



Spotted Gum for Farm Forestry

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*This Agriculture Note describes the characteristics, site requirements and wood quality of Spotted gum *Corymbia maculata*, (syn. *Eucalyptus maculata*), and *Corymbia variegata* as a farm forestry species.*



Figure 1. Spotted gum plantation

Spotted gum (*Corymbia* spp.) is gaining popularity as a plantation timber due to its fast early growth, relatively good form and good quality general use timber. At its best it is an impressive tall tree with conspicuously spotted bark in summer and often has a dimpled trunk surface.

Natural occurrence

Spotted gum is widely distributed in the coastal areas of south east Australia from Bega, NSW, to Maryborough in Qld, mainly in taller forests on slopes up to about 950 m elevation. A small, isolated, stand occurs near Buchan in Victoria.

Provenances

Tree improvement of Spotted gum through provenance selection for plantation timber production is only relatively new in Australia. Considerable variation has been recorded in material sourced from natural stands, particularly in form and growth rate. The variation in frost tolerance within the species is very minor, with all Spotted gums relatively frost sensitive. Trials established in 2003 as part of the Australian Low Rainfall Tree Improvement Program have revealed that there are significant differences between seed sources for both species and that the *Corymbia maculata* tended to be fatter than the *Corymbia variegata*. The Hamilton select materials in both the *maculata* and the *variegata* have performed well. The Deniliquin seed orchard seed performed well and is currently available to growers, along with seed orchard

seed from the south coast of NSW. More seed orchard seed of this species is due to become available in the near future.

Site requirements

Spotted gum grows in areas ranging from 650 - 1300 mm of annual rainfall. Some specimens have been found growing with good form, although slowly, in areas of even lower rainfall. Most of this species' natural range has an even rainfall distribution throughout the year or a summer maximum, but the species can be found growing well in areas of winter rainfall maximum. Spotted gum are relatively drought tolerant but the main climatic concern is their frost tolerance. They can only tolerate mild frosts, and even these can be devastating to young Spotted gum. Until more frost tolerant selections are available, planting on low-lying, frosty sites should be avoided.

Spotted gum grows on a wide range of soils and grows commonly in areas with poorer clay subsoils, but best growth occurs on moist, well-drained soils of moderately heavy texture. These soils can be derived from shales, slates, and granites. It naturally occurs on lower slopes, only extending to ridgelines if the soil is not too dry. The species can withstand moderate droughts and high exposure, and is fire resistant due to the formation of lignotubers as a seedling. It does not tolerate heavy water logging, but has been found to do well under irrigation. Kino pockets can occur as a result of mechanical injury to the cambium layer by various physical agencies such as insects, mechanical damage or fire. These kino pockets can affect timber quality.

Growth rates

Spotted gum can grow to a large tree up to 60 m tall and over a metre in diameter. Trees generally have good form, usually with a long, clean, straight, symmetrical bole with minimum taper and apical dominance, but forking can occur. Their characteristic of narrow crowns and good self-pruning lends them to plantation production of sawlogs, but they are a competitive species and need to have space to grow. Thinning is therefore required to prevent growth being retarded. The species coppice vigorously when harvested or damaged, due to the presence of a lignotuber.

Spotted gum has a reputation in Australia as a species of moderate growth of around 2 - 3 m/year, but overseas

experience indicates that on suitable sites it is capable of rapid early growth. In Zambia, where mild humid summer rainfall conditions prevail, the best provenance was 11.2 m in height after three years.

Management

The lack of genetic selection within this species will require initial stocking rates in plantations to be fairly high, (800- 1000 stems per ha) to ensure sufficient quality trees remain after culling. Canopy closure will be slow due to narrow crowns, but over time, with these high planting rates, tree growth will stagnate from lack of space. Thinning is necessary to ensure maximum growth potential is reached.

Generally, spotted gums are self pruning, but occasionally large branches occur which will need to be removed if sawn timber is to be produced. Smaller branches will need removing if clearwood sawn timber is required. Due to the susceptibility of this species to frost, growing tips are often damaged and double leaders result. Form pruning is then needed to ensure a single stem. Spotted gums respond to fertiliser application. Growth responses are usually obtained with nitrogen application and sometimes with phosphorus. The micronutrient boron has been found to be beneficial to growth in many areas of North East Victoria, and in coastal areas, zinc and copper responses have also been observed.

