

Sydney Blue Gum (*Eucalyptus saligna*) Provenance Research in South West Victoria

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Sydney blue gum naturally occurs as a medium to tall forest tree in the coastal regions and nearby ranges of NSW and southern Queensland. It is a fast growing species, of good form, with a high potential for clearwood production in the south west of Victoria. Minimum rainfall is about 700 mm and *E. saligna* is suited to a variety of soil types, provided drainage is adequate. The timber is an attractive dark-pink colour and has been rated by Garry Waugh (1996) as very good for round timber, sawn engineering, sawn appearance and engineering veneer.

Experimental methods and sites

Six research sites (Table 1), including six *E. saligna* provenances (Table 2), were established in the Hamilton area in October 1995.

The experimental design of each site was a randomised complete block, with four blocks. The experimental units were 12 to 24 trees and the spacings were 4m x 3m (833 stems/ha) or 3m x 3m (1111 stems/ha) at Branxholme.

Each site includes 2-6 provenances of *E. saligna*. Spotted gum (*Corymbia maculata*), *C. henryi*, *C. variegata*, mountain grey gum (*E. cypellocarpa*) or manna gum (*E. viminalis*) provenances are also included in four of the trials.

Data for one provenance (Orbost) of *C. maculata* are presented here for comparison with *E. saligna* provenances. The Orbost provenance ranked highly in all trials in the SW of Victoria (Bird *et al.* 2000). *E. cypellocarpa* has also performed consistently well in the region (Bird *et al.* 1996) and, since it was



Eucalyptus saligna near Branxholme, aged 52 months

planted at two sites in common with *E. saligna*, has also been included for comparison.

All trees at each of the sites were measured for height at age 32-48 months (Figure 1). Diameter at breast height (DBH) was also recorded at sites where average height was greater than 3m. Data was analysed for each site individually. Trees at the Branxholme site were also assessed for branch thickness and forking.

Results

Differences in survival among the sites were small (Table 2).

Differences in the early growth of provenances of *E. saligna* were not great (Figures 1 and 2). There was a significant difference among provenances in only one case: the Clyde River provenance (15) performed better than the Mount Boss provenance (16) at the Digby site, for both height and DBH.

Table 1. Site details for 1995 *E. saligna* provenance trials

Site	Land zone	Rainfall (mm)	Survival (%)	Ripping treatments included
Mirranatwa	Grampians ranges and plains	700	90	No
Branxholme	Basaltic plains	750	91	Yes
Karabeal	Basaltic plains	700	94	No
Digby	Laterised tablelands (dissected to below laterite)	800	95	Yes
Dunkeld	Basaltic plains	650	94	No
Hensley Park	Basaltic plains	680	96	Yes

Table 2. *E. saligna* provenances in 1995 provenance projects

Provenance Number	Species	Provenance Location	State	Seedlot	Altitude (m)
11	<i>Eucalyptus saligna</i>	Flat Rock State Forest, Termeil	NSW	ATSC 12974	45
12	<i>Eucalyptus saligna</i>	40km W of Coffs Harbour	NSW	ATSC 13320	600
13	<i>Eucalyptus saligna</i>	Armidale	NSW	ATSC 13335	910
14	<i>Eucalyptus saligna</i>	Bulahdelah	NSW	ATSC 13434	80
15	<i>Eucalyptus saligna</i>	Clyde River, Yadboro	NSW	ATSC 16620	60
16	<i>Eucalyptus saligna</i>	Mount Boss State Forest	NSW	ATSC 18241	600
9	<i>Corymbia maculata</i>	Orbost	Vic	CNR Orbost	250
23	<i>Eucalyptus cypellocarpa</i>	North of Erica	Vic	ATSC 12390	480

The relatively poorer performance of spotted gum at Karabeal can be attributed to considerable frost damage at that site. *E. saligna* is more tolerant of frosts than is spotted gum.

There are considerable differences in growth among the six sites, even allowing for differences in age at measurement.

Digby has the highest rainfall and a well drained, sandy loam soil. Hensley Park is also a relatively fertile site and had excellent weed control. Trees at the Mirranatwa site were heavily pruned in 1998 and this may have penalised growth.

Assessment of form at Branhholme showed no differences in branch thickness or

forking among the provenances of *E. saligna*. A branch with diameter greater than 1/3 of stem diameter was regarded as a heavy branch. Among the provenances a range of 14–18% of trees had no heavy branches, 64–72% had one or two heavy branches and 14–19% had three or more heavy branches. With respect to forking, 51–63% of trees had no forking. Trees were generally vertical and straight.

