps along the stems of plants and will often be associated with a black, powdery substance called sooty mould. In small infestations, scale can be scraped off the stems but in more severe cases treatment with white oil is usually effective. This creates an oily film over the insects and cuts off their air supply.

Rotters

The various types of rotting are caused by fungi and a number of different forms may be encountered:

- Root rot - this is caused by *Armillaria* and the cinnamon fungus (*Phytophthora cinnamomi*). If they are present, treatment may be impractical so it's best to try to minimize conditions that favour them. As *Armillaria* often spreads to healthy plants from dead plant material, removal of old stumps and roots of deceased plants is advisable. The effects of cinnamon fungus can be minimized by improving garden drainage.
- Ink disease - this affects some kangaroo paws and appears as black dots on the leaves which gradually spread and eventually kill the plant. Again, control can be difficult as fungicides have limited effect. The problem can be minimised by growing resistant forms (*Angizanthos flavidus* and hybrids involving that species).

- Collar rot - this can result in rotting of plant stems at or near soil level and it can often appear as if plants have been ringbarked. The problem can be minimized by ensuring that organic mulches or moist litter don't accumulate around the stems.
- Damping off of seedlings -see "Propagation by Seed" above.

9 Potted Plants

More and more Australian native plants are being grown in pots, window boxes and other containers.

There are several reasons for this. Some people live in home units and the like, some have grown past the age of strenuous gardening and some want to grow species which are not suited to the conditions in their gardens. For instance, they want to grow dry-climate plants in a high rainfall area or frost tender species in a cold district.

Growing in pots is only a matter of re-potting the plant instead of planting it out in the garden, so that at all times it has enough soil and space for it to grow healthily. This is satisfactory for plants which are small or which don't live long, but bigger or older plants will eventually reach the largest practicable pot.

When this happens you can move the plant out into the garden, but this is not always wise - particularly with common container grown plants such as figs which can be far too vigorous for a normal suburban garden.

The other option is to re-pot into the same sized pot. To do this, gently turn the plant out of its pot, tease off the outside quarter of the soil and trim the roots which are thereby laid bare. Clean the pot and replant using fresh potting mix. Having reduced the root system you should prune the plant to reduce the foliage by about the same amount. Use the opportunity to cut out any poorly growing parts of the plant.

The choice of pot is really a matter of personal taste. There is a wide range of plastic pots available in small and large sizes and, you can even use your imagination and use unusual objects such as old hollow stumps and half wine barrels. If you use clay pots, remember that these are porous and lose moisture much quicker than plastic varieties so they will require more frequent watering. As re-potting will be needed, perhaps every year or two, a tapered, rather than a straight-sided pot will lead to least root disturbance.

Hanging baskets are another option. Many of the smaller, herbaceous plants look great trailing over the sides of a basket. Plants like native violets and some of the

fan flowers (*Scaevola* species) are ideal. More difficult subjects such as *Lechenaultia biloba* have also been found to be more reliable in the traditional bark-lined baskets than in other types of container.

Practically any Australian plant which will grow in a garden will grow well in a pot. Many which will eventually be too big for pot growing (*Grevillea robusta*, silky oak, for example) make good, fast growing subjects in their younger days. However, growing a plant in a pot does not usually transform it into an indoor plant. They can be brought indoors during flowering, of course, but they should spend most of their lives in the fresh air. Many species which are of rainforest origin, however, will survive indoors for very extended periods.

It's easy to protect potted plants from infection and well worth doing. Make a strict rule NEVER to stand your potted plants on the bare earth; ALWAYS stand them on something impenetrable, such as a sheet of plastic. This is not just to prevent soil pathogens from getting into the potting mix. If you are growing particularly hardy species in containers standing on bare earth, they will quickly take root into the soil through the drainage holes.

Always use clean pots. If you are re-using a pot scrub it thoroughly and then disinfect it using a diluted solution of household bleach (about 7 parts water to 1 part bleach). It is a good idea, and if you are growing difficult species it is almost essential, to use a quality, open textured potting mix designed for Australian native plants. You can buy it in sealed bags from reliable nurseries.

Fertilizing potted plants

All container plants will require feeding because any nutrients not taken up by the plant will be leached out of the potting mix by water flowing through it. Overfeeding is obviously wasteful for this reason. A slow release fertilizer applied at the rate recommended on the pack will ensure a gradual release of nutrients over time.

Remember to use low phosphorus fertilisers if you are growing phosphorus sensitive species.

