



TreeNote

No. 17

March 1999

Tree planting

— in the medium and high rainfall zone of Western Australia

This *TreeNote* describes tree planting for commercial trees. For information on site preparation, see *TreeNote* No. 2, 'Preparing sites for tree planting'.

In Western Australia, most planting of commercial trees is done by hand, using seedlings grown in peat 'jiffy' pots, or in specially moulded plastic trays. Purpose-built planting machines are used in some areas, and are particularly suited to planting bare-rooted seedlings.



Planting blue gums using the planting tube and planting tray. (See section on Planting methods.)

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Ordering seedlings from nurseries

Order in October/November to ensure that the species you want can be obtained. Nurseries sow tree seeds into trays of potting mix from December to February. The seedling trees are then ready for planting after the 'break of season' in May.

For larger quantities, most nurseries grow to order, so early ordering helps them meet your requirements. Most nurseries factor in a level of discard plants. Check with the nursery how many healthy seedlings can be expected in each tray. Order 5 to 10 per cent more trees than you need, to replace seedlings that become damaged or that die when transplanted.

Root training

If possible, buy seedlings in trays designed for root training. Seedlings that are pot-bound or have tightly coiled roots are likely to develop root problems later.

Most modern trays have individually moulded cells for each seedling. Trays designed for root training have cells with vertical grooves to direct the roots downwards, and have slots to air-prune the roots and reduce root coiling. Some nurseries paint the inside of the trays with a copper-based, root-inhibiting paint which is also effective in reducing coiling. Before taking delivery, remove a few seedlings from their trays or pots and check their root structure.

Seedling size

A good size for seedlings is between 15 and 30 cm. Very small plants (less than 5 cm) can survive well, but need more care in planting, are easily buried by moving soil or swamped by weeds, and can be hard to find for later fertilising. Very large plants (over 30 cm) are awkward to transport and are more susceptible to wind damage. Large seedlings are harder to use with hand planting tubes, but are well suited to machine planting.

The stem of tree seedlings should be strong, and have a diameter greater than 2.5 mm at the base.

Hardiness

Before planting, ensure the seedlings have been 'hardened', that is, 'weaned off' shade and nutrients, at the nursery. Deep green, lush and soft foliage indicate unhardened seedlings that may suffer from transplant shock, dry conditions and frost. Reputable nurseries sell only 'hardened' seedlings.

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Collecting, transporting and storing seedlings

If possible, collect your seedlings from the nursery close to the date of planting out. Protect them from sun and wind during transport. Store the seedlings in an open position protected from strong winds. If they must be stored for a long period, place them on raised mesh benches or on coarse blue metal to stop their roots growing into the soil, and to prevent fungal diseases. Seedlings need a light watering every day during fine weather. Wash ice off the leaves in the morning if the weather is frosty. On the day they are to be planted, give the seedlings a thorough watering to reduce transplant shock and make them easier to remove from their pots or trays.

Pines and other bare root seedlings need to be stored in the shade. For temporary (one to two days) storage before planting, cover the roots with a moist bag or hessian. Do not expose the roots to air or sunlight more than is necessary. For longer storage, place bare root plants in a shallow trench, cover the roots and about one-third of the stem with soil, and water in well. Just before planting, soak bare rooted seedlings in water for about an hour to reduce transplant shock. Never store bags of seedlings in water for any length of time.

When to plant

Early June to mid August is the optimum time for tree planting in southern Western Australia – starting as soon as the soil is thoroughly wet with winter rains and adequate weed control has been achieved. On dry sites, for example, deep elevated sands, it is best to plant trees before the middle of July. Very wet sites can be left until the end of August to minimise stress on the seedlings from waterlogging.

Planting methods

Trees can be planted by hand, or by mechanical planters. To plant small numbers of trees, a narrow or cut down spade will do the trick. For larger hand planting projects, the easiest and quickest way is to use a planting tube such as the 'Pottiputki'. Using these devices, more than 2000 seedlings can be planted per day.

