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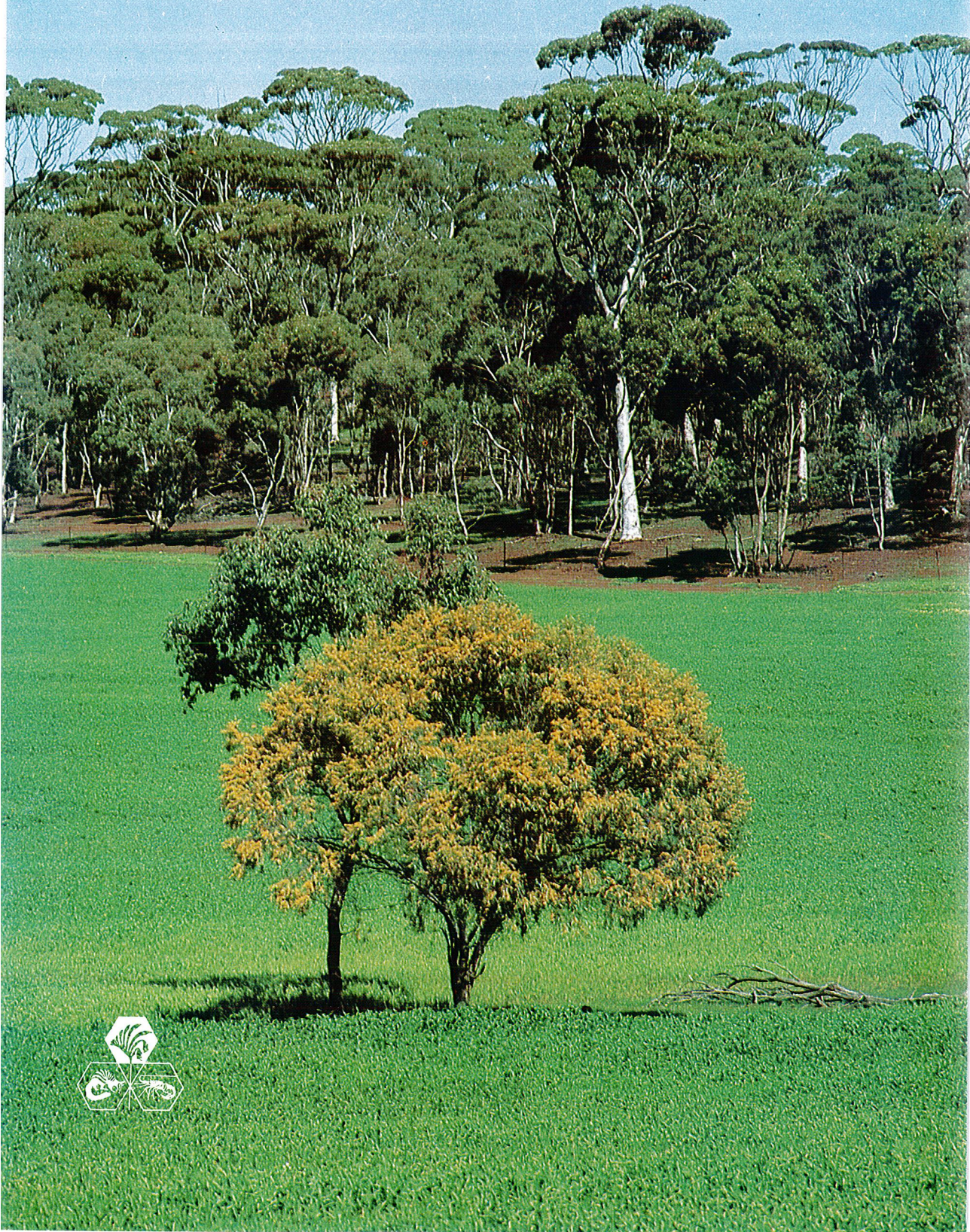
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# RE-ESTABLISHING LOCAL TREES AND SHRUBS ON FARMS

*Power*





## INTRODUCTION

Much has been said about the value of trees in the countryside, but what is often left unsaid, or not realised, is that these values are especially high when the trees and shrubs are local to the area. *Local* is used here to mean species that grow on the site naturally, or grew there before it was cleared. This pamphlet discusses briefly the special values of local trees and shrubs and then explains how to re-establish them on farms.

