

This series on Cypress Farm Forestry has three parts. Each part can be read individually or as part of the series.

1. Overview
2. Intensive Management Regime
3. Pruning Regime for Cypress Species

### PRUNING REGIME FOR CYPRESS SPECIES

Annual form and clearwood pruning should commence from age 2. A traditional pruning regime, as applied to *Pinus radiata* (3-4 lifts to 6.4m starting at age 4-5) should be avoided for the following reasons.

- Prolific branching habit - Cypress species may have as many as 60 branches/metre of stem, compared with *P.radiata* with 6-15 branches/metre of stem.<sup>1</sup> Efficient pruning of large numbers of branches necessitates that branch diameters are small at time of removal.
- High quality timber formed from an early age - Pruning to a small DOS (Diameter Over Stub) of 10-12 cm enables a greater recovery of quality timber. A well managed pruning regime for *P.radiata* achieves a DOS of 20cm or less. Unlike cypress species, early pruning of *P.radiata* to achieve a significantly smaller DOS does not increase the output of quality timber due to the formation of juvenile wood.

#### Pruning Methods

##### Pruning to Half Tree Height

This pruning regime should commence when tree height is approximately 1.5-2.0m tall; possibly earlier than age 2 depending upon site and initial growth. Continue pruning with this regime to a height that can be reached from the ground, typically 2.5m with loppers, at which point tree height should be ~5 metres. Early removal of the lower branches also provides for safer, easier and quicker release spraying in the second growing season if required.

If the management objective is to achieve a final pruned stocking of 400 stems/ha, then ~550 (50%) of the trees should be pruned from the ground with this regime. These extra trees allow for selection of the best 400 for continued pruning from a ladder. This also allows for culling of trees that may have become infected with canker or have suffered form problems as a result of wind or possum damage.

##### Pruning by Stem Diameter

This regime is determined by the maximum DOS that management desires. For example, if a maximum DOS of 10-12cm is desired, then pruning could be undertaken to an upper stem diameter of approximately 8cm. An 8cm calliper is placed on the stem at the point where stem diameter is 8cm, with all branches below this point removed. When pruned 12 months later, stem diameter at the pruned height will have increased from 8cm to 10cm or more. The calliper is placed higher on the stem and further clearwood pruning undertaken, ensuring that the DOS remains below the desired maximum of 10-12cm. Start this pruning regime when a ladder is required. Select the best 300-400 relatively even spaced stems/ha.

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Image 1



Image 2

Image 1 - Cypress aged 2. Tree height of about 2 metres, pruned to about 1 metre with secateurs.

Image 2 - Cypress pruned to about 2.5 metres from the ground using the half tree height method. Once a ladder is required, annual gauge pruning with an 8cm calliper ensures a consistent DOS for all trees.

## Form Pruning

Double leaders and steep angled branches can be removed with small loppers from age 1-2 onwards.

## Time of Year

Pruning should be undertaken in spring, when rapid growth commences. This will ensure a full growing season through which occlusion of the pruning wounds can occur.

## Rogue Branches

Branches should be removed before branch diameter exceeds 2.5cm at the time of removal. Larger branches increase the pruning input and take longer to occlude. Even with annual pruning, some branches may grow excessively fast. Rogue branches above the section of stem to be pruned can be either removed or shortened (half the foliage removed) to slow branch development.

## Pruning Costs

At present, little information is available from Australia about the cost of contract pruning. Information from NZ<sup>1</sup> (1996 prices) suggests an approximate cost of NZ\$1.00/metre of pruned stem. The cost of contract pruning in Australia tends to be higher than in NZ. Considering 1996 prices for NZ, it is estimated that contract pruning rates in Australia would be in the order of \$1.25-\$1.50/metre of stem. Based upon a pruned height of 6.4m, this equates to \$8.00 - \$9.60 / tree.

### Labour Rates

Factors that affect pruning rates include experience, fitness, access, slope, branch size, pruning height, species and branching habit. As a guide, pruning rates of 20-30 metres of stem/hour may be achieved, depending upon the above factors.

