Agriculture
WESTERN AUSTRALIA

Farm Forestry Advisory Service

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

TreeNote

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Growing eucalypts for high-grade sawlogs

High-grade sawlogs can be produced from eucalypts on farms to provide valuable additional farm income.

Demand for high-grade sawlogs

World demand for sawlogs is increasing steadily, particularly in developing regions such as Asia. Meanwhile, sawlog supplies from Asia and North America are sharply reduced.

Western Australia imports substantial volumes of high quality hardwood logs, mainly from tropical rainforests, for use in buildings and furniture.

Landowners in Western Australia can grow trees on farm land to produce hardwood sawlogs targeted at these domestic and export markets. To profit from these market opportunities, high quality sawlogs need to be grown quickly and efficiently, and in suitable quantities.

Improved technology and efficiency

In recent years, improvements have been made in tree breeding, site and species selection, and tree growing techniques. Growth rates have been increased from learning how to grow trees at very low densities and *E. globulus* in particular has been made more productive through tree breeding. As well, new methods have been developed for milling and seasoning young eucalypt logs. Continued improvement in techniques for growing and processing eucalypts is giving Australia a technological edge, and will enable Australian farm foresters to profit from sawlog production for domestic and export markets.

Species for the South West

Trials in the 1970s and earlier indicate the top performing species for the South West are:

- for high rainfall areas (> 600 mm): *E. saligna*, *E. maculata*, *E. globulus*, *E. botryoides*, *E. grandis*, *Acacia melanoxylon*; and
- for medium rainfall areas (450–600 mm): *E. maculata*, *E. cladocalyx* and *E. sideroxylon*.

It has been shown that smooth-barked eucalypts are much less susceptible to damage by grazing animals than rough-barked species.

Seed source

The growth rate and form of planted trees is partly inherited from their parent trees. To maximise profitability from commercial plantings, it is highly recommended that seed sources should be obtained from superior parent trees.

Age to harvest

High quality sawlogs can be grown in 20 to 50 years, depending on species, spacing, and site factors such as soil type and rainfall.

Trees can be harvested any time after they reach minimum sawlog size. However, larger trees are usually more valuable than smaller trees, because:

- the percentage of sawn timber recovered from each log increases; and
- the handling cost per cubic metre of timber decreases.

So, if trees are growing at a reasonable rate, it usually pays to allow them to grow until large sawlogs can be produced. However, individual grower's circumstances, and market conditions must be taken into account when deciding when to harvest. For example, a grower may wish to harvest sawlogs as soon as they reach the minimum marketable size, to increase the farm's cash flow, or to take advantage of unusually high prices.

At current prices, returns to the grower (stumpage) are likely to be at least $50 to $100 per tree.

Example of a sawlog regime

Age (yrs)	Operation
0	Plant seedlings at 750–1500/ha
3	Cull to 250–500/ha Prune to 10 cm diameter (approx. 2.5 m depending on species)
5–6	Cull to 125–250/ha Prune to 10 cm diameter (approx. 5 m)
7–9	Prune to approx. 6–7 m

The planting density can vary depending on species and desired number of sawlog trees.

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Range of products

Sawlog stands need to be thinned in the first ten years. Thinnings can be used on-farm or sold as posts, rails, woodchips or firewood. Simple, cheap techniques have been developed for treating thinnings on farms for use as fence posts.

A selection of the best logs was sent to Wesfi's peeling plant in Perth with the remaining sawlogs sent to CALM's experimental mill at Harvey. Logs unsuitable as sawlogs were used as pulpwood.

Milling and seasoning into sawn timber produced a high percentage of premium quality boards.

Sawlog trial at Vasse

Table 1. Growth data for various eucalypt species at year 15 (approx. 135 trees/ha)

Eucalypts for sawlogs – the Vasse trial

Species	Diameter (cm)	Height (m)	Vol./ha (m^3/ha)	Vol./tree (m^3/tree)
Tasmanian bluegum (*E. globulus*)	48	22	185	1.45
karri (*E. diversicolor*)	44	26	167	1.30
spotted gum (*E. maculata*)	33	18	96	0.54
yellow stringybark (*E. muelleriana*)	38	18	103	0.72
grey ironbark (*E. paniculata*)	31	17	67	0.42

In 1981 a eucalypt sawlog trial was established at Vasse near Busselton. Trees were planted in 7-row belts at 3 m x 2 m spacing (1666 per hectare). Pasture was grazed beneath the trees and in the 20 m wide bays between belts. The slower growing, forked and crooked trees were culled heavily at three and again at seven years of age, to allow the remaining widely spaced crop trees (135 per hectare) to grow with less competition. These trees were pruned from an early age to produce high quality sawlogs.

Growth data at year 15 (1996) is shown in Table 1.

Trial milling of Vasse sawlogs

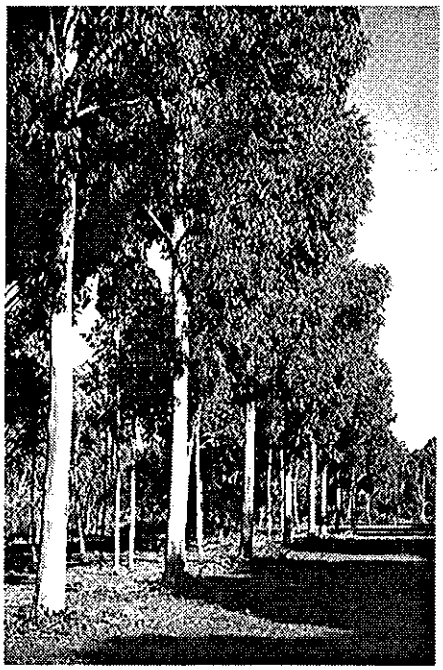
In 1994, some of the 13-year-old *E. globulus* trees had reached sawlog size, and were milled to test their performance. Their average diameter was 46 cm and average height was 21 m. The volume and estimated value of each log type is shown in Table 2.

Table 2. *E. globulus* yields – age 13, 135/ha

Log type	Vol./ha (m^3/ha)	Vol./tree (m^3)	Returns/ha ($/ha)
Sawlogs (@ $60/$m^3$)	98	0.7	5856
Pulpwood (@ $20/$m^3$)	82	0.6	1640
Total	180	1.3	7496

Results of milling study

- *E. globulus* reached minimum sawlog size within 13 years – the average sawlog volume being 0.7 m^3/tree.
- Assuming a stumpage of $60/$m^3$, the sawlog value was $44/tree.
- Total returns per hectare (including pulpwood at $20/$m^3$) would be $7496.
- Total cost to establish and manage trees was less than $10/tree. Trees would be unsuitable as sawlogs without pruning.



Eucalypt sawlog trial – Vasse, near Busselton

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