### Biological Value

Local trees and shrubs provide homes and food for many different types of animal: mammals, birds, reptiles, insects, spiders and micro-organisms. A local tree's foliage, its buds, flowers and fruits, its branchlets, its bark and wood, and the litter of leaves and twigs around it are all likely to support animal life. Hollow limbs that develop in older trees are used by possums, bats, lizards and a variety of birds for nesting and shelter. Associated native undershrubs provide habitat for still more fauna. There are some species that depend for their survival on a single tree or shrub species. Remnants of local vegetation greatly benefit the farmer by helping to maintain populations of predators and parasites that help control agricultural pests.

Remnants of the original flora, both on the road verge and on private land, make an important contribution to the rural landscape. (Photo by Robert Powell)

By contrast, non-local trees and shrubs, even ones from elsewhere in the State, cannot provide habitat for anything like as wide a range of fauna. This may easily be observed; for example, the unblemished foliage often seen on non-local trees indicates that the leaves are supporting very little insect life.

Local trees and shrubs are also of value in themselves as remnants of the immense variety of vegetation types of the South West. Some species are rare; the more remnants that are conserved, the greater the chance that those species will survive in the wild. Other species may be very common but variable; for example, York gum\* varies over its natural range from a smooth-barked mallee to a medium-sized tree with mainly rough bark. Conserving natural populations of the species in different localities is essential to maintain this natural variability.

### Value to the Landscape

Vegetation makes an important contribution to rural scenery. Despite widespread clearing in the South West, remnants of the original vegetation survive almost everywhere. These naturally occurring plants are beautiful not only in

\*for botanical names, see back page.







Trees in paddocks can provide valuable shade for livestock. (Photo by Robert Powell)

themselves but also in relation to the whole environment. They harmonize with their setting. They reinforce natural features; an example is the bands of vegetation round a lake. They preserve the distinctive characters of different localities, since even minor variations in terrain, soil and climate result in variations in the plant cover. Increasing the amount of local vegetation present, by encouraging natural regeneration or by planting local species, can increase the natural beauty and local character of the landscape.

However, the planting of *non-local* plants will confuse the landscape, and may lead people to undervalue, or even completely overlook, the natural species. A district can easily lose much of its local character if non-local species are planted. The end result is that all districts tend to look the same.

## ROAD VERGES

Road verges have served as important refuges for local vegetation and have helped retain natural beauty in the rural landscape. Moreover, a road verge well vegetated provides habitat for wildlife. For example, studies have shown that road verges form corridors that assist the movement of nomadic and migratory birds.

The farmer benefits in at least two ways from natural vegetation on road verges. The wildlife it harbours includes many predators and parasites of agricultural pests; and it serves as a windbreak. A road verge that is vegetated with both trees and shrubs often provides a more effective barrier to wind than do rows of planted trees. Strips of bush retained or regenerated on farms serve the same purpose.

If road verges are burnt too often, they lose much of their natural vegetation. In recent years many local authorities have ceased the regular burning of verges, and the natural trees and shrubs are regenerating.

Generally this increased growth of natural vegetation has reduced the growth of annual grasses, and so reduced the risk of accidental fires. In other words, frequent burning is not always the best way to minimise fire risk.

## RESTORING VEGETATION

Local vegetation can be restored in two ways: by encouraging natural regeneration of existing remnants of bush; and by planting local trees and shrubs.



### Encouraging Natural Regeneration

The main factors that inhibit natural regeneration are grazing and the cultivation of the land. Frequent fires and competition from exotic grasses do not help either.

The best way of encouraging regeneration is to fence off areas containing trees or shrubs. Suitable sites are corners of paddocks, areas of rough country, gullies, land isolated between gullies, and areas not readily accessible to farm machinery. Fencing alone is often enough to promote regeneration. In the western wheatbelt, York gum, marri, flooded gum, wandoo (white gum), rock sheoak and jam can produce spectacular regeneration.

Ploughing the site (without damaging the existing trees and shrubs) can greatly improve the regeneration. If it is done in the spring before the exotic grasses have set their seed, native seedlings germinating the following winter will

have fewer of these grasses to contend with. Ploughing also creates a better seed-bed for the local species.

If the land is to be returned to production, or used as a shelter belt for stock, the fencing can be removed a few years later, when the young trees are large enough to withstand browsing. Windbreak strips should be left fenced.

