

Managing your plantation.

Proper attention to controlling pests and diseases, pruning at the right time and thinning to alleviate competition amongst your trees will ensure your plantation thrives.



Pests and diseases

To ensure your plants grow and flourish, ongoing management and maintenance is essential.

This includes ongoing vigilance with pests and diseases and browsing wildlife and cattle, as well as pruning and thinning of the trees.

It's important to do a regular check for both native and introduced pests and diseases.

Look for these signs:

- Yellowing of the foliage may be a sign of ill health and a nutrient imbalance (unless it is a deciduous tree in autumn)
- Indications that the leaves have been eaten, especially where the soft new foliage develops in spring
- Insects, caterpillars, black mold or a sticky coverage on the foliage
- Extensive lumps and bumps on the foliage or limbs
- Dead branches around the crown

If more than 10% of the foliage of a tree is affected, you must investigate the cause!

USEFUL INFORMATION

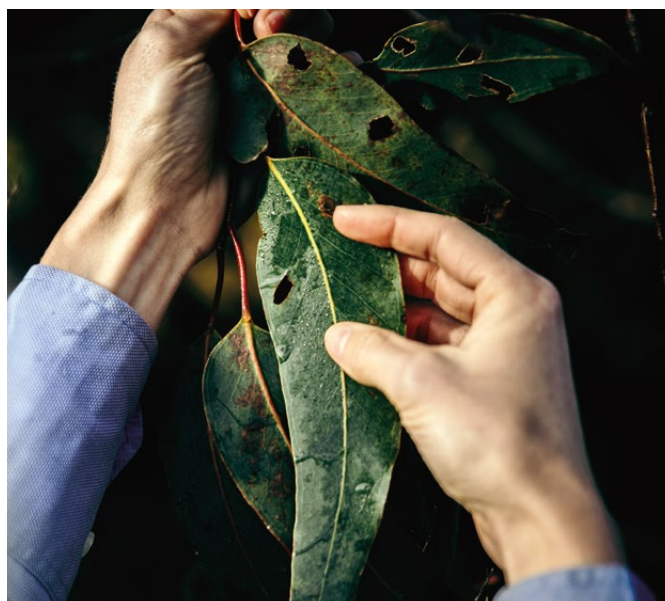
Go here for a comprehensive list of the most common pests and diseases

WHAT TO DO

- Affected single trees can be treated with insecticide or if the infestation is small, you can pick off the bugs and squash them. Soapy water can be sprayed on the foliage to discourage insects and browsing animals, though will wash off in rain so you would need to reapply
- If a tree is severely affected, cut it down and burn it all to reduce the spread
- Spray large plantations. If the trees are high it may need to be done by air. Be careful to avoid waterways or other sensitive areas and always seek advice before using chemicals

BROWSING DAMAGE

- Control of browsing animals is essential to protect the growth of seedlings. Animals can affect the growth rate and the form of your plants, reducing the chance of a successful harvest. Seedlings are vulnerable until they have reached between one and two metres in height. The species of tree you plant will influence the growth time. A safe option is to plant larger seedlings.



Managing your plantation

WHICH ANIMALS?

It's important to monitor your seedlings regularly. If you notice the leaves have scalloped edges or holes in them, it is most likely insect damage. Mammal browsing results in jagged leaf edges and the stems are often eaten. In Tasmania, the key mammals that like to browse on seedlings are:

Brushtail possum – prefer shining gum and blue gum seedlings, however will also eat foliage from older trees. Usually a possum will target the apical bud and a few side leaves

Pademelons – tend to avoid eating the apical bud and eat the side leaves

Bennett's wallaby – may eat foliage and break or damage the stem

Rabbits/hares – often snap seedlings off at the base and leave a few leaves lying around

Deer – strip the bark

USEFUL INFORMATION

[Go here](#) for more information about wildlife browsing management

Find out more about [fallow deer management](#)

HOW TO PROTECT YOUR SEEDLINGS

Fencing

There are several fencing options available. Fencing that has been erected for livestock won't prevent native browsers from getting to the plants. For more details on the types of fencing to protect your plantation [Go here](#)

Trapping

Any trapping of a native species requires a permit. Only live-trapping is allowed and can be disruptive and cruel to the animal. It is only effective against small populations and is time consuming

Repellents

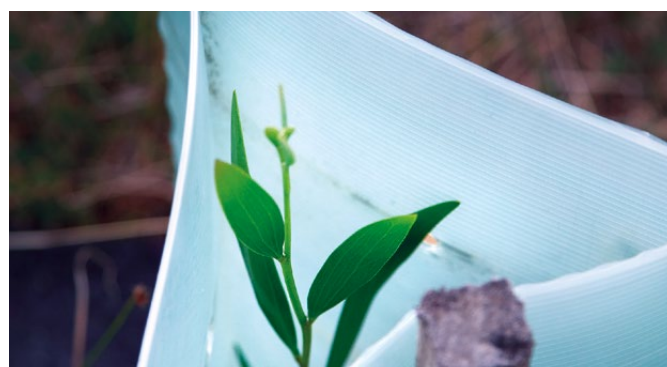
Protection can be limited to 6-8 weeks and any new foliage that grows in this period won't be protected. Repellents may also damage leaves and reduce growth