### Pruned Height

There is no standard pruning height for cypress. Pruned veneer logs are often purchased in 2.7m and 5.4m lengths. Export logs are often traded in 3.0m and 6.0m lengths. Due to the high cost of pruning and the potential to carry high stockings, some NZ growers only prune to a little over 3m while retaining a pruned stocking of 600-800 stems/ha. Other pruned heights reported from New Zealand are 4.5m and 6.4m, with a lower pruned stocking. In Tasmania, where growth rates are unlikely to match those achieved in NZ, pruning to 6.4m with a final stocking of 300-400 stems/ha may be appropriate.

### Pruning Equipment (high quality pruning equipment is recommended)

- a) Hand secateurs - Quick and easy removal of small branches (<1.5cm)
- b) Small bypass loppers - Removal of larger branches (>1.5cm)
- c) Hand saw - Removal of large branches (>3cm) where late pruning is undertaken or where rogue branches have developed rapidly.
- d) Pruning ladders - Lightweight aluminium forestry ladders in 2.4m and 4.2m lengths. Ensure that the point where the ladder rests against the stem is well padded. Cypress species tend to have thin bark that can be easily damaged.
- e) Pruning Holster - Secateurs, loppers and hand saw carried in the holster.
- f) Safety Harness - When pruning from a ladder a safety harness should be used. Although pruning rates may be slower with a harness, safety is more important than getting a few extra trees pruned. A full body harness designed for working from ladders should comply with AS/NZS 1891.1:1995.

### THINNING REGIME FOR CYPRESS SPECIES

At present, there is no standard thinning prescription for cypress species. What has become apparent is that cypress species have the potential to attain very high basal areas, such that high stocking levels can be maintained. Silvicultural trials by Forest Research of New Zealand have indicated this for stands at 14 years of age. Plots standing at 400 stems/ha exhibited only slight increases in tree diameter compared to those at 800 stems/ha. However, total timber volume at 400 stems/ha was only 60% of that at 800 stems/ha. It may be possible to maintain high stockings of 600-800 stems/ha until mid rotation to provide for a commercial thinning.

### Early Thinning (non-commercial thinning to final pruned stocking)

- Little improvement in tree diameter growth.
- Branch development increases rapidly at lower stockings.
- Total volume production is reduced.
- Trees of poor form and health can be non-commercially thinned from age 6-10. While such trees can be thinned earlier, retaining them will help reduce branch development in neighbouring trees.

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### Late Thinning (mid-rotation)

- Little reduction in tree diameter growth.
- Branch development is significantly reduced.
- Total volume production is enhanced.
- Provides the opportunity for commercial thinning.

### What is the correct time to thin to the final pruned stocking?

Unpruned trees and the knotty log above the pruned butt log have the potential to produce quality knotty sawlogs and veneer logs, provided that:

- Branch development is restricted and knots are small. Large knots significantly reduce timber strength, appearance and drying characteristics.
- Knots are 'green' (branches are still alive). Dead branches result in bark encased knots, where bark surrounds the dead branch while stem diameter growth continues. Bark encased knots detract from timber appearance and often result in loose knots.

Maintaining higher stockings results in a gradual 'lifting' of the green crown as lower branches begin to die from a lack of light. The branches in the second log, above the pruned butt log, provide the indicator as to when to undertake thinning. Thinning should be undertaken when these lower branches show signs of loss of foliage and stop growing. Once thinning is undertaken, these lower branches are provided with the opportunity to resume growth and remain alive, increasing the chance of producing small, green knots.

### FURTHER READING

Brailsford, Stephen (1996), .The Cypress Growers Handbook - Options for growing quality timber.

Miller J.T. and Knowles F.B., (1996), Introduced Forest Trees in New Zealand: Recognition, Role and Seed Source (9) The Cypresses, FRI Bulletin 124.

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Date August 2004

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