To distribute the young trees over a wider area, some of the seedlings can be dug up when very small for transplanting to other parts of the property that have the same soil-type. In doing so, try to preserve the ball of earth around them. They can be dug up in the spring after germinating and kept in pots over the following summer (see 'Growing On' below). Alternatively, they can be dug up after the opening rains the following year and transplanted immediately to the chosen site. Note that the size and colour of the seedlings' leaves may differ from those of the mature plants.

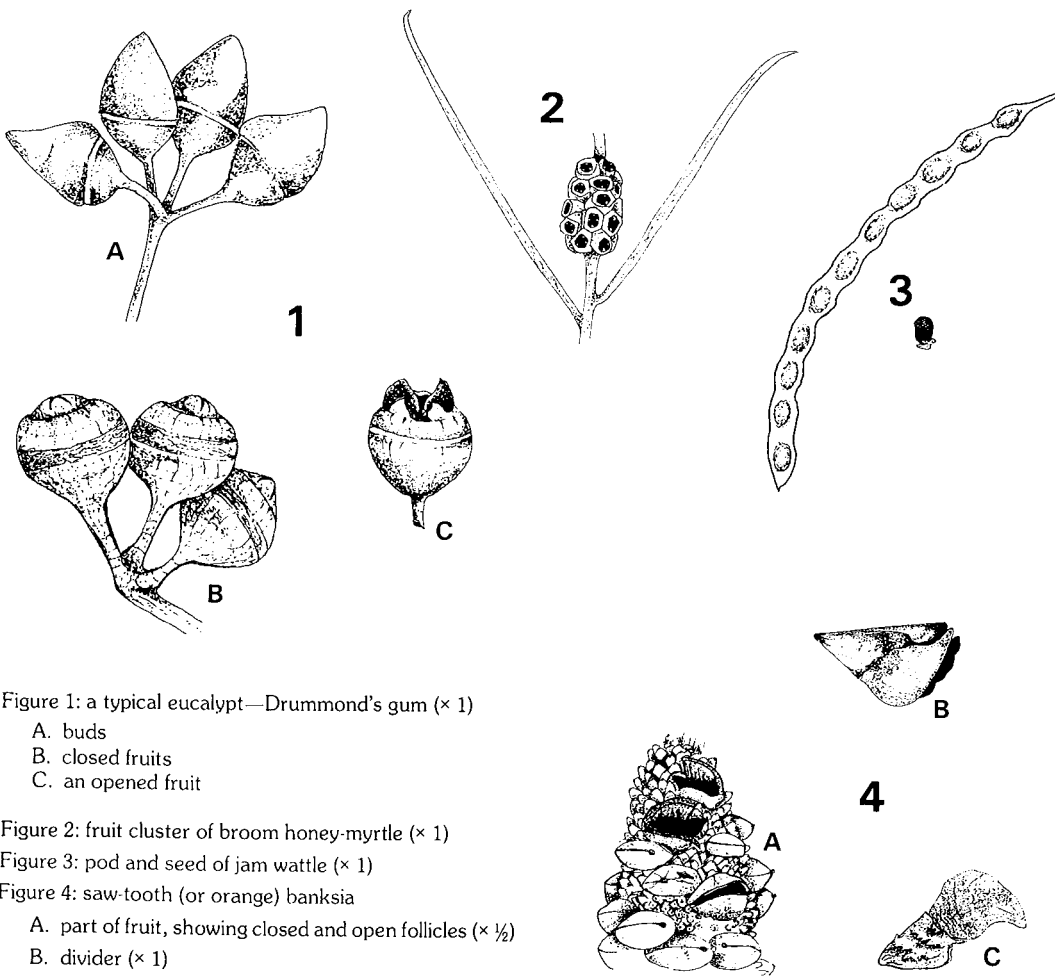


Figure 1: a typical eucalypt—Drummond's gum (× 1)

- A. buds
- B. closed fruits
- C. an opened fruit

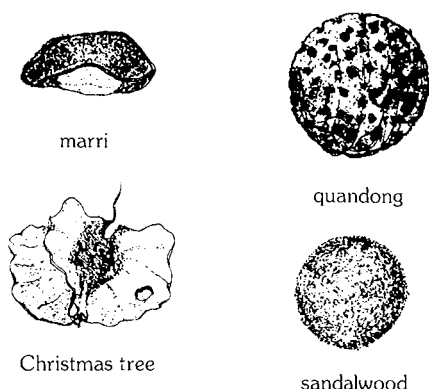
Figure 2: fruit cluster of broom honey-myrtle (× 1)

