

GROWTH RATES OF EXOTICS IN THE NANNUP TOWN  
ARBORETUM

by

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In 1922 a number of exotic pine and eucalypt species were planted at what is now known as the Nannup Town Arboretum. This site is immediately adjacent to the Blackwood River on deep, well drained, grey-brown sandy loam.

The plot has been subjected to infrequent thinning during its existence although the number and intensity are unknown. However a number of suppressed stems are present and it is assumed the thinnings could have been heavier.

The plot was measured in 1972 (at age 50 years) and the results are appended. Some of the growth rates are quite good but in examining the results, the following should be noted.

- i) Since no volume tables are held for each of the various species, the karri table was used for eucalypts and the radiata table for pine volume computations.
- ii) Because the arboretum is so small most species have established edge effect (i.e. these figures may have no application to stand growth rates). It could be argued however that proper silvicultural treatment may have produced similar figures.
- iii) Suppressed trees (whips) were not used in the calculation of average figures.
- iv) There was a tendency towards suppression of the less vigorous species by the faster growing ones.
- v) The site is a high quality Pinus radiata site.
- vi) The assessment of merchantable volume is

based on current jarrah sawlog acceptability for the eucalypts and total volume up to 100 mm for pine.

### Discussion

Bearing in mind the above, the figures presented show remarkably good growth rates by most species if compared with our native timbers, jarrah and karri.

However it is perhaps a little unfair to compare these growth rates with our native timbers, as the arboretum being so small does not indicate true stand growth. Additionally use of karri volume tables may introduce significant errors into the volume calculations. Nevertheless, the growth is exceptional and although extrapolation of results can be dangerous, trends and relative differences between species can be seen with reasonable assurance.

A couple of points worthy of comment include:-

1. P. radiata

- a) We can compare the growth rate directly against expected rates on similar soil types under the existing silvicultural system.

Under the Silviculture 70 prescription it is anticipated we will achieve an M.A.I. of 21.4 cubic metres/hectare/annum over a rotation of 30 years with a final crop of 200 stem/hectare. The arboretum plot of 0.02 hectare contained 7 stems (= 350 stems/hectare) completely enclosed by all other species and gave an M.A.I. of 22.7 cubic metres/hectare/annum over 50 years.

This gives added weight to the credibility of the Silviculture 70 theory whereby the best quality lower slope soils should be able to give a far better M.A.I. than 21.4 metres/hectare/annum

over 30 years. This would be balanced by the lesser quality ridge soils which still fit into the plantable soil classification.

- b) The height of these radiata compare favourably with the highest measured in the state. According to Hewett (1) the tallest *P. radiata* is 48.7 metres. The tallest measured in the arboretum is 47.0 metres.

## 2. Eucalypt Performance

*E. globulus*, *saligna* and *fastigata* in particular have shown excellent growth rates if the volume figures can be taken as anywhere near correct.

It is difficult not to relate the growth of these species to our native hardwoods, particularly karri which managed to provide a 3 metre g.b.h.o.b. log in 90 years. Fertility wise the arboretum would be similar to karri sites and the three species mentioned above would more than compare with karri growth.

Jarrah management aims at producing a 1.85 metre g.b.h.o.b. log in 100 to 120 years. All species shown would more than adequately compete with jarrah growth.

## REFERENCE

- (1) Hewett, P.N. : Tall Trees Information Sheet No. 1 Forests Department of W.A. 1973

Nannup Town Arboretum - Planted 1922, Measured 1972 (Age 50 Years)

Species	Plot Area (ha.)	Average Ht. (m)	Average G.B.H.O.B. (m)	Merch. Vol. U.B./Plot (m <sup>3</sup> ) *	Merch. Vol. U.B./Ha. (m <sup>3</sup> /Ha.) *	Ave. Merch. Vol. U.B./Tree (m <sup>3</sup> ) *	M.A.I. Ht. (m/ann.)	M.A.I. Volume (m <sup>3</sup> /ha./ann.) *
<i>E. globulus</i>	0.02	46.1	2.58	30.6	1530	3.9	0.92	30.6
<i>E. saligna</i>	0.02	41.5	2.06	19.4	970	2.4	0.83	19.4
<i>E. fastigata</i>	0.02	40.8	2.30	12.0	600	1.7	0.82	12.0
<i>E. goniocalyx</i>	0.024	36.3	1.61	11.4	475	1.1	0.73	9.5
<i>E. pilularis</i>	0.024	36.3	1.94	10.0	417	1.2	0.73	8.3
<i>E. sieberiana</i>	0.022	32.9	1.45	5.3	241	0.7	0.66	4.8
<i>E. robusta</i>	0.02	30.8	1.15	4.0	200	0.4	0.62	4.0
<i>P. radiata</i>	0.02	43.9	2.20	22.7	1135	2.7	0.88	22.7
<i>P. caribea</i>	0.025	28.7	1.05	8.1	324	0.7	0.57	6.5
<i>P. canariensis</i>	0.02	29.3	1.14	3.7	185	0.5	0.59	3.7

\* Using Karri Volume Table for Eucalypts  
Radiata Table for Pines.