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WESTERN AUSTRALIA

# TreeNote

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## Preparing sites for tree planting

in the greater than 600 mm rainfall zone of Western Australia

### Site preparation – the vital step

Site preparation improves survival and growth of tree seedlings by providing the best environment for plant establishment.

Early root growth can otherwise be slowed by dense soil, compacted layers, low organic matter and nutrient levels, waterlogging, salinity, low moisture availability due to non-wetting soil and poor infiltration.

Managing these problems, and weeds and pests, enables fast early growth of plants to help them survive their first summer and autumn.

### Techniques for site preparation

Ideally, site preparation should start in late summer or early autumn for a winter planting. This will allow the most effective ripping and more efficient weed control on mounded areas before planting. Where summer-active perennial species such as couch, kikuyu or sorrel are present it will be necessary to spray to control these species before ripping and mounding. (A later *TreeNote* will address controlling weeds for establishment.)

It is important that ripping, mounding and furrowlining be aligned close to the contour to control run-off and prevent erosion.

#### Ripping

Ripping has been shown to improve tree growth on all farmland soils. It fractures the compaction zone (usually located 200 to 400 mm below the surface), allowing penetration of tree roots and it improves moisture infiltration.

On most soils, aim to rip to at least 500 mm deep, as a single rip line per row of trees.

Ripping works best when the soil is dry. Also a 'winged' ripping tine results in better shattering of the subsoil compared with a conventional tine.

Sites which have hardpans (hard or rocky cemented layers at depth) may require deeper ripping (to 1000 mm) with a bulldozer.

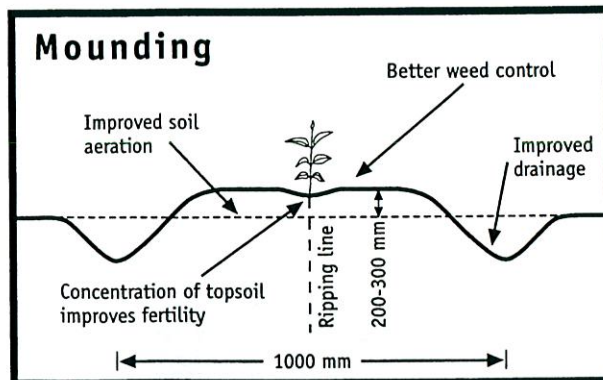
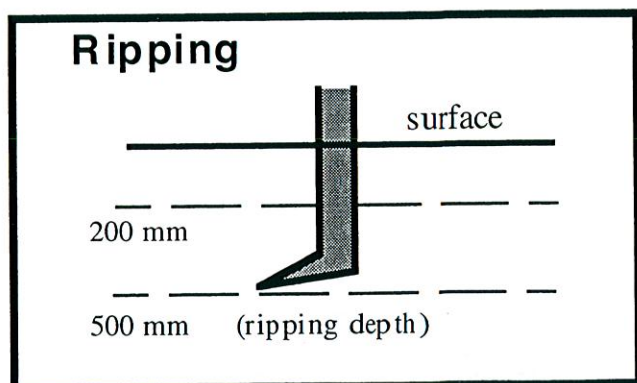
#### Ploughing

Broadscale ploughing is not usually practised because of the cost and danger of erosion. However, ploughing can help make tree planting easier and improve moisture conservation. It is a useful adjunct to using herbicides to control weeds such as couch grass (*Cynodon dactylon*). Also, on heavy soils, ploughing before mounding benefits the formation of the mound.

#### Mounding

Mounding is recommended on all but elevated, deep sandy soils. The concentration of topsoil as a medium in which to plant trees is beneficial for survival and early growth.

Mounding is essential on wet sites. A 1993 study showed that tree survival improved from 65 per cent to over 95 per cent by mounding on a site prone to seasonal waterlogging. On wet sites mounds should be aligned to allow excess water to drain off the site without causing erosion.

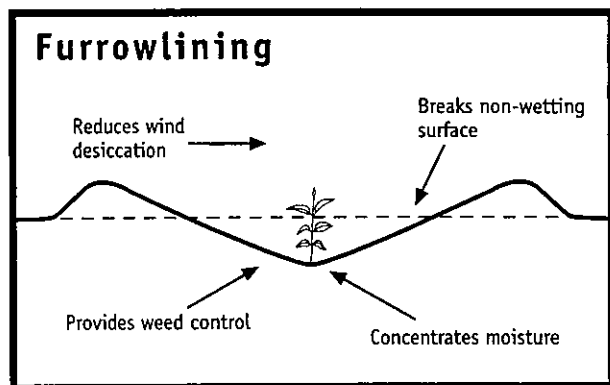
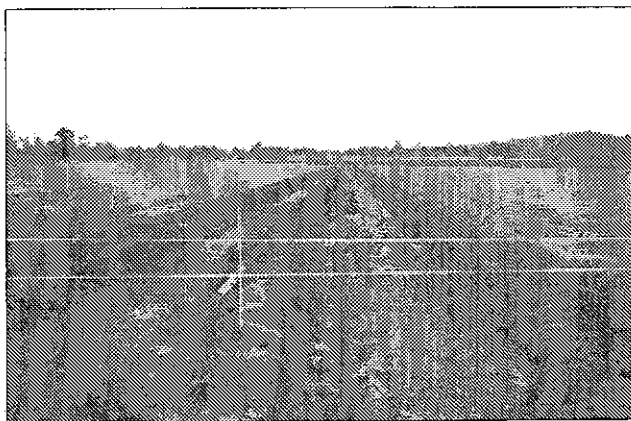


The drainage furrows created on each side of the mound provide important additional drainage. For maximum effect, these should be continuous, and connected into the drainage network. The mound should be constructed at least 200 mm to 300 mm high, about 1000 mm wide and located over the ripline. Even larger mounds may be required on very wet sites.

Specialist mound ploughs are available for mounding and profiling soils. Rollers on mound ploughs consolidate and profile the mound. A roller that forms a shallow 'M' shape is best for saline sites as it allows the salt to leach from the mound. Satisfactory mounds can also be created using a small one-way plough or grader in non-saline situations.

### Furrowlining

Furrowlining can be used to break the water repellent layer on elevated, non-wetting, deep sands, and allow water to enter through the bottom of the furrow. This is also an effective means of weed control, and can give some shelter to small seedlings. Caution should be used where exposure could lead to wind erosion, or where water erosion could occur down the furrow. In these situations, ripping followed by a press wheel or tyre will provide a suitable entry point for water. Weed control can then be undertaken with herbicides. Furrows are usually 200 to 300 mm deep and about 1 metre wide. As furrowlining removes topsoil, fertilising of trees may be necessary.



Well formed mounds with continuous drainage furrows.  
The site has been strip-sprayed to aid planting.

### Site preparation for each soil type

Soil type	Non-wetting deep elevated sands	Sandy loam	Clayey loam	Duplex soils – sandy surfaced	Duplex soils – clay/loam surfaced	Wet/water-logged sites	Saline sites
Ripping	500 mm deep	500 mm deep	500 mm deep	500 mm deep	500 mm deep	500 mm deep	500 mm deep
Ploughing	NR	For moisture conservation	Beneficial for mounds if soil is cloddy	NR	Beneficial for mounds if soil is cloddy	NR	NR
Mounding	NR	Beneficial	Beneficial	Beneficial	Essential	Essential – larger mounds required on very wet sites	Essential
Furrowlining	Recommended	NR	NR	NR	NR	NR	NR

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