Growing Eucalypt Sawlogs

Summary of Tree Management Principles

Planning for tree growing
Consider your objectives, tree placement & area, design, species, labour.

Pruning
Why?: to minimise the size of the "knotty core" and produce knot-free timber.

When?: aim to commence when stem diameter equals 10cm and at about 2 metres from ground (from about age 3 onwards). ***Don't delay!!***

How?: remove branches close to the "collar" and not damaging it or leaving "coat hangers".

How much?: no more than 50% of tree height in any lift.

Thinning
Why?: to remove unwanted trees, reduce competition on "crop trees" and minimise number of trees pruned. ***Don't delay*** !!

Selecting crop trees
aim to keep the **best** trees ie healthy, vigorous and straight trees. Final crop trees should have a bole length of 6-8 metres and density 150-250 trees/ha.

Treating coppice
foliar spray when coppice is about 30-40cm with Roundup @ 1 part to 20 parts water.

Bob Hingston.
Farm Forestry Unit.
CALM. Busselton.
11th, September 1996.

PLANNING FOR TREE GROWING

SOME POINTS TO CONSIDER

OBJECTIVES:

What purpose do you want to grow your trees for??

Shelter Shade Salinity control
Amenity Timber (fuel, pulpwood or timber)

PLACEMENT:

Optimising the benefits
Where will the trees be planted on the farm??
ie is there a farm plan?
Is it salty?? Check it out!!
Are soils suitable? shallow, hardpans, wet.
Match species to soil type
Seek advice eg. CALM (F.F.U.) or Ag.W.A.

TIMING:

Order seedlings in Nov/Dec.
Prepare site in autumn - mound/rip, scalp
Weed control- pre plant best
Plant June- August
Monitor post planting for insects, weeds etc

DESIGN or PADDOCK LAYOUT:

Blocks Timberbelts Shelterbelts
How many rows and what spacing?

SPECIES:

Your choice to achieve objectives
Rough barked (*Euc. microcorys, muellerana, resinifera*) or smooth barked (*Euc. maculata, saligna, grandis*)??
Fencing requirements

GROWING FOR SAWLOG PRODUCTION:

How much area planted in one year?? Stagger plantings over a few years
Your labour requirements to prune, cull, treat coppice
Consider what time is best to manage
Incorporate management into farm work programme

Growing Eucalypts for High Quality Sawlogs

by Bob Hingston

Presentation notes for Field Day.
Middlesex District, Manjimup.
Thursday 12th September, 1996.

TREE MANAGEMENT

These notes describe the management of trees for the purpose of producing high quality sawlogs. The main aspects of management are:

- pruning
- thinning
- crop tree selection
- fertilising
- treating coppice.

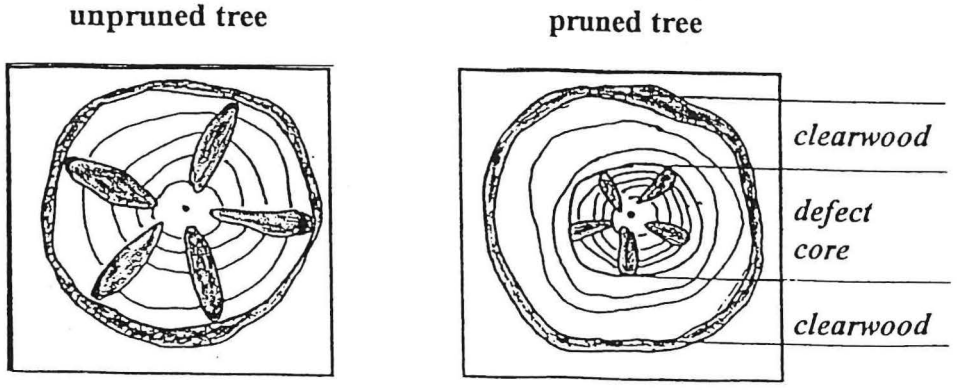
PRUNING

Why prune ??

Pruning is **essential** to produce high quality sawlogs.
Trees are pruned to produce wood without knots, as knots are a major defect in timber. Large knots therefore downgrade timber and reduce recoveries. Wood without knots, sometimes known as "clearwood", is high quality and commands the highest prices.

The aim of pruning is to produce logs with a small "knotty or defect core", surrounded by a large thickness of knot-free clearwood (see Figure 1).

Figure 1. Comparison of unpruned & pruned trees, showing defect core and clearwood.



*** Aim to minimise the defect core size (10-15cm).**

Types of pruning:

 # Pruning for clearwood. As described on the previous page. Involves the removal of all branches to a certain point on the tree (see below).