Figure 3: pod and seed of jam wattle (× 1)

Figure 4: saw-tooth (or orange) banksia

- A. part of fruit, showing closed and open follicles (× ½)
- B. divider (× 1)
- C. seed (× 1)

Figure 5: some large types of seed (× 1)



## PLANTING

If you are to plant it is best to raise the plants from seeds you collect yourself. Many local trees are easily grown from seeds. Also, collecting the seed locally helps to preserve the local forms of the species and thus ensure their natural variability (see 'Introduction'). There is a sense of achievement in growing your own plants; it is very rewarding to see them progress through all their stages of development. Or you can ask a local nursery to grow the plants from your seed.

### Collecting Seeds

Collect from natural trees and shrubs on your property or a neighbour's. Seeds may be collected for your own use on private land if you have the owner's permission. They may not be collected in a national park or nature reserve without a permit.

Below are notes on various groups of species, and some individual species, that may be local to your area.

Eucalypts, honey-myrtles, hakeas, sheoaks and cypresses

These have woody fruits (see Figures 1 and 2) that retain their seed for one or many years, sometimes until the branch dies. Collect fruits when they are mature but before they have opened (see Figure 1). Mature eucalypt fruits may still be slightly green, but most mature fruits have changed colour from green to brown. If a tree carries fruits of several ages, select the oldest unopened ones, but check for insect damage.

Place the fruits in a paper (not plastic) bag until they dry and open. Then shake the seeds out into an icecream container and store in envelopes until planting-time. Labelling at each stage will enable you to remember which seeds came from which plants.

### Wattles

Collect the black, shiny seeds from ripe pods. The pods of many species ripen in early summer. Ripe pods are dry and brittle, and split easily (see Figure 3).

The seeds have a hard coat, which needs to be softened before planting. Pour very hot or boiling water over them and leave them to soak for 12 to 24 hours. Fertile seeds will swell.

### Banksias

Some species shed their seed annually (usually in autumn), when the dividers and seeds may be extracted from the cone (see Figure 4).

For species that retain their seed, place the cones on an open fire or in an oven at 180°-200°c until the follicles open. Then cool the cones in water and remove to dry. Shake the cones or use tweezers or a screwdriver to extract the dividers and seeds. Repeat the process if necessary.

### Grevilleas

Collect seeds from ripe fruits, or from the ground soon after the fruits have split open.

### Quandong and sandalwood

Collect ripened fruits of both species in September to December and remove their flesh. Ripe fruits of quandong are red, and those of sandalwood are brown. Alternatively, collect the freshest of the fallen seeds (see Figure 5) at the base of the tree at any time of the year.

These species are semi-parasitic, but they do not appear to affect other trees around them. Plant the seeds direct into the soil within the root range of a tree (such as a wattle or eucalypt) that can act as a host. Do not plant too deeply; just cover with soil. Cutting a nick through the hard shell of the seeds may aid germination but is not strictly necessary. Plant with the nick down. Keep an eye on seedlings that germinate and water them periodically during the first summer if necessary.

Seeds may also be raised in pots and planted out the following autumn. If well watered, seedlings in pots do not need a host.

### Native apricot

Collect fruits in mid to late summer. Ripe fruits are orange. Store in a paper bag in a warm spot until the fruits split open, then remove the sticky seeds.



### Christmas tree

In February to March collect seeds that have fallen on the ground around the tree. The seeds are of an unusual shape (see Figure 5). Sow direct into the ground or into pots. Do not cover the seed, just press into the soil with open end down, to about a third of its depth; or place the seed on its side and press one wing into the soil. Like quandong and sandalwood, the Christmas tree is partly parasitic; sow where the young plants will get some protection between shrubs.

If well watered, seedlings in pots will not need a host. They should be planted out the following autumn, between shrubs (or in lawn near the house).

This species needs more water than other local plants. Watering of seedlings in the ground should be done once a week in the first summer and may need to be continued for several summers. Planting in lawn is one way of ensuring this. Protection from snails may also be necessary at first. The plants remain shrubby for several years, often dying back in summer, then send up a single stem that develops into a tree. The plants do not flower until at least seven years old.

### Sowing Direct

Species with large seeds, such as quandong, sandalwood, marri, banksias and hakeas, may be sown direct into the ground in late autumn or winter. Plant the seeds to a depth of one to two times their thickness. Marking their positions with stakes will help to prevent the seedlings from being trodden on.