Pest and disease risks

Spotted gums are susceptible to damage by hares and rabbits as young seedlings, but are generally insect resistant. Occasionally grasshopper outbreaks can cause damage to trees in their first year, and lerp outbreaks can infest plantations following drought or dry periods. Disease outbreaks are rare, with good resistance to phytophthora and most root rot fungi, but high humidity or summer rainfall can lead to outbreaks of Quambalaria shoot blight. Fire resistance is a characteristic of spotted gums, as their smooth bark has low flammability and the presence of ligno-tubers allows rapid regrowth.

Uses

Spotted gum is an excellent multipurpose timber. It has traditionally been used in high impact situations as handles of striking tools such as axes and hammers. It is also one of the best species for preservative treated poles and has been used in ship and boat building, decorative and hard-wearing flooring and heavy construction. Spotted gum is not generally used in paper making as the paper has a low tensile strength and pulp yields are relatively low.



Figure 2. Table made from spotted gum timber.

Wood quality

Excellent wood quality has made spotted gum an important timber species on the southern coast of NSW, where it is most abundant. The sapwood is pale and wide (2 - 5 cm) compared to other species, which leads to its popularity for preservative treated posts and poles. The sapwood is very susceptible to lyctid borer if left untreated. The heartwood varies from light brown to dark brown, is hard, strong and very tough, but is only moderately durable - not sufficiently durable for external use. In southern Australia it has a durability rating of 3 with an expected in-ground life span of 8-15 years. The texture is moderately coarse, with variable grain. The wood is generally easy to work, and is satisfactory for steam bending if straight-grained material is selected.

The density varies depending on where it is grown and the age of the tree, with green density around 1150 kg/m³, and air dry density at 12 % moisture of about 950 kg/m³. The heartwood is resistant to impregnation with preservatives, and the sapwood is very susceptible to lyctid borers and so needs preservation for post and pole use. For good bonding, a low moisture content of 8 - 10 % is desirable.



Figure 3. Wood grain of spotted gum

Drying characteristics

The timber is generally easy to dry, with slight shrinkage and collapse. Almost no drying degrade was found in trials when 25 mm green back sawn boards were kiln dried for 14 days. This drying time could probably be shortened even further without degrade.

Summary

Spotted gum is an excellent species for farm forestry. It can grow high quality logs on good sites and the timber is suitable for a wide range of uses, particularly sawn timber and poles. Its major limitation is its susceptibility to frost, restricting its growth to frost free sites.

References

- Bootle, K.R. (2004). Wood in Australia. Types, properties and uses. 2nd edition. McGraw-Hill Book Co, Sydney.
- Borschman, R., (May 1996). Report on the Monitoring and Evaluation of Farm Forestry Sites in North East Victoria. North East Farm Forestry Program, Centre for Forest Tree Technology.
- Costermans, L., (1994). Native Trees and Shrubs of South Eastern Australia. Lansdowne Publishing Pty Ltd, Sydney.
- Costermans, L. (1998) Trees of Victoria and Adjoining Areas. Costermans Publishing, Frankston.
- Hall, N., Johnston, R.D., and Chippendale, G.M. (1975). Forest Trees of Australia, Australian Department of Agriculture, Forestry and Timber Bureau, Australian Government Publishing Service, Canberra.
- Hillis, W.E. & Brown, A.G., Ed. (1984). Eucalypts for Wood Production, CSIRO Australia.
- Northway, R.L., (1996). Evaluation of Drying Methods for Plantation-Grown Eucalypt Timber: (a) Kiln drying trials with four species. CSIRO Forestry and Forest Products Report. Australia.
- Phelan, T and Higgins, I., (Nov 1996). Timber Growing Opportunities in North Central Victoria. Centre for Land Protection Research, Technical Report No 38. Department of Natural Resources and Environment, Victoria.
- Smith, I. W. and Collett, N.G., (Nov 1996). Fungal disease and insect pest database for plantations in Victoria. CFTT. Heidelberg, Australia.
- Washusen, R. (1995). Farm Forestry Species for the Benalla Landcare Farm Forestry Group. Benalla Landcare and Farm Forestry Group, Benalla.

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