Assessment of farm forestry trials established in the Bega Valley 1994 - 2008

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OVERVIEW

This report summarises the results of a survey done on farm forestry trial sites established by the South East NSW Farm Forestry Project, from 1994 to 2008. The objective was to conduct a preliminary review of sites to determine how species had performed, and to gain an insight into the impact of management decisions.

The survey process relied on limited past records and mapping, and needed to ascertain land ownership at each site prior to survey. Many of the sites have changed ownership over the past 25 years, and the new owners have limited knowledge about what was planted and what management actions had been implemented.

It is evident that most of the sites have had limited management since planting. Anecdotal evidence suggests that most sites received management from project officers up to the time when the Farm Forestry project ended in 2008. A few landholders continued to prune up to approximately 10 years, and limited pruning occurred after that time due to the lack of appropriate equipment and support. It is understood that many of the P. radiata trials did receive pruning up until 2008, through the Farm Forestry project. It is estimated that 90% of the sites received little to no thinning post project.

Most current landholders who have trial sites intend to leave them as biodiversity and landscape plantings. Some are interested in what suitable management actions might be to improve the forestry potential of their sites. Several landholders with P. radiata plantings expressed interest in potential harvest, and one larger site was under harvest by a commercial operator during the period of this survey.

Methodology

1. Potential sites were identified using existing reports, interviews with the past project officer and satellite imagery.
2. Landholders were contacted to gain permission to survey sites. Contact list was built using existing networks, letter box leaflets and cold-call visits.
3. Species were identified (some unknown) and survey was carried out measuring:
    a. the DBH and Height of a best and average tree in each planting
    b. basal area where possible (some plantings had mixed spp)
    c. year of planting (where known)
    d. area of planting
    e. general soil type
    f. position in the landscape
    g. landholder intent for the site

RESULTS

Hardwood species

A variety of hardwood species were planted as part of the trails and the full list can be found in the South East Farm Forestry Project Report. (page 4). The following tables are an average of the major species across several sites based on regions and showing average growth per year since the sites were last measured.

Note that not all species at all sites were recorded in earlier survey events. In addition, prior recorded measurements do not always include all parameters. More extensive historical measurement data may exist, but this information was not available for this report due to the original project ending in 2008.

Overall, the species that have performed the best include:

E. botryoides
E. muelleriana
E. saligna
C. maculata
E. microcorys

E. nitens grew well for the first 10 years and then died in many of the blocks. Drought conditions and soil type would no doubt have contributed to this result. Most of these failures were on poorer decomposed granite soils.

Most of the experimental varieties, and cross variants have not had longevity or have had low growth rates. Many of the plantings may not warrant further forestry management due to unsuitable tree form and growth rate. These planting may yield other products such as posts and firewood. Other unidentified scattered species have grown well, and further investigation may be warranted.

Cobargo - planted 1995 - fire affected in early 2020

	2004			2023					Average growth rate per year since first measurement		Average growth rate per year since planting (average tree)	
	Overall average			Best tree		Average tree						
Species	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)
E. benthammi	18.35	12.80	22.34	39.50	13.00	28.30	13.00	11.00	0.52	0.01	1.01	0.46
E. microcorys	16.46	13.43	16.47	41.00	20.00	33.00	21.50	23.00	0.87	0.42	1.17	0.76

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Springvale - planted 1997

	2006			2023					Average growth rate per year since first measurement		Average growth rate per year since planting (average tree)	
	Overall average			Best tree		Average tree						
Species	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)
E. botryoides	14.86	10.58	16.00	40.10	22.50	27.76	20.58	25.66	0.76	0.56	1.07	0.86
E. saligna	13.30	10.0	15.25	48.95	21.63	32.50	25.5	19.0	1.13	0.91	1.25	0.98
E. muelleriana	14.90	9.88	14.38	40.80	22.50	28.00	17.25	34.00	0.77	0.43	1.08	0.64

E. botryoides

Jellat Jellat - planted 1996

	2008			2023					Average growth rate per year since first measurement		Average growth rate per year since planting	
	Overall average			Best tree		Average tree						
Species	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)
E. botryoides	25.40	22.43	37.68	55.00	36.45	40.50	41.25	53.00	1.00	1.25	1.50	1.53
E. muelleriana	22.12	22.00	23.34	60.50	21.5	35.00	25.00	23.00	0.85	0.20	1.29	0.93

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Candelo - planted 1996

	2023					Average growth rate per year since planting (average tree)	
	Best tree		Average tree				
Species	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)
E. botryoides	52.53	24.25	31.13	23.16	34.83	1.15	0.86
E. muelleriana	51.65	20.13	27.75	16.00	32.50	1.02	0.59
E. nitens?	37.95	18.19	-	-	-	1.40	0.67
C maculata (2003)	47.10	22.50	29.90	23.0	23.0	1.50	1.15

E. mixed planting

C. maculata

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Lochiel - planted 2008

	Sept 2022				Average growth rate per year since planting (average tree)	
	Best tree		Average tree			
Species	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)
C. maculata	32.80	20.50	25.10	19.6	1.80	1.40
E. saligna	-	-	28.10	24.80	2.00	1.80

Towamba - planted 1994

	2004			2023					Average growth rate per year since first measurement		Average growth rate per year since planting	
	Overall average			Best tree		Average tree						
Species	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)
E. botryoides	25.40	22.43	37.68	55.00	36.45	40.50	41.25	53.00	1.00	1.25	1.50	1.53
E. saligna	19.06	17.25	17.13	42.20	36.00	34.75	23.50	29.00	0.83	0.33	1.90	0.81

Softwood species

P. radiata - planted 1996-99

P. radiata sites generally have had some pruning in early growth years, although limited to no thinning. The table below shows some averages across a range of P. radiata plantings on different soils types. The potential for growth has been limited due to low levels of management.

	approx. 2006			2023					Average growth rate per year since first measurements		Average growth rate per year since planting	
	Overall average			Best tree		Average tree						
Species	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)	BA (m2)	DBH (cm)	Ht (m)	DBH (cm)	Ht (m)
P. radiata	22.0	12.27	28.50	59.73	23.96	36.15	22.5	36.7	0.83	0.60	1.39	0.83

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Saltgrow Trials

These sites were planted in 2006 and contained E. camaldulensis x E. globulus and E. camaldulensis x E. grandis as part of an investigation into the forestry potential of these crosses. E. botriodies were included as a comparison species.

These measurements below are taken from the Tantawanglo trial - the remaining three sites were not measured due to poor performance.

The E. globulus crosses had the better growth of the two variants - although E. botriodies performed better overall.

Species	Ave Height m (2008)	Ave Height m (2023)	Ave growth rate m/year (since 2008)
E. camaldulensis x E. globulus	2.30	14.0	0.78
E. camaldulensis x E. grandis	2.46	10.75	0.55
E. botrioidies	3.61	17.66	0.93

A full table of 2008 measurements is contained in the South East Farm Forestry Project Report.

Acacia Trials

Several mixed Acacia trials were established across the region. In general, these trails do not show forestry potential and were not measured. Drought and insect attack may have been an influence on high death rates and low to moderate growth. Tree forms were highly branching.

A summary of the species planted is contained in the South East Farm Forestry Project Report.

FURTHER INFORMATION

South East Farm Forestry Project Report.

Site Locations