### Sowing in Pots

Sowing in pots is generally more successful than sowing direct, because it enables the seedlings to be looked after until they are larger and less vulnerable. Spring is the best season for sowing but autumn and winter are also suitable, and some species, for example eucalypts, honey-myrtles and wattles, will germinate in summer if you stand the pots in a tray of water in a cool spot; and then you can plant them out that autumn. Use fine washed sand that is not salty. Pouring boiling water over the soil first should kill most weed seeds. Water the filled pots and leave the soil to drain and settle.

For fine seeds, margarine tubs or icecream containers are suitable, with a few drainage holes poked in the bottom (with a heated piece of thick

Natural regeneration of York gum in a small area fenced to exclude stock. Note that the juvenile foliage of the saplings is of a different colour from the foliage of the mature York gums behind. (Photo by Robert Powell)



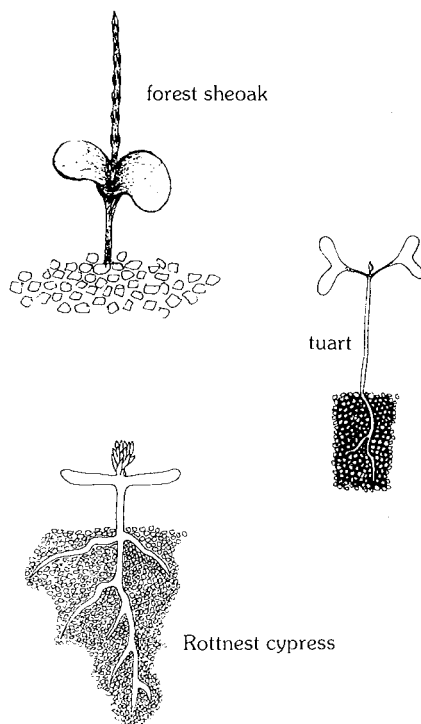


wire). Mix the seed with an equal amount of sand and sprinkle the mixture thinly on the soil. Water with a fairly fine spray to settle the soil.

Larger seeds can also be planted in the same sorts of container. Alternatively, you can save yourself the trouble of separating seedlings later by planting them singly in pots 10 cm or more tall. Place seeds on the surface and cover with sand to a depth of one to two times their thickness.

Keep the pots moist (but not wet), either in the rain or by watering every day. Most species will germinate within a month, but banksias and other species with large seed may take longer. Figure 6 shows the appearance of seedlings soon after germination.

Figure 6: seedlings soon after germination ( $\times 1$ )



### Separating Seedlings

When the seedlings have two to three pairs of leaves (more for small types of seedlings, e.g. honey-myrtles), separate them into individual pots. One method is to place the seedling container in a bucket of water and shake the soil and seedlings out; another is to dig out the seedlings with a knife, leaving some earth around each. The pots should be 10 cm or more tall. Tin cans are less suitable, because they rust; aluminium cans (with drainage holes) are good, but require cutting to remove the seedling.

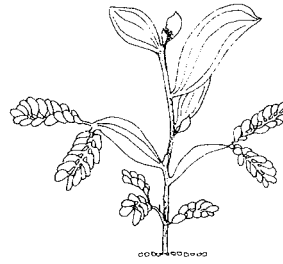


Figure 7: seedling of red-eyed wattle several weeks old, showing transition from leaves to phyllodes (special flattened leaf-stalks that take the place of leaves in many wattles) ( $\times \frac{1}{2}$ )

### Growing On

Keep the seedlings in pots over the first summer. Place them where they get a third to half of the day in the sun. Don't stand them on earth, or their roots may grow down into it. Water every second day in winter and spring, and once a day in summer; do not allow the pots to dry out.

It is best not to use any fertilizer. Local plants are adapted to soils of low fertility. Fertilizing a plant in a pot may kill it or force it to grow too vigorously and become pot-bound.

### Preparing the Site and Planting

By far the best time for planting is after the opening rains. This means that the plants go into damp soil and should have time in winter and spring to develop deep roots. The plants should be only 15-30 cm tall and will be less pot-bound and better able to establish themselves than if they are kept in pots for longer.

If the soil is heavy, rip the site and plant on a rip line. It is best to make a saucer-shaped hollow 1 m wide and 10-20 cm deep for each plant; this will help catch rain-water without flooding the plant.

