

Pages 4 and 5 list tree species that have the potential to grow in Tasmania, site requirements and other factors which form a guide to help you match potential tree species to your proposed tree planting site.

The process of species selection is done in three stages:

1. Determining the characteristics of the planting site in terms of climate, soil and other ecological factors;
2. Deciding which species and provenances are likely to thrive in such conditions;
3. Deciding which of one or more species, at the same time, satisfy the objectives of the planting scheme (Savill et al, 1997).

The trees listed can, or have the potential to, be used for timber production. There may be other species not listed here that are also suitable for wood production.

The species selected should have:

- available seed;
- improved seed; and
- proven as a plantation species elsewhere.

The recognized plantation species: *Eucalyptus nitens* (Shining gum), *E. globulus* (Blue gum), *Pinus radiata* (Radiata pine), *Acacia melanoxylon* (Blackwood) and, to a lesser extent, *Cupressus macrocarpa* (Monterey cypress) have been proven to suit Tasmania. However, many of the alternative species have been planted in Tasmania on a trial basis by Private Forests Tasmania, landowners and other organisations. While it is to be encouraged, the planting of these or other alternative species in Tasmania should be on a small scale and considered experimental, as their performance is relatively unknown at this stage. It is possible that some alternative species may fill a niche role, such as the production of naturally durable timber that can be used for exterior use without chemical treatment. It is not expected that these alternative species could be planted on a large scale, but rather as smaller plantings on suitable sites. Thus, they may offer landowners an opportunity to enter a high-value niche market that is not dominated by larger industrial scale growers. Landowners should seek further advice regarding species and site selection if considering alternative species.

### **What is the need for alternative species?**

- Better match to site
- Species matched to different silvicultural systems e.g. *Macrocarpa* underplanted beneath *eucalyptus*
- Expand the potential forest estate into areas not conducive to current species
- Supplement native speciality species that are becoming more difficult to acquire
- Replace imports
- High value / small volume of cabinet species

- Naturally durable timbers that can replace treated timbers in certain situations, especially where there is increased concern regarding chemicals
- Naturally durable products that have ready market acceptance including: poles, posts, decks, boards etc
- Improved market & product diversity (local, national & international)
- Increased value & returns
- Manage risk within a plantation estate

### **Provenance & Origin**

*In species choice it is essential to consider the origin and provenance of the plants which may best suit the site. Tree species which occur over wide geographic areas develop sub-populations with slightly different characteristics*

(extract from Practical Forestry for the Agent and Surveyor. Cyril E. Hart. 1993 Alan Sutton publ.).

Therefore, the importance of selecting and/or trialing the correct seed origin and provenance is as important as the correct species choice. It is likely that some species that have been previously trialed and failed were the wrong origin/provenance and were discarded as not being a suitable species.

Zobel *et al.* (1987) provide general rules about matching provenances to sites as exotics:

1. Do not obtain seed from high-elevation or high-latitude sources to plant in low elevations or latitudes.
2. Provenances from a maritime climate should never be used in a continental climate.
3. Provenances from milder climates usually grow well unless there is a risk of freezing
4. Do not move trees from areas of uniform climates, where minor fluctuations in rainfall and temperature occur, to those with severe and large fluctuations; and do not choose trees that originate in basic soils for growing on acid soils or vice versa.

Please note that this information is introductory in nature and should not be treated as a substitute for specific advice or relied on as a basis for business decisions. For further detailed information on the species in Table 2 please refer to our Species Guides.

Before undertaking any significant forestry project it is recommended that you seek personal professional advice directly from a forestry professional on the particular matter.

In particular, a consulting Forest Practices Officer (FPO) can guide you through the legal processes of the *Forest Practices Code*. Visit the Forest Practices Authority website for additional information.

This information has been collected from published sources. Titles of references are available from Private Forests Tasmania. Gaps in the table indicate where information was not available.

