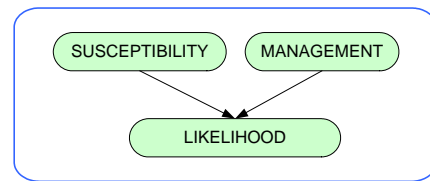


Wind Erosion Risk in the Mallee Region



Mapping wind erosion risk in the Mallee CMA region 2006 – 2007

A review of methods for monitoring and target setting for wind erosion in the Mallee was conducted by DPI (MacEwan, 2005). The final recommendations of this review proposed two risk based approaches to assessing wind erosion:

1. Remote sensing linked to ground data and a sound understanding of erosion processes, land use, climate, seasonal affects and farm management practices.
2. Using a land capability approach and knowledge of land use and land use practices affecting wind erosion, to identify areas likely to experience wind erosion under current land management.

Based on that review, a method was proposed that used the LUIM to assess the likelihood of occurrence of wind erosion for the Mallee CMA region. Remote sensing data will be interpreted to provide high resolution land use information to support the LUIM likelihood assessment.

Key achievements

This is currently an ongoing project. On completion of this project in 2007, the key achievements will be:

- Development and trial application of a method for acquiring high resolution land use information from remotely sensed data for the Mallee region.
- Collation of all relevant knowledge around the causes of wind erosion in the Mallee.
- Identification of areas in the Mallee likely to experience wind erosion under current land management systems.

Elements

The LUIM is being used for the Mallee wind erosion project to produce a likelihood map for wind erosion under current dry land agricultural land management in the region. A full risk assessment is not required for this project, thus the risk assessment framework (Figure 1) has been modified to include only the components of the risk assessment framework that deals with likelihood (susceptibility and management).

Process

The likelihood assessment comprises the following components:

1. Rating different landscape components (geomorphological units) in the Mallee for their susceptibility to wind erosion.
2. Mapping of land use using a combination of the currently available 1:100 000 scale land use map and the high resolution remotely sensed information that will be developed.
3. Collation of information on land management practices and their distribution.
4. Rating combinations of practices (predominantly broadacre cropping and grazing systems) for their influence the likelihood of occurrence of wind erosion under specific seasonal conditions.

Work completed

Management practice information has been collected in a series of workshops with regional experts. This consists of:

1. A list of specific dryland land use categories and definitions for the Mallee CMA region.
2. An inventory of management practices for each land use category that may have an impact on wind erosion occurrence, and estimated practice distributions for the region.
3. Classification of management practice combinations for their influence (beneficial, neutral, negative) on the occurrence of wind erosion.

Table 17 lists the land use categories and definitions identified for the Mallee CMA region by the experts.

Table 17 Dryland agricultural land use categories for the Mallee CMA region.

Land use type	Definition
Phase cropping	2-4 years of pasture (often sown pasture e.g. Medic and Lucerne is usually under-sown in the last crop) then a series of crops (2-4 years). 5% of cropping land in the Mallee.
3 year cropping rotation	Every 3rd year is a crop, normally a cereal i.e. pasture (often volunteer but maybe 5-10% may be sown with medic perhaps only once every 10 years), fallow, crop. Is being phased out.
2 year cropping rotations	Every 2nd year is a crop, normally a cereal i.e. cereal, break (volunteer pasture or fallow – spray before seed set, could be August depending on season), cereal, break. Occasionally comes back to two crops in a row. Tends to be in Northern Mallee.
Continuous cropping	Cropping every year. Could be a combination of all crop types but generally dominated by cereal crops. Tends towards southern Mallee.
Grazing native vegetation	Native vegetation is grazed by stock. No pasture improvements are carried out.
Continuous grazing	Grazing of improved pastures with no crop rotation or fallow period.

Table 18 gives an example of the inventory of practices for phase cropping. Management types are listed with practice options and their estimated distributions. The management types and each of the practices are also ranked for their effect on wind erosion (1 = least impact). This enables the development of list of management practice combinations in the LUIM that are ranked from best to worst.

Table 18 Phase cropping management practices that may influence the occurrence of wind erosion.

Management types *	Management practices	Estimated distribution of practices (% area of land use)	Ranking of practices
Pasture management (mixed medic pasture and lucerne) NB: driven by seasonal conditions Rating: 5-6	Intermittently grazed	60	1
	Set stocked	40	2
Cover type during pasture phase (cover type for 50% of the rotation) NB: driven by seasonal conditions Rating: 5-6	Mixed medic pasture	80	2
	Lucerne	20	1
Tillage Rating: 4	Minimum (maximum 2 cultivations - Autumn).	50	2
	Zero (disc) / direct drill (tyne)	50	1
Cover type during cropping phase (cover type for 50% of the rotation) Rating: 3	Cereal	75	1
	Pulse (peas / lentils / chickpeas / vetch)	15	4
	Pulse (lupins)	5	3
	Oilseed (Canola)	5	2
Stubble management Rating: 2	Stubble grazed	30	2
	Stubble ungrazed	30	1
	Stubble burnt	10	3
	Mechanical management of stubble (to knock down)	30	2
Sowing Rating: 1	Tyned sowing with harrows (eg. to spread and/or incorporate)	70	2
	Tyned sowing with press wheels	25	1
	Tyned sowing	5	1

*Management types and practices rankings: Practices are ranked for their influence on wind erosion. 1 = best for wind erosion.