In the centre of the hollow dig a hole to the depth of soil in the pot but wider. Water the pot to bind the soil and snip off any roots that emerge through holes in the bottom. Place your fingers either side of the seedling, invert the pot and tap the edge firmly on a solid object to make the plant come out. Gently tease out visible roots until they hang down. Transfer the plant to the hole without breaking the ball of earth. Press earth in to fill the rest of the hole, water well and press in more soil if it subsides.

### Marking and Protection

Place a stake about half a metre away from the plant to mark its position. Do not tie the plant to a stake, but if it is over 20 cm tall it may need protection from windthrow. In this case place a stake at either side of the plant and fix hay-bale



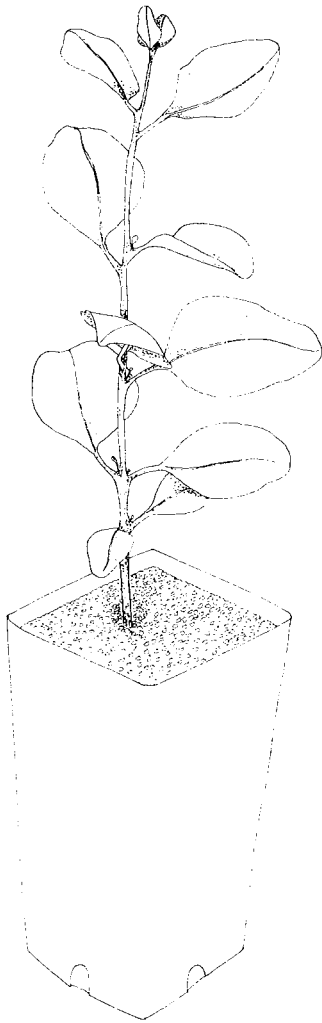


Figure 8: seedling of flooded gum ( $\times \frac{1}{2}$ ), nearly a year old and ready for planting out

twine from one stake to the other and back, knotting it together 2 cm away from the plant on each side. This will allow the plant some movement, which will help strengthen it.

### Watering

Some of your seedlings would establish themselves without further help but, for a high survival rate, periodic watering is essential from late spring to the opening rains next year. Every four weeks, 16-20 litres are required. Mark on a calendar to ensure that watering is not forgotten. Deep watering promotes the growth of deep roots, which are necessary for the plants to become drought-resistant.

By the second summer all plants should be fully established, and should not need further watering unless the second summer is exceptionally long and dry.

### Botanical Names

banksias	<i>Banksia</i> species
banksia, saw-tooth (or orange)	<i>Banksia prionotes</i>
Christmas tree	<i>Nuytsia floribunda</i>
cypresses	<i>Callitris</i> species and <i>Actinostrobus</i> species
cypress, Rottneest	<i>Callitris preissii</i>
Drummond's gum	<i>Eucalyptus drummondii</i>
eucalypts	<i>Eucalyptus</i> species
flooded gum	<i>Eucalyptus rudis</i>
grevilleas	<i>Grevillea</i> species
hakeas	<i>Hakea</i> species
honey-myrtles	<i>Melaleuca</i> species
honey-myrtle, broom	<i>Melaleuca uncinata</i>
jam	<i>Acacia acuminata</i>
marri	<i>Eucalyptus calophylla</i>
native apricot	<i>Pittosporum</i> <i>phylliraeoides</i>
quandong	<i>Santalum acuminatum</i>
red gum	<i>Eucalyptus calophylla</i>
salmon gum	<i>Eucalyptus</i> <i>salmonophloia</i>
sandalwood	<i>Santalum spicatum</i>
sheoaks	<i>Allocasuarina</i> species and <i>Casuarina</i> species
sheoak, forest	<i>Allocasuarina fraseriana</i>
sheoak, rock	<i>Allocasuarina</i> <i>huegeliana</i>
tuart	<i>Eucalyptus</i> <i>gomphocephala</i>
wandoo	<i>Eucalyptus wandoo</i>
wattles	<i>Acacia</i> species
wattle, red-eyed	<i>Acacia cyclops</i>
white gum	<i>Eucalyptus wandoo</i>
York gum	<i>Eucalyptus loxophleba</i>

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Cover photo: Woodland of salmon gum and wandoo preserved on a farm in the Victoria Plains district. In the foreground are a jam wattle and a sapling York gum. (Photo by Clifford Young)

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