 # Form or corrective pruning. This is generally used in conjunction with pruning for clearwood and improves tree form (shape) where excessively large branches or forks in the crown are present. It is used when the trees are young, or especially where parrots have modified the growth tip of trees and corrective action is required to "straighten" the trunk. Examples of species that require form pruning are: *Euc. botryoides, maculata* (forks) and *Acacia melanoxylon.*

When to prune ??

Pruning should commence when the stem diameter reaches 10 centimeters at about 2 metres from the ground, and continues until the bole or tree trunk is pruned to the desired height - usually 6-8 metres. This may take 2-4 pruning operations. For fast growing species eg E.globulus, pruning usually commences at about age 3 years. For slower growing species, this will be later.

*** It is essential that all pruning be done on time.***

Delayed or late pruning in some species will result in very large branches eg E.saligna, so timing is critical. As a guide, remove branches before they exceed 2.5 cm because they are easier to remove and defect core is minimised.
Tree management should be incorporated into annual farm work programmes.

We recommend pruning in autumn or early winter.
Spring or summer pruning places trees under stress and can retard their growth. Pruning in autumn and winter is therefore recommended.

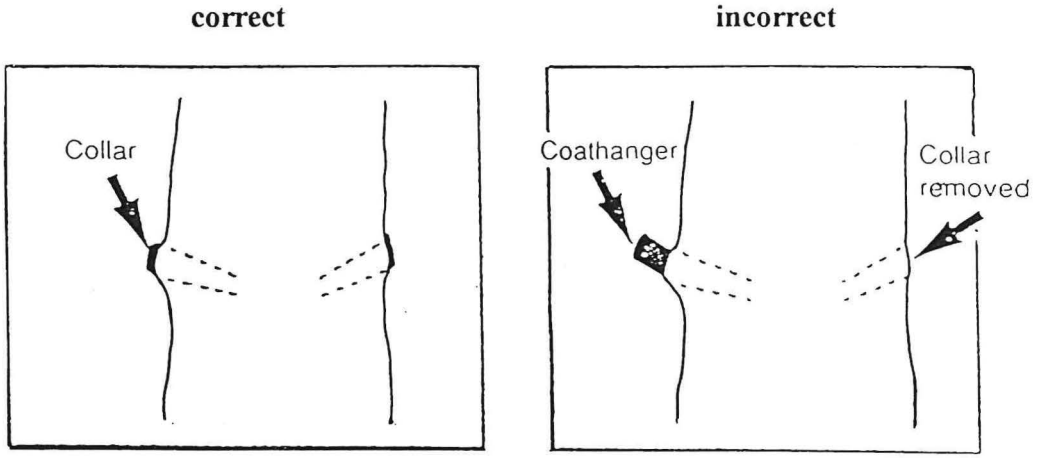
Consider your farm labour requirements. Sometimes winter or autumn may be low work-load periods and pruning can be done on time.

Staggered tree planting over a number of years may also assist the pruning work-load, so that not too much pruning need be done at one time. A planting programme of 3-5 hectares per year may be "managable" but this will depend on species planted, amount of labour available, commitment to other on-farm activities etc.

How to prune??

Remove all lower branches with long handled secateurs, jacksaw or chainsaw. ***When removing branches, do not damage the wrinkly wood around the base of the branch (the collar).*** See Figure 3 . The collar contains cells which produce new wood and therefore speeds-up occlusion of the pruning scar. Damage or removal of the collar will expose the tree to fungal attack, will take longer to occlude the branch stubs and lower timber quality. Do not leave branch stubs (coat hangers) on tree, as these will also increase the defect core. See Figure 3.

Figure 3. Correct and incorrect methods of pruning.



Tools for pruning:

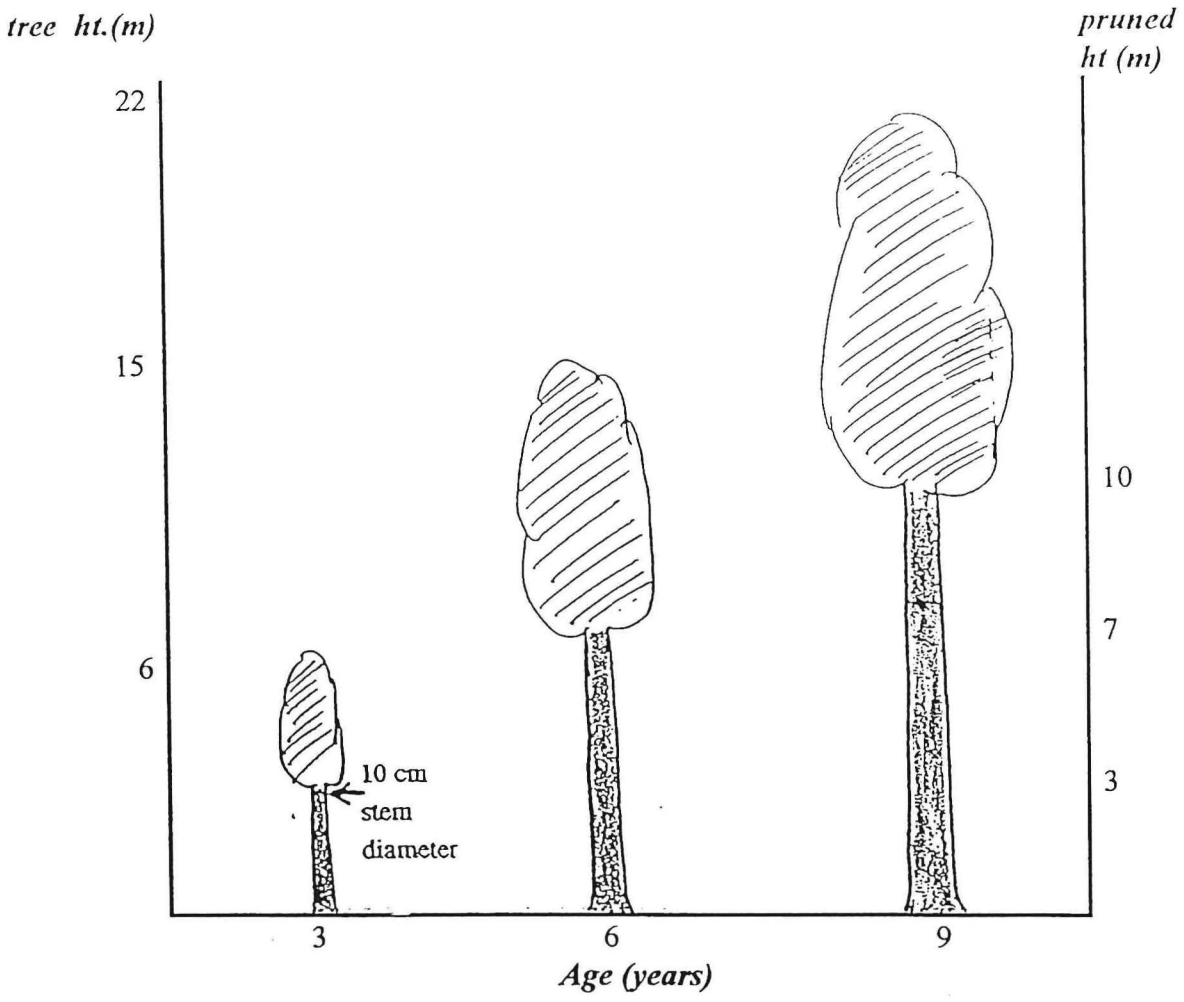
small hand shears
light chainsaw eg Stihl 026
polesaw
ladder and jacksaw
"Squirrel" pruning platform (if available)

Your choice of equipment depends on the size of the job and the labour available.
A list of equipment, price and suppliers is at the end of the paper.

How much to prune??

Eucalypts should be pruned no higher than 50% of tree height (See Figure 2). Any more than 50%, may place the tree under stress and retard its growth significantly.

Figure 2. Pruning heights for Eucalypts.



Some other benefits of pruning are:

lets more light in for pasture growth

makes it easier to manage stock

reduces the risk of fire damaging the tree's crown, even though a large amount of debris is created from prunings. These can be pushed up and burnt.

improves access and farm visibility.

THINNING

Generally, more trees are planted initially because it results in a **greater selection** for the "ideal" crop tree (or sawlog trees). The "ideal" crop tree is one that has a long straight bole, is healthy, vigorous and preferably has smallish branches.

The aim of thinning is to maximise the growth of crop trees and minimise the number of trees to be pruned by removing the undesirable ones.

A typical planting spacing may be 4x2 metres or 1250 trees per hectare.

Final crop tree density depends on your objectives. If you want to combine grazing with sawlog production, then 100-150 trees per ha is suitable. On the otherhand, if your objective is to grow just sawlogs, then you might grow 150-250 trees per ha.

Individual trees grow faster at lower densities, but total wood production per hectare is less than for higher stocked stands.