Tree planting machines take time to transport to the site and set up properly, but they can plant large areas efficiently, as long as the planting lines are well prepared, trafficable and unobstructed. They can plant bare rooted stock more efficiently than hand planters.

Seedling preparation

Remove seedlings from their cells in plastic trays by pushing up from the bottom while at the same time gently pulling on the stem. For trees in individual pots, invert the pot and tap the upturned edge on a solid object, such as a spade. The seedling should slide out of the container fairly easily. Cut off any long protruding roots. If the seedlings are pot bound, with tightly coiled

roots, make two shallow vertical cuts down the root ball with a knife and gently tease out some of the roots.

If the seedlings are in peat 'jiffy' pots, cut off any large roots protruding from the pots, and break off the bottom and one side of the pot to prevent root coiling. Also remove any excess peat from the top rim of the jiffy pot. If not buried properly, the jiffy pot's exposed rim can act as a wick and dry out the roots.

Plant only healthy, actively growing seedlings – discard others. Prepare only 50 to 100 trees at a time on planting trays, to prevent them drying out, and to reduce transplant shock.

Planting depth

Plant seedlings deeper than they were growing in the nursery, to make sure the roots stay moist while getting established (without being waterlogged). Bare rooted seedlings have a soil mark on the stem, showing how deep they were growing in the nursery. For seedlings grown in trays, make sure the entire root ball is buried.

Choose a depth of planting to suit the soil conditions. On dry sites (especially dry sandy sites), plant the seedlings so the top of the root ball or soil mark is 5 to 7 cm below the soil surface. For heavier soils with adequate moisture, plant the seedlings 2 to 3 cm deep. On very wet sites, plant closer to the surface, or better still, delay planting until the end of winter.

Make sure the roots are planted into mineral soil, not mulch or loose organic matter, and that soil is firm around the roots, that is, 'heeling' for hand planting or using press wheels for machine planting.

Planting position for seedlings

Plant in the centre of the mound on mounded sites. If hand planting on sites that have been ripped only, place the seedling about 15 cm away from the ripline on the uphill side. This reduces exposure to large air cavities under the ripline and potentially damaging concentrations of pre-planting residual herbicides that can accumulate in the ripline under some soil conditions. For sites that have been furrowlined (usually only the deep non wetting sands of the Swan Coastal Plain), plant in the centre of the furrow. Only use knockdown (non residual) herbicides on furrowlined sites.

Suppliers of planting tubes

Pottiputki Planting Tube – Prospectors, Unit 4,
195 Prospect Highway, Seven Hills, NSW 2147

Nufab Hand Planter – Lot 28, Moore Road, Dongara
WA (08) 9927 1297

Pottiputki hand planting tube – Namaco, Perth
(08) 9354 9200 Fax (08) 9354 9300

Note: These are examples only; please enquire of other suppliers relevant to your area.

Hand planting

Using a planting tube

1. Adjust the planting tube to give the desired depth of planting.
2. Push planting tube into the ground and press on depth limiter until it reaches the correct depth.
3. Take the seedling out of its container, or from the planting tray and drop it into the tube (roots first!).
4. Step on jaw-opening pedal.
5. Lift planting tube out of the ground with a twisting motion to loosen any soil stuck to the jaws.
6. Press the soil firmly around the seedling with your foot on either side, to close air pockets, making sure the seedling ends up vertical. Leave a small depression around the plant to collect water (except on wet sites).

A simple check to see if the trees have been firmly planted is to lightly pull a seedling by the stem. If it pulls out of the ground easily it has not been firmed in well enough.
7. Close the jaws of the planting tube using the release lever, and move to the next planting position.

Using a spade (for small scale plantings)

1. Dig a small hole which should be just big enough to hold the teased out root system of the seedling.
2. Place the seedling in the hole at the desired depth. Make sure the roots are arranged in a natural position and are not coiled or bending upwards.
3. Fill the hole making sure the seedling tree is upright. Gently firm the soil around the tree stem with your feet.

