



# GROWING EUCALYPTS FOR TIMBER

## Choosing eucalypts

Information Note **1**

The right eucalypt species grown on the right site and well managed throughout the rotation can produce high-quality timber with many potential end uses.

The first challenge facing would-be eucalypt growers is deciding what species to plant. Of the over 600 species that exist, only a small proportion are suitable for solid timber production in New Zealand. Even so, the choice can be quite daunting.

Eucalypts have a range of site requirements. Some species are suited to a very limited range of sites, whereas others are more adaptable. By understanding the key characteristics of the site and species, and matching these with planting objectives, growers will be able to narrow down the possible species choice.



A 10-year old mixed-species plantation.

### WHAT TYPE OF TIMBER?

Narrowing down the choice of species can be made simpler by deciding on the type of timber you want to produce – (i) ground-durable or (ii) suitable for above-ground uses.

Some species of eucalypt produce heartwood timber that is naturally durable or even very durable, and therefore suitable for in-ground uses such as posts and poles. Other species produce heartwood that is moderately durable, and better suited to above-ground applications such as flooring, decking, structural applications, furniture and joinery. A general rule of thumb is that as durability increases, growth rates decrease.

Deciding whether or not you want to grow ground-durable timber is a good starting point in species choice. The reality of planting eucalypts in New Zealand, however, is that depending on your site, you may not be able to grow the type of timber that you prefer.

A 28-year old *E. nitens* plantation.



## HOW FROSTY IS YOUR SITE?

Eucalypts grow much better in warm sites. Frost is a key limiting factor affecting the establishment of a young eucalypt crop. The timing of frosts, and their severity, combined with the species planted, will determine whether young eucalypt trees survive their first few winters.

Most growers will be able to obtain general climate information for their property, but may not fully appreciate the effects of slope, aspect and air drainage in determining frost levels and average temperature. Frost settles in hollows and lower on the slope; micro-site differences like this must be borne in mind when selecting species or mix of species for any given site. Sometimes a small experimental planting of a range of species (ideally with a data recorder logging temperature) could be a wise investment if time allows prior to increasing the scale of planting. Severe wind exposure can produce poorly formed trees: some species are much more prone than others to wind malformation.

## CLASSIFYING DURABILITY AND SITE CLIMATE

The following table is designed to serve as an initial indicative aid to species selection. The eucalypt species listed are those currently favoured for plantings for timber production in New Zealand.

Heartwood durability in ground	Species	Other important species x climate factors
Very durable	<i>E. bosistoana</i>	Tolerates relatively poor soil drainage and periods of drought. Poor early heartwood formation. Can have poor form. Crown shy. fairly good frost tolerance.
	<i>E. cladocalyx</i>	Tolerates exposed, dry sites. Frost tender. Requires good drainage. Can have poor form. Crown shy. Good early heartwood formation.
	<i>E. microcorys</i>	Frost tender. Requires some shelter. Likes good drainage and reasonable soil moisture. Very dense crown. Brittle in high winds.
Durable	<i>E. globoidea</i>	Reasonably drought tolerant. Moderately frost hardy. Requires some shelter for good form. Good early heartwood formation.
	<i>E. pilularis</i>	Frost tender. Requires some shelter for good form. Good early heartwood formation.
	<i>E. quadrangulata</i>	Best suited to sheltered sites with plenty of soil moisture. Tolerates relatively poor soil drainage. Poor early heartwood formation.
	<i>E. sphaerocarpa</i>	Frost tender. Tolerates exposure, requires good drainage. Excellent form. Dense crown. Good early heartwood formation.
	<i>E. botryoides</i>	Tolerates poor soil drainage and some exposure. Poor early heartwood formation. Ensure planting stock is from a pest-resistant strain.
Moderately durable	<i>E. saligna</i>	Better suited to fertile valley floor sites but tolerates relatively poor soil drainage. Poor early heartwood formation. Requires some shelter for good form. Crown shy. Ensure planting stock is from a pest-resistant strain.
	<i>E. macrorhyncha</i>	A drought hardy, frost- and snow-tolerant species. Good early heartwood formation.
	<i>E. muelleriana</i>	Frost tender. Requires some shelter for good form. Good early heartwood formation.
	<i>E. laevopinea</i>	Frost hardy. Fast growing. Requires some shelter for good form. Good early heartwood formation. Adaptable species.
	<i>E. blaxlandii</i>	Frost hardy. Good early heartwood formation. Adaptable species.
	<i>E. youmanii</i>	Very frost hardy. Good early heartwood formation. Prefers cool conditions.
Not durable	<i>E. fastigata</i>	Vigorous where soil moisture is sufficient and drainage good. Prefers cool conditions. Frost hardy.
	<i>E. nitens</i>	Extremely fast growing but poor timber properties. Requires some soil drainage. Tolerates exposure. Very frost-hardy.
	<i>E. regnans</i>	Fast growing but poor timber properties. Requires some soil drainage. Tolerates exposure. Reasonably frost-hardy.

### Note on durability:

Very durable and durable species are suitable for in-ground use. Durable and moderately durable species are suitable for outdoor applications above ground such as decking and outdoor furniture. Durability is not required for internal applications.

## OTHER IMPORTANT FACTORS FOR SITING SPECIES

As well as frost and aspect, there are a number of other important site characteristics which need to be considered when selecting eucalypts species to plant. These include:

- **Wind:** eucalypts species vary greatly in their tolerance to wind, although in general all common timber-producing species have better form on relatively sheltered sites.
- **Annual rainfall:** some eucalypts can tolerate dry conditions, but this does vary between species. Species selection for very dry sites (<600 mm/rainfall per year) needs to be made with care.
- **Soil depth, fertility and drainage:** some timber eucalypt species can tolerate quite challenging sites, where soils are dry, shallow and infertile. Others need deep, fertile, freely drained soils to thrive.

## OTHER IMPORTANT SPECIES CHARACTERISTICS

Eucalypt species also vary in many ways, for example:

- **Relative growth rate:** generally higher durability species grow slower than lower durability species.
- **Crown shyness:** dense crowns mean more wood production in a given area. Crown shy species adapted to drylands are not as productive in terms of volume over time.
- **Ease of processing:** medium density eucalypts (durable and moderately durable species) generally process the best. As a rule the 'stringybark group' process and season without problems.
- **Heartwood formation:** some species have narrow sapwood bands and produce good volumes of heartwood at early ages. Some species produce richly coloured heartwood.
- **Wood properties:** e.g. stability, hardness, colour.

These factors need to be taken into account before you reach a final species choice.

Photos: John Milne, Paul Millen/NZ Dryland Forests Initiative.



Measuring 2-year old *E. quadrangulata*.



4-year old *E. bosistoana*.



4-year old *E. quadrangulata*.

## MORE INFORMATION

The best thing is to learn from others' experience – people have been growing eucalypts in New Zealand for over 100 years, and there is a lot of expertise available. The best information sources are NZFFA Eucalypt Action Group, NZFFA Farm Forestry Timbers, and the NZ Dryland Forests Initiative. The NZFFA website provides regularly updated information resources. For anecdotal information enquire locally within the NZFFA branch network.

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