Before carrying out pruning and thinning the following must be done:

Decide what density of crop trees you want.
Calculate what proportion must be culled.
Select the best trees to prune and mark in some way (eg plastic tape).

First thinning should be carried out when trees are ready for their first pruning (commonly 3 - 4 years). These thinnings may be culled to waste or used for fence posts (treated) or firewood. It is recommended that waste thinnings be felled into every second row to allow future access along rows.

Aim to reach final crop tree stocking by age 8-9 years.

SELECTING CROP TREES.

This means selecting a proportion of trees in the stand as sawlog trees (the crop trees). Three criteria are used to select crop trees. In order of importance they are:

1.) Form (ie choose trees which are straight and free from forks, large branches and other malformations).

2.) Vigour (ie choose the biggest and healthiest trees).

3.) Spacing (ie choose trees to give fairly even spacing of crop trees. This criteria is generally less important than the other two).

A typical regime may be:

Age 0	plant 1250 trees per ha.
Age 3-4	prune to half tree height
	thin to 500 trees per ha (ie retain 1 tree in 2.5)
Age 6-7	prune to half tree height
	thin to 150 trees per ha (ie retain 1 tree in 3)
Age 8-9	prune to half tree height.

FERTILISING

It is recommended that trees receive regular fertiliser to maintain growth rates. Fertiliser can be applied to trees as part of normal operations when pasture topdressing.

TREATING COPPICE

Most eucalypt species coppice (or re-shoot) from the stump following thinning, and it should be removed to avoid competition. The recommended method is to allow stumps to re-shoot and spray the foliage when it reaches 40-50 cm with 1 part *Roundup* herbicide to 20 parts water. Do not treat bare stumps as root translocation of the chemical can affect nearby crop trees.

SUMMARY

*1.) **Pruning trees produces high quality sawlogs.*** High quality sawlogs are saleable. Trees with large branches, and therefore knots, are likely to be worthless for this purpose.

*2.) **It is important to prune on time*** *ie.* while stem diameter is 10-15 cm. Delays can cause the defect core to increase in size and allow large branches to develop, which are both difficult and expensive to remove.

*3.) **Thin on time*** to promote growth of crop trees, and to reduce the amount of debris.

Good luck!!!!

Further reading:

1.) "Agroforestry. Trees for productive farming." Edited by Digby Race. Agmedia Publications. Melbourne.

2.) "Trees for rural Australia." Edited by K.W.Cremer. Inkata Press. Sydney and Melbourne.

3.) "Agroforestry. Productive trees for shelter and land protection in the Otways". By R.Reid and A.Stewart.

4.) "Agroforestry with widely spaced pine trees". (1991). By R.Moore, P. Jenkins, G.Anderson and P.Scott. W.A. Dept. of Agriculture. Bulletin No 4176.

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EQUIPMENT FOR PRUNING

Item	Job	Price (approx.)	Supplier
Lopper, "Wilkinson Sword WCP 121"	hand pruning branches up to 32mm	$56	J.S.Sadique Pty Ltd 3 Dampier Rd. Welshpool W.A. 6106. Tel. 09/458 3222 Aust. Forestry Suppliers PO Box 1059 Traralgon VIC. 3844 Tel. 051/747133.
Lopper, "Hit BRC 27"	hand pruning large branches>32mm	$156	Sadique
Hand Saw, "Lotus" - frame - blade	hand pruning	 $60 $4	Aust. For. Supplies
Polesaw, "Bushman 149"	for high pruning from ground (3-6m)	$26	Sadique
Sandvic 600mm "board saw" 252-24	high pruning	$35	Sandvic Aust. Pty. Ltd. 8 Fargo Way Welshpool. 6106.
Sandvic "Hard point" 339-6T	high pruning	$25	Geographe Hardware (Busselton) Tel. 097/521408
Chainsaws -wide range available CALM use Stihl 026s	for low pruning & culling, thinning		
LADDERS, NZ "MAAC" - 3 lengths (1.2, 3.2 & 5.6m)	for high pruning	NZ $141 $216 $306	McCallum Enterprise PO Box 101 Metakana Nth. Auckland N.Z. Tel. 0011 64 9/4257255
LADDERS, NZ "MAAC MULTILIST" 3.3m 4.2m	for high pruning	 NZ$162 NZ$192	as above
SAFETY EQUIPMENT -includes helmets, face guard or eye protection, ear muffs, gloves or c/saw chaps	for pruning & thinning		Protector Safety Pty. Ltd 3 Rose St. Bunbury. 6230. Tel. 911510

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