Palatability

Choose a species that will be less tempting to the browsing mammals you have on your property. Also, planting a desirable species on the outskirts of the plantation could lure the browsing mammals away from the plantation. Retaining some weed cover between rows can provide an alternative source of food. Hardened seedlings are less attractive than unhardened seedlings

Tree guards

These are more suited to small plantations due to the expense. The fluted extruded plastic tubes that are 1.2m high are the most effective, although their effectiveness against possums is unknown. The guards need to remain until the trees are just above the tree guard level. This is roughly 12-18 months for eucalypts and 18-24 months for pines and blackwood



Pruning

Pruning your trees will improve the growth form of the trees and increase the value of the timber. Log value is determined by size and straightness of the tree trunk and the number of knots and branches. Large, straight, knot-free trees get the highest price. A harvestable log of six metres is the preferred length for sawmilling and for peeling for veneer.

It is crucial that pruning is done on time. Premature pruning can reduce tree rate growth and delayed pruning damages tree form and can result in loss of valuable clearwood. A log that is not pruned is worthless and may only be sold for pulp wood.

Select the larger trees (dominants or co-dominants) with the best, straightest form for pruning. Apply the following rules for the region of the stem you are pruning:

- Single stem and free of secondary leaders
- Straight stem with no lean from the vertical of more than 5 centimetres (5cm)
- Stem free of wounds and splits
- Branches not making an acute angle (less than 30 degrees) with the stem
- Butt sweep limited to the bottom 0.3m of the stem
- In eucalypts, branches should be less than 3cm in diameter at the junction with the stem

There are two types of pruning that need to be done – form pruning and clearwood pruning.

- **Form pruning** will help produce a straight trunk and control branch size
- **Clearwood pruning** produces the maximum amount of knot-free wood

USEFUL INFORMATION

[Go here](#) to find out how to form prune and clearwood prune



What tools you will need

Secateurs for smaller branches

Shears for medium-sized branches

Saw for the larger branches and for a close cut to the stem

Ladder to reach the higher branches

Extension poles for the saw or shears to reach the higher branches

Chainsaw for the larger branches, however be careful not to damage the stem

Hydraulic/air-powered saws/shears are useful for some larger commercial jobs

Thinning

Trees compete for basic resources, light, water and nutrients. The process of thinning, which is the selective removal of some trees from a plantation, helps to alleviate the competition and provides more resources for the remaining trees. In plantations grown for solid wood, establishing more trees than are required at final harvest occupies the site with trees early on, reducing the competition from weeds. It also allows for the selection of the very best trees for final crop. With native forest systems, the forest self-thins.

Which trees to thin?

- Poorly formed, forked or diseased trees
- Smaller trees
- Ensure remaining trees are even spaced for equal light, soil moisture and nutrient allocation
- For commercial thinning, a row of trees (out-row) may need to be removed for machinery access
- Don't over thin or the remaining trees may bend or be blown over

USEFUL INFORMATION

For information on thinning a pruned plantation. [Go here](#)

For information on thinning a native forest. [Go here](#)

How to thin

How you thin your plantation will depend on if the trees are being thinned for commercial use or for waste (non-commercial). Access is essential for commercial-thinning operations. The occasional row of trees (called an out-row) is removed to provide this access. Out-rows should be selected before pruning as trees in this row won't be selected for retention. Ideally, every fourth or fifth row should be removed.

COMMERCIAL THINNING

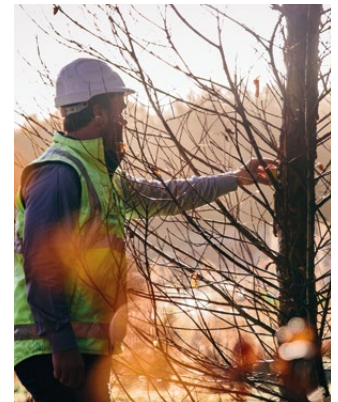
There are two approaches: ground-based or cable thinning.

- Ground-based operations are usually done with an excavator with a reach of about eight metres. This can be carried out on slopes up to 25%
- Cable thinning can be done on steeper slopes
- From the out-row, the machine or cable can remove selected trees from each side of the out-row
- Depending on the machine you use, the bark can be removed and the log cut to lengths at the stump. Other machines need to carry the trees out of the stand for processing
- In native forests, logs are often taken out of the forest along snig tracks
- Consult Private Forests Tasmania for advice on which approach would work best for your plantation

Thinning cont'd

NON-COMMERCIAL THINNING

- Ground-based machinery or a chainsaw can be used
- A preferred successful method is stem injection of glyphosate
- The amount of chemical needed depends on the size of the tree. With glyphosate 360, it is given in 1ml hits per 5cm of DBHob at injection points placed evenly around the stem



Top tips for thinning

- Be careful not to damage the stem or crown of crop trees as this will reduce the quality and value of the thinned stand
- Avoid damage to bark as it provides an entry point for decay pathogens
- Plan the direction of falling trees to avoid crop trees
- Don't leave dead branches and trees around as they can cause a fire hazard once dry
- Monitor stem growth for best results



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