**Table 1: Terms used in Table 2.**

TERM	DESCRIPTION	PREFERENCE/TOLERANCE
Preferred annual rainfall	Average rainfall required for maximum growth.	Millimetres per year (25mm = 1.0 inch)
Minimum annual rainfall	Approximate average amount of rainfall needed for survival.	Millimetres per year (25mm = 1.0 inch)
Preferred position	Position in the landscape in which the species grows best.	Cool valley, lower slopes, plains, etc.
Preferred soil type	Soils in which the species grows best. This category is problematic because most species grow best in deep, moderately fertile, moist, warm, well-drained soil conditions which many species do not encounter in their natural condition. Further, species such as <i>Pinus radiata</i> , <i>C. macrocarpa</i> , <i>E. maculata</i> , <i>E. viminalis</i> , <i>A. melanoxylon</i> and other species are adaptable and will grow well on a wide range of soils provided they are not subject to severe waterlogging, or in some cases frost.	Heavy, light, shallow, deep, well-drained, loams, clays, sands, fertile, moist soils, etc.
Prohibitive conditions for survival and good growth	Soil conditions or other factors (excluding salinity) which prevent good growth.	Wet/heavy clay, infertile, deep sands, poor drainage, etc.

**Table 2: Tree species list - Site requirements and other factors**

Botanical Name	Common Name	Preferred Rain (mm)	Minimum Rain (mm)	Preferred Position	Preferred Soil Type for Best Growth	Prohibitive Conditions Survival / Good Growth	Use	Dryland species
<i>Acacia melanoxylon</i>	Blackwood	900+	650	Cool valley	Fertile clay-loam	Infertile heavy clay	Cabinet	N
<i>Eucalyptus glob. sub species glob.</i>	Blue gum	900+	700	Cool valley	Heavy loam-clay	Frost	Commodity	N
<i>Eucalyptus nitens</i>	Shining gum	1000+	700	Cool wet slope	Clay-loam		Commodity	N
<i>Pinus radiata</i>	Radiata pine	800+	500	Slope	Sandy-loam over clay	Fire; wet/heavy clay	Commodity	N
<b>Trees listed below can, or have the potential to, be used for timber production:</b>								
<i>Castanea sativa</i>	Spanish chest-nut	1000	760	Lower foothills/mtns	Deep, fertile, moist	Shallow soils; wet soils	Durable / Cabinet Fencing	N
<i>Cryptomeria japonica</i>	Japanese cedar			Sheltered, lowland	Moist, fertile	Waterlogged, dry , exposed	Cabinet	N
<i>X Cupressocyparis leylandii</i>	Leyland cypress	1000+	650	Lower slope	Moist, fertile		Cabinet	N
<i>X Cupressocyparis ovensii</i>	Ovens cypress	800		Sheltered slopes/valleys	Fertile, well-drained	Infertile, poor-drainage	Cabinet	N
<i>Cupressus lusitanica</i>	Mexican cypress	750+	600	Lower slope	Fertile sandy clay-loam	Fire; wet clay	Cabinet	N
<i>Cupressus macrocarpa</i>	Monterey cypress	800+	650	Lower slope	Fertile clay-loam	Fire; deep sand; wet clay	Cabinet	N
<i>Cupressus sempervirens</i>	Mediterranean cypress	800		Sheltered slopes/valleys	Fertile, well-drained	Infertile, poor-drainage	Cabinet	Y
<i>Cupressus torulosa</i>	Bhutan cypress	800		Sheltered slopes/valleys	Fertile, well-drained	Infertile, poor-drainage	Cabinet	N
<i>Eucalyptus bosistoana</i>	Coast grey box	1200	700		Better and moist soils		Durable / decking fencing	Y
<i>Eucalyptus botryoides</i>	Southern mahogany	1300	700	Sheltered, moist sites	Mod. fertile, good soil depth and moisture	<300m ASL	Durable / decking fencing	N
<i>Eucalyptus cladocalyx</i>	Sugar gum	650	450	Riparian - upper slopes	Skeletal, shallow – deep alluvial		Durable / decking fencing	Y
<i>Eucalyptus fastigata</i>	Brown barrel	1100+	800	Valley/slope	Granite loams		Commodity	N
<i>Eucalyptus macrorhyncha</i>	Red stringybark	600+	500	Hill/slope	Rocky clay-loam	Heavy clay	Durable / decking fencing	Y
<i>Eucalyptus muelleriana</i>	Yellow	800+	800	Valley	Deep clay-loam	Wet / heavy clay	Durable / decking	N