Watering of potted plants

Watering is best done by taking the pot and immersing it in a bucket of water for a few minutes. However, this can be time consuming for more than two or three pots and totally impractical for any containers greater than about 250 mm diameter. It you do use a hose for watering be careful not to allow the mix to dry out. If it does, it can shrink away from the sides of the pot and subsequent hosing will just allow the water flow down the sides and not soak into the root ball.

“Self watering” pots are expensive but quite successful and are proving to be very beneficial for many native plants that have been difficult to grow.

If you have a lot of container plants and you plan to go away from home for an extended period, consider installing an automatic watering system with one or two drippers fitted into each pot.

10 Further Information

Books

The most comprehensive publications currently available are:

- Elliot, W. R and Jones D (1980), *The Encyclopaedia of Australian Plants* (all volumes), Lothian Publishing Company Pty Ltd, Melbourne.
- Handreck, K . (2001 - 2nd ed.); *Gardening Down-under: A Guide to Healthier Soils and Plants,* Landlinks Press, Melbourne.
- Wrigley, J and Fagg, M (1996 - 4th ed), *Australian Native Plants*, Collins Publishers, Australia

These three publications include a good coverage of cultivation, propagation, pest control, etc. The following more specialised publications are also well worth seeking out, although some are out of print and will only be available though second hand sellers:

- Australian Daisy Study Group (1995), *Australian Brachyscomes*.
- Australian Daisy Study Group (2002), *Everlasting Daisies of Australia*
- Blombery A. and Maloney B. (1984), *Propagating Australian Plants*, Kangaroo Press, New South Wales.
- Blombery A. and Maloney B. (1996), *Growing Australian Orchids,* Kangaroo Press, New South Wales.
- Burke, D (1983), *Growing Grevilleas in Australia and New Zealand*, Kangaroo Press, New South Wales.
- Brooker, M and Kleinig, D (1996*), Eucalyptus: An Illustrated Guide to Indentification*, Reed Publishers, Australia.
- Chaffey, C. (1999), *Australian Ferns: Growing Them Successfully,* Kangaroo Press, New South Wales.
- CSIRO Australia (1985), *Potting Mixes,* No.9 in the "Discovering Soils" series.
- Elliot. G (1988) *Australian Plants for Small Gardens and Containers*, Hyland House, Australia
- George, A (1996 – 3rd ed) *The Banksia Book*, Kangaroo Press in association with the Society for Growing Australian Plants.
- Holliday, I (1989), *A Field Guide to Melaleucas*, Hamlyn, Australia.
- Holliday, I (1997), *A Field Guide to Melaleucas* , Volume 2, self published.
- Nicholson, N and H, *Rainforest Plants*, Vols 1-5, Terania Rainforest Publishing New South Wales.
- Olde, P and Marriott, N (1994), *The Grevillea Book*, Vols.1,2,3, Kangaroo Press, New South Wales.
- Pizzey G. (2000), *The Australian Bird-Garden: Creating Havens for Native Birds*, Angus and Robertson, Australia.

- Romanowski. N (1998), *Planting Wetlands and Dams*, University of NSW Press.
- Simmons, M (1981), *Acacias of Australia*, Vol.1, Thomas Nelson Australia.
- Simmons, M (1988), *Acacias of Australia*, Vol.2, Penguin Books Australia.
- Snape, D (2002), *The Australian Garden: Designing with Australian Plants*, Bloomings Books, Melbourne
- Society for Growing Australian Plants - South Australian Region (1997*), Eremophilas for the Garden*, SGAP (SA Region).
- Tame, T (1992), *Acacias of South-east Australia*, Kangaroo Press.
- van Dok.W (2000) *The Water-efficient Garden*. Water-efficient Gardenscapes, Glen Waverley, Victoria.
- Wrigley, J and Fagg, M (1989), *Banksias, Waratahs and Grevilleas*, Collins Publishers Australia.
- Wrigley, J and Fagg, M (1993), *Bottlebrushes, Paperbarks and Tea Trees*, Angus and Robertson, Australia.

Peroiodicals

- *Australian Plants,* Quarterly Journal of the Association of Societies for Growing Australian Plants (Enquiries: P.O. Box 744, Blacktown, NSW, 2148).

Internet

There are many useful resources on Australian Native Plants to be found on the World Wide web. The following are good sites to start with and have extensive links to other sites:

- Australian Plants Society (NSW)
  http://austplants.com.au
- Australian Native Plants Society (Australia) – includes links to regional, district and study groups Australia-wide
  http://anpsa.org.au
- Australian National Botanic Gardens
  http://www.anbg.gov.au/
- Australasian Native Orchid Society
  http://www.anos.org.au

For further information about membership of the Australian Plants Society contact PO Box 5026, Old Toongabbie NSW, 2146

Phone: 0499 073 001 Email: office@austplants.com.au