



farmtalk



This article contains information most relevant to the less than 350 mm rainfall mallee farming region

Sharing, Learning, Doing!

Fact Sheet 22
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Farmtalk is a product of the Mallee Sustainable Farming Inc. Tri-State Research and Extension team

Mallee Farming: Productive, Profitable and Sustainable!

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The issue

The Mallee has the potential to be one of the most environmentally sustainable farming systems in Australia if Best Management Practice (BMP) principles are used. These BMPs are based on current research and practical farmer experience.

The achievable aim in the Mallee is to be more productive and profitable whilst improving environmental indicators such as wind erosion, deep drainage, soil microbial activity and biodiversity.

What we know

The Mallee has a wide range of soil types, and few crop options. Intensifying cropping and pasture phases has been shown to increase productivity, profit and environmental outcomes.

The longer a paddock has been actively growing plants, the more opportunities there are for environmental outcomes, such as:

- Increased water use and lowering the risk of deep drainage;
- Increased biomass production resulting in greater levels of organic matter and microbial activity for healthy soils; and
- Reduced risk of wind erosion.

The most efficient way to use stored soil water is to convert it into plant dry matter.

However, if water and nutrients leak below the root zone of annual crops they may be utilised by deep-rooted perennial plants (eg lucerne) if subsoil constraints are not present.

Wind erosion can be controlled by maintaining adequate levels of ground cover in crop and pasture paddocks and increasing soil aggregation through higher organic matter and microbial activity.

Long fallow on sandy soil poses the greatest environmental risk in terms of wind erosion, loss of microbial function and deep drainage. Removal of long fallow from the cropping sequence on sandy soil will deliver both environmental benefits and extra income.



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What it means

The Mallee will achieve better environmental outcomes by growing more crops on sandy soils increasing production within agricultural systems. This will benefit the soil by:

- Production of higher levels of groundcover to reduce erosion risk;
- Utilising increased amounts of stored soil water that will lessen the risk of deep drainage;
- Increasing the carbon supply for soil micro-organisms;
- Increasing the turnover of organic matter that will improve soil structure, particularly if cultivation is reduced;
- Increasing the water holding capacity if organic matter levels are raised;
- Leaching fewer nitrates, particularly in wet summers.
- Growing a deep-rooted perennial pasture to utilise soil water and nutrients that move below the rooting depth of annual crops and so convert it into production.

There are a number of ways in which the issues associated with natural resource management can be tackled in the Mallee. Options to consider include:

- The use of reduced tillage to maintain higher levels of ground cover and soil aggregation;
- A reduction in the length of cultivated fallow on sandy soils by avoiding cultivation or prickle churning before January in the year of the crop;
- Investigating how much stored soil water is in the soil profile - (see Farmtalk No. 11 The Deep Down on Deep Drainage in the Mallee);
- Utilising phase farming within the farming system. This system combines a phase of continuous cropping until deep soil water conditions become suitable for a phase of perennial pasture (e.g. lucerne) to clean the paddock and utilise the stored soil water and nutrients.

Where to next

- Join a farming group to hear about the experiences that other people have had with reduced tillage and phase farming or continuous cropping on sandy soils.
- Trial a small area to get the feel of how your soil changes with reduced tillage, higher ground cover and phase farming.
- Contact MSF Inc. to obtain other *Farmtalk* articles with more detail on some of the issues raised here. See www.msfp.org.au/farmtalk

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Environmental targets for Mallee Paddocks

Maintaining greater than 50% groundcover on farm land (eg stubble or trash) to significantly reduce wind erosion.

N.B. The groundcover target for grazing land is to maintain above 40% groundcover which includes all groundcover eg. leaf litter, rocks and lichens.

AND/OR

Maintaining greater than 50% aggregation larger than 1mm if soil is bare (i.e. clods > 1mm making up more than 50% of all the soil in a handful will significantly reduce wind erosion).

N.B. As cover levels drop, aggregation levels become more important. Aggregation is difficult to create if the soil is sandy or if there is less than 15% clay in the surface.

PLUS

Soil Water Use Efficiency (WUE) target –
Productive crops achieving WUE of 16 kg/ha/mm each growing season and sowing of a perennial pasture phase in response to wet season and > 250 mm plant available water in the profile.

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