It is important to make the planting hole only slightly bigger than the root ball and to firm the soil around each seedling, leaving no air pockets around the roots. In heavy soils, it may be necessary to re-insert the spade beside the seedling, lever back and forth to close any air pockets under the seedling, then close the hole with your heel.
4. Press the soil round the stem with your feet to form a basin, so that water concentrates near the tree's roots during the early stages of growth (not suitable for wet sites).



A planting team making efficient use of the planting tube method.

PHOTO COURTESY OF BUNNINGS FOREST PRODUCTS PTY LTD

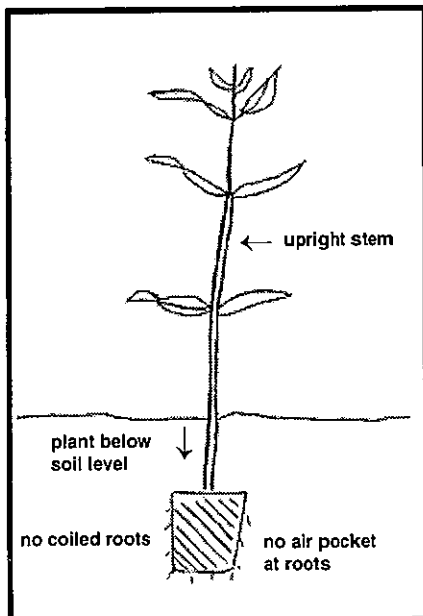
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Planting bare-rooted seedlings by hand

Pines are sometimes supplied as bare-rooted seedlings. These should be planted in a different way to container-grown seedlings. Long roots should be trimmed off with secateurs.

1. Form a wedge-shaped hole about 30 cm deep, using a narrow spade, or preferably a specially designed 'planting spear'.
2. Hold the seedling by the stem, and lower it into the hole, deeper than you wish it to be planted.
3. Gently raise the plant to ensure the roots point downwards.
4. When the seedling is at the correct planting depth (about 5 cm deeper than it was in the nursery soil), press soil against the tree's stem with your foot.
5. Reinsert the spade close to the roots and press the soil against the root with a lever action to eliminate air pockets. Make sure the tree remains vertical.
6. Press down the soil near the seedling to make a saucer-shaped depression (except wet sites).

Planting tips for potted seedlings. (See 'Planting depth' on page 2.)



Fertilising

Adequate nutrition gives trees a good start, with rapid early root and shoot development. Test the soil before planting to find out if fertiliser is needed. If the site has a good fertiliser history it is usually unnecessary to fertilise in the first year. However, the trees may need a fertiliser application in later years. Tree nutrition will be covered in more detail in a separate *TreeNote*.

As a general rule of thumb, for sites which need fertiliser in the year of planting, give each seedling about 50 g (equivalent to a small handful) of a general purpose fertiliser containing phosphorous and nitrogen. Suitable fertilisers include DAP, Agras No1, or NPK Blue. Use a spade or planting tube, and bury the fertiliser in a lump, 15 to 20 cm away from the base of the seedling, on the downhill side. This concentrated lump of fertiliser has an extended release period, similar to compressed tree tablets (which cost more, but are easy to use). Burying the fertiliser prevents nitrogen being lost to the atmosphere and reduces potential growth of weeds near the seedling.

Apply fertiliser at the time of planting (to minimise labour costs), or some weeks later when the seedlings have become established (to maximise the effectiveness of the fertiliser). Later fertilising is recommended for wet sites, to minimise the loss of fertiliser by leaching, before the tree roots have grown enough to use it. Fertilising should be completed by the end of September.

Note: Fertilise only if weed control has been successful, otherwise it will accelerate weed growth at the expense of the seedlings.

Further information

Contact your nearest office of the Department of Conservation and Land Management or of Agriculture Western Australia for the name of your nearest adviser representing the Farm Forestry Advisory Service. Other *TreeNote* titles are available from these offices in the higher rainfall area of southern Western Australia.

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ISSN 1329-3273

Print Post Approved 606811/00013

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