	stringybark						fencing	
<i>Eucalyptus quadlangulata</i>	White top box	1500	1000	Sheltered sites only	Fertile well drained soils	skeletal and stony soils	Durable / decking fencing	N
<i>Eucalyptus sideroxylon</i>	Red ironbark	550+	350	Hill/slope	Heavy clay-loam	Deep sand	Durable / decking fencing	Y
<i>Fraxinus americana</i>	White ash	1500	500	Riparian, low-mid slope	Rich, moist, well-drained	Waterlogged or very dry	Cabinet	N
<i>Picea sitchensis</i>	Sitka spruce	1000+	900	Elevated	Deep, moist, non-calcareous	Very dry	Commodity	N
<i>Pinus contorta</i> (Skeena River origin)	Lodgepole pine	900+	450	Gentle slopes/basins	Deep loam	Shade	Commodity	N
<i>Pinus muricata</i> (blue var.)	Bishop pine	500+	400	Arid, steep slopes	Rocky, sandy		Commodity	Y
<i>Pinus nigra var calabrica</i> (maritima)	Corsican pine	1500	1000	Lower slope	Deep sands-clays	Shallow, wet soils	Commodity	N
<i>Pinus pinaster</i>	Maritime pine	1250	500	Coastal	Well-drained sandy-loam	Clay; poor drainage	Commodity	Y
<i>Pinus ponderosa</i> (Plumas)	Ponderosa pine	750+	500	Lower slope/valley	Deep, well-drained	Poor drainage	Commodity	Y
<i>Pinus radiata x P. attenuata</i>	Hybrid pine	650+	500	Uplands, drier sites	Deep, well-drained	Poor drainage	Commodity	
<i>Pseudotsuga menziesii</i>	Douglas fir	1000+	800	Humid, wet sites	Fertile sandy-loam	Heavy clay	Cabinet	N
<i>Platanus x acerifolia</i>	London plane	750		Riparian, sheltered valleys	Light soils, good fertility		Cabinet	N
<i>Quercus petraea / robur</i>	Sessile / Pedunculate oak	1000+	900	Sheltered	Fertile, heavy and moist soils	Free-draining soils	Durable / Fence / Cabinet	N
<i>Quercus rubra</i>	Red oak	1000+	750	Low-mid slope & valleys	Deep, well drained loam to silty, clay loam		Durable / Fence / Cabinet	N
<i>Sequoia sempervirens</i>	Coast redwood	1200+	750	Foggy valley	Moist, fertile, deep	Shallow soil; poor drainage	Cabinet	N
<i>Thuja plicata</i>	Western red-cedar	800+	800	Humid region	Medium to very rich brown earth	Exposure, very poor and very dry soils	Cabinet	N

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**For more information see:**

- CSIRO's Australian Tree Seed Centre (ATSC) <http://www.csiro.au/en/Research/Collections/ATSC>
- Forest Growers Research Website <https://fgr.nz/programmes/alternative-species/>
- Forest Research, Tree species database <https://www.forestresearch.gov.uk/tools-and-resources/tree-species-database/>
- National Forest Inventory (NFI) <https://inventaire-forestier.ign.fr/spip.php?rubrique87#:~:>
- New Zealand Dryland Forests Innovation (NZDFI) <https://nzdfi.org.nz/>
- Proseed New Zealand <https://www.proseed.co.nz/>
- Savill, P, Evans, J, Auclair, D & Falck, J (1997) *Plantation silviculture in Europe*. Oxford University Press, New York.
- Species choice for afforestation of difficult sites NZ <https://www.treesandstars.com/sppchc/>
- Zobel, B.J., Wyk, G. van, and Stahl, P. (1987). *Growing exotic forest*. Wiley, New York.

**Weed Disclaimer** - landowners should be aware that some tree species have the potential to become weedy. It is good practice to avoid use of known environmental weeds in Tasmania. For further information consult your local DPI/PWE or Council weed management officers.

**Species Flammability Disclaimer** - landowners should be aware that some species have the potential to be moderately or highly flammable and shall need to be managed with caution. For further information:

- Red Hot Tips program: A FREE one-stop service for farmers and rural landholders. The Red Hot Tips program educates, engages and supports farmers and landholders in rural Tasmania to actively manage their bushfire risk <https://www.sfmc.tas.gov.au/RedHotTips>
- Tasmanian Fire Service <https://www.fire.tas.gov.au/>
- In particular, the Fire Resisting plants publication [https://www.fire.tas.gov.au/userfiles/alarm/170572\\_tfs\\_fire\\_resisting\\_plants\\_2017-18\\_web.pdf](https://www.fire.tas.gov.au/userfiles/alarm/170572_tfs_fire_resisting_plants_2017-18_web.pdf)

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