Department of Conservation and Land Management

Wood Utilisation Research Centre

SAWMILLING TRIAL OF ROSE GUM

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W.U.R.C. Technical Report No. 17

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SUMMARY

A sawmilling trial of rose gum (*Eucalyptus grandis* W. Hill ex Maiden), grown as an exotic in a Western Australian plantation, was done at the Wood Utilisation Research Centre. A green-off-saw recovery of 39.4 per cent was achieved by using a 'Forestor 150' horizontal band saw for initial breakdown into 30 mm thick boards, and 32.1 per cent by using a twin edger with overhead beam feed. Shrinkage during drying, and dressing, reduced the recoveries to 24.5 per cent and 20.0 per cent respectively, with an average of 22.4 per cent.

The percentage of Clear and Feature grade was 22.4 per cent, which was considered acceptable. However, 54.4 per cent of the dry dressed recovery was Merchantable or Reject grade because of excessive numbers of bark-included knots.

INTRODUCTION

Rose gum (*Eucalyptus grandis* W. Hill ex Maiden), sometimes referred to as flooded gum, is an Eastern States hardwood which grows from the Hunter River in N.S.W. to North Queensland (Boland *et al.* 1984). This tree is generally 45-55 m in height, with two-thirds to three-quarters of its height being clear and straight. The timber is considered reasonable for furniture, although damage from borers and grub holes can be extremely detrimental to the value (Bootle 1983).

In Western Australia, research into the silviculture and utilisation of eastern states eucalypts includes the assessment of sawmilling properties of species which are faster growing than jarrah (*E. marginata* Donn ex Sm.). These timbers should be suitable for either high value uses or for wood chips, to reduce the need for wood extraction from our native forests.

This sawmilling trial was to assess rose gum, grown as an exotic species in Western Australia, when milled with the initial breakdown either by a 'Forestor 150' horizontal band saw or by a twin edger with overhead beam feed. Both green-sawn and dried dressed recoveries were assessed.

METHODS

The rose gum logs used in the sawmilling trial were first thinnings from a 1964 planting in the Willow Springs Arboretum at Nannup, in the south-west of Western Australia, with an average rainfall of about 990 mm. The area had a prescribed low intensity fire at age 20 years.

After delivery to the Wood Utilisation Research Centre (W.U.R.C.) in August 1988, the logs were stored in a stockpile under water sprays until milling in October.

Sawmilling of this timber was carried out in the W.U.R.C. sawmill, assessing rwo different methods. The first method used a 'Forestor 150' horizontal bandsaw for initial breakdown, sawing the logs through and through, and then resawing on a 'Jonsereds' two-person vertical bandsaw. The second method used a twin-edger with overhead beam feed, and then resawing on the vertical bandsaw. Boards were cut to 30 mm thickness green-off-saw.The timber was stacked in separate bundles using 20 mm strip sticks, and air-dried under cover.

The seasoning was carried out in two stages, with air drying to fibre saturation point (f.s.p.) for five months and then high temperature drying in the experimental high temperature kiln to final moisture content.

For high temperature drying each bundle was loaded onto the kiln trolley and weight restraint of 1 t/m^3 was applied. The drying schedule was as follows:

(i) Increase temperature from 30°C to 50°C by 60 minutes.

(ii) Increase from 50°C to 80°C in the second 60 minutes.

(iii) Maintain at 80°C for approximately 240 minutes.

The charge was allowed to cool overnight with the weight restraint in place, and then was destripped and stacked in one bundle for processing.

After seasoning, the timber was dressed using a 'Guilliet' four-sider straightening planer to 25 mm thickness, and to maximum width in multiples of 25 mm.

Grading was carried out using phantom docking to the W.U.R.C. draft grade rules, which were outlined in Hanks (1990). Phantom docking identifies the proportion of each grade in the individual board without actually docking the piece.

RESULTS AND DISCUSSION

The volumes, and recovery percentages from each of the two sawing methods are given in Table 1.

Table 1
Green-off-saw recoveries from different sawing methods

Method	Log volumes (m^3)	Recovery (%)
Forestor 150	2.497	39.4
Twin edger	2.149	32.1

The Forestor 150 produced a better recovery rate than the twin edger, owing to two major factors. The logs milled on the Forestor 150 were larger than those milled on the twin edger, with mean small end diameter over bark of 280 mm and 260 mm respectively. The log lengths were 2.57 m and 2.98 m respectively, which would reduce sweep. In addition the Forestor 150 has a 3 mm kerf and the capability to taper saw parallel to the sapwood, which gives a higher recovery than the 7 mm kerf of the twin edger's circular saws, which cannot taper saw.

After shrinkage during drying, and dressing, the dried graded recovery of boards sawn by the Forestor 150 and by the twin edger were 24.5 per cent and 20.0 per cent respectively. The combined recovery was 22.4.

The results of grading were as follows (Table 2), and the defects resulting in downgrading are given in Table 3. Some boards had more than one defect, resulting in the percentage board figure totalling more than 100 per cent.

Table 2.
Grading results of rose gum sawn into 30 mm thick boards

Grade	Volume (m^3)	(%)
Clear	0.045	4.3
Feature	0.188	18.1
Processing	0.242	23.3
Merchantable	0.541	52.0
Reject	0.024	2.3
TOTAL	1.040	100.0

Table 3
Defects resulting in downgrading of rose gum boards

Defects	No. Boards	% Boards
Sapwood	7	2.2
Checks	3	0.9
Heart	1	0.3
Knots	159	50.3
Stain	8	2.5
Epicormics	22	6.9
Gum	76	24.0
Borers	64	20.2
Spring	3	0.9
Size	10	3.2
Rot	5	1.6

Fifty-two per cent of the boards were Merchantable grade, while only 2.7 per cent were Reject grade. This can be explained from Table 3, which shows that 50.3 per cent of the boards were downgraded because of knots. In the case of downgrading to Merchantable grade, bark-included knots were the major reason, while borers, gum veins and gum pockets were often in the same board, making the board totally unsuitable for furniture use.

Another noticeable trend was the downgrading from Clear to Feature grade because of epicormics. Only 4.3 per cent of the boards were Clear grade, because the presence of epicormics presented 6.9 per cent making clear grade. Clear and Feature grades were 22.4 per cent, which is a reasonable result.

Rose gum, an Eastern States eucalypt, although being easy to saw and dry, tends to have faults such as bark-included knots, kino and borers when grown as an exotic in Western Australia. Although it is an easily-worked timber with a pleasant salmon pink colour, the grading results indicated that it would be an advantage to prune branches to reduce the number of knots. However, these grading results were encouraging because the timber which was not downgraded by knots to merchantable grade was evenly spread between processing grade and the two higher grades.

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