

INTRODUCTION

In making mallees both a commercial and environmental option for your farm, it is important to thoroughly plan your planting. "How easily are mallees going to integrate into my current farming system?", "where do I want to plant them to achieve maximum benefit?", "what constraints do I have to overcome?" and "what options are available to me if my objectives change?" are all questions you need to ask before selecting the species, planting and managing the trees.

This fact sheet outlines the 'Best Practice' procedure for ensuring your plantings achieve the maximum benefit to you and your land regardless of your primary objective and covers the following:

- Planning
- Site and species selection

PLANNING

The design of your mallee planting depends on a range of factors. Site selection is essential and will determine whether your plans are feasible or not. Factors to be considered include, but are not limited to, the following:

- Your existing and future land use – cropping, grazing or a mix of both
- The purpose of your planting – water table or runoff control, wind erosion, commercial production, aesthetics or combination of all of these.
- The dimensions of the land to be planted and the size of the equipment used to farm the land – spray boom and seeder bar width assuming an alley style layout.
- The type of planting you want and whether the site is able to support the number of trees planted on the site – block vs belt plantings and moisture/groundwater availability.

The following table outlines possible options you may consider and their constraints:

Site	Treatment	% cover	Purpose	Constraints
Valley floor	Alley	30	Ground water use, commercial production	Saline water, sodic soils, heavy clays
Break of slope	Belt	100	Ground water use, commercial production	Saline water, fencing if required
Mid slope	Contour belt	10 – 20	Erosion control, ground water use, commercial	Spray drift, fencing if required
Deep sand	Block/alley	30 – 100	Soil stabilisation, ground water use in seeps	Difficult establishment, low nutrients, access to water
Waterways	Block	100	Erosion control, groundwater use	Access/mobility for mgt, fencing cost, saline water
Rocky slopes /caps	Block or belt	10 – 100	Commercial, Aesthetics	Difficult/costly est, difficult harvest, Drought death

SITE AND SPECIES SELECTION

The factors determining site suitability include:

- Rainfall and moisture availability
- Soil type
- Salinity
- Operational impediments
- Species



Rainfall and moisture availability

Rainfall (considered in isolation) is not always a limiting factor in determining whether a site is suitable for mallees however should be considered in planning planting operations as it contributes to the overall moisture availability of a site. In their natural environment, mallees occur in low to medium rainfall zones, generally 250 – 600mm, so a similar range would be most preferred for more intensive plantings.

Moisture availability is the amount of moisture, both surface and subsurface, which a mallee has access to over its lifespan to continue to survive and grow. As the mallee grows, its reliance upon surface moisture reduces as it accesses groundwater. Mallee planting layouts should take advantage of this moisture. The use of integrated tree belts is an effective way to achieve this.

Soil type

Mallees can be planted on a range of soil types, ranging from sandy clays through clay loams to heavy clays. The soil type identified will assist in the selecting the species to be planted on the site (see descriptions below). It is important in assessing soil and soil type that the depth of soil is assessed and the extent and type of any impenetrable layers which may result in perched water tables or drought death due to being unable to reach adequate groundwater supplies, is determined. For commercial plantings, a minimum of 3m soil depth is required.

Salinity

Mallees will tolerate saline soil conditions up to 100mS/m. Higher salinity levels (up to 200mS/m) will have an effect on biomass production and the final commercial yield of a mallee crop however it is possible that where growing mallees for environmental purposes, adequate growth rates will be achieved and sustained. The accepted best practice of determining salinity is using a Genomics EM38, usually available on loan through local Landcare co-ordinators, OMA Regions and CALM.

Site Establishment impediments

In planning mallee plantings, it is important to consider any operational impediments which may arise during establishment, management and harvesting of the crop. Impediments include:

- Surface/cap rock – difficult and costly to rip, obstacle to efficient harvest, drought stress
- Waterlogging – difficult to access and manage ie. Spraying, harvest, affects growth
- Farming infrastructure (fences etc) – obstacle to efficient harvest and establishment
- Areas of erosion and uneven ground – obstacles, rabbits, safety of operators
- Existing native vegetation – It is the intention of the mallee industry to help protect and enhance existing native vegetation and removal should be avoided

Species

Eucalyptus angustissima ssp. *angustissima* – Long, thin needle like leaves, smooth grey bark mallee. Grows in deeper sand over saline clays. Best for recharge sites. High salt & waterlogging tolerance.

Eucalyptus gratiae – Large glossy leaves, smooth bark and tall (10m+) mallee. Grows on range of soils – sands, duplex and clays. Some salt and waterlogging tolerance, best on well drained sites

Eucalyptus horistes – Rough barked, fine glossy green leaves. Grows on reddish sands to heavier loamy clays. Minimal salt and waterlogging tolerance. Drainage important.

Eucalyptus kochii ssp. *plenissima* – As for *E. horistes*, but more dull in color during juvenile leaf stage. Prefer reddish sands and sandy loams, but may be OK in heavier clays. Minimal salt and waterlogging tolerance.

Eucalyptus loxophleba ssp. *lissophloia* - Large glossy leaves, smooth bark and tall (10m+) mallee. Grows on range of soils – sands, duplex and clays. Some salt and waterlogging tolerance, best on well drained sites and heavy clay/loam sites.

Eucalyptus polybractea – Upright, medium height (10m), rough grey bark and varying colored leaves originating on the east coast of Australia. Grows on range of soils – sandy duplex to heavy clays. Some salt and waterlogging tolerance, but best on well drained sites. Not suitable for lighter country in dry areas or areas of variable to low rainfall.

For more information contact the Oil Mallee Association on 1800 625 511 or email info@oilmallee.com.au