Comparing results across the six research sites, there are no clear trends for any particular *E. saligna* provenances to be superior.

Ripping

Ripping treatments were also included at some of these research sites (Table 2). They were no rip, double rip (50 cm apart) and deep, winged rip (with a D4 bulldozer), each with and without cross ripping to 50 cm using a farm tractor. At Hensley Park a single rip was substituted for the no rip treatment. The ripping treatments had no effect on growth, consistent with results obtained from a blue gum establishment trial (Bird *et al.* 2000b)

Conclusion

There was little variation in the growth rate, or form, of provenances of *E. saligna* at 32–48 months. This result differs a little from trials in the Shepparton area, where there appear to be some small differences among 12 provenances at 6 years (Des Stackpole, pers. comm.). Larger differences at Hamilton may become apparent as the trees age, but at this stage there is no reason to indicate a preference for a particular provenance.

For further information:

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References

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Figure 1: Mean height (m) of *E. saligna* provenances at six sites in south west Victoria

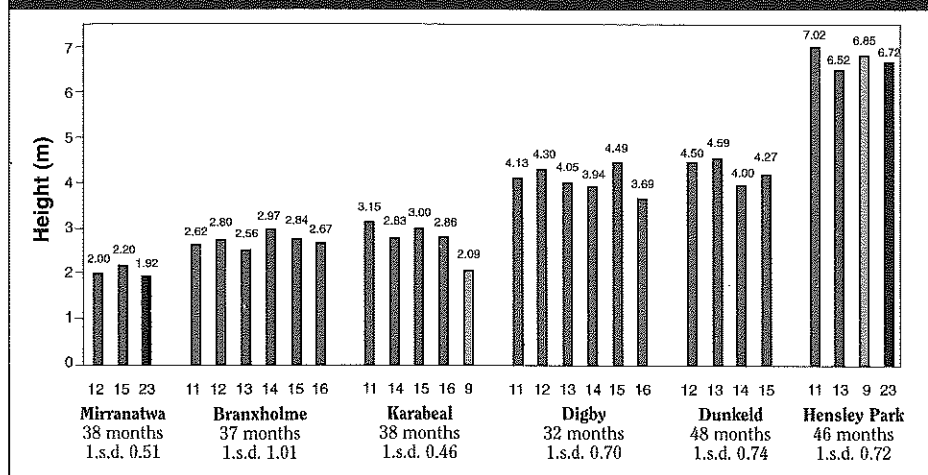
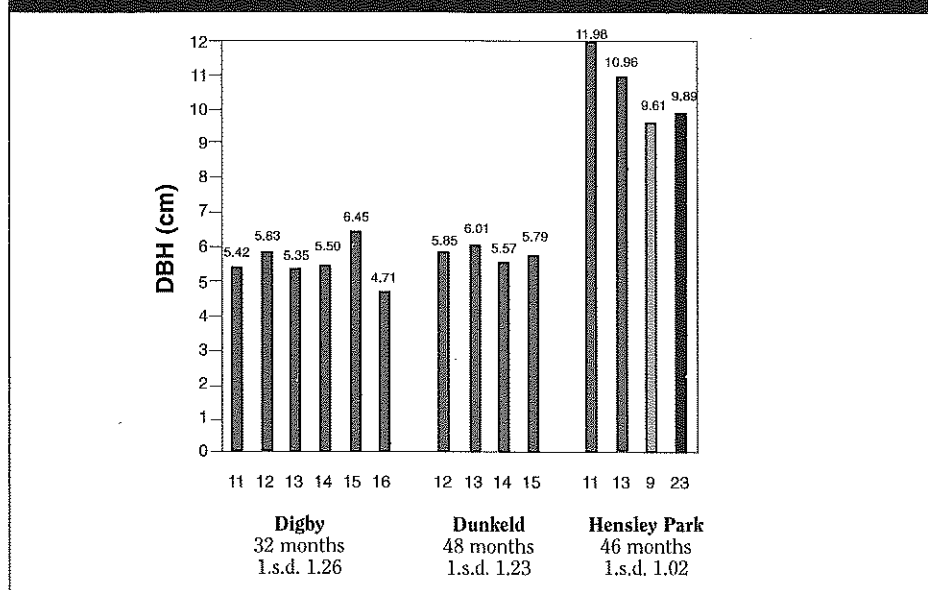


Figure 2: Mean diameter at breast height (DBH) of *E. saligna* provenances at six sites in south west Victoria



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