

Soil conservation and land use: now and then

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“It was so black with dust the only time you knew a match was lit was when it burnt your hand”. This was a veteran farmers account of wind erosion during the 1944 drought and similar stories are told of events that occurred as recently as the 1982 drought. Thankfully, due to much improved farming practices, the current situation in the Mallee/Wimmera is not that bad.

Clearly, land use and management has a huge impact on the potential for soil loss due to wind erosion in drought years. Any practice that promotes increased soil aggregation and soil protection is a positive.

Land use: now and then

Current land use survey data from Natural Resources and Environment indicates that the extent of bare fallow is 3% of the Mallee region. It is expected that this figure will have significantly increased by March when the autumn survey is conducted but this highlights the major reduction in ‘long’ cultivated fallow. In 1984, of the 600,000 hectares sown to cereal crops in the Mallee approximately half of the area was sown on bare cultivated long fallow (data source Soil Conservation Authority – SCA). 20-50% of this area (60 – 150,000 ha) was affected by wind erosion.

The risk

Structure-less sands and poorly structured sandy loams dominate Mallee soil types comprising over 50% on area. With excessive cultivation and/or low levels of surface soil protection due to overgrazing or poor crop/pasture growth during drought events these soil types become very prone to erosion.

Wind erosion is most likely to occur when winds reach in excess of 35 km/hr. Since the 1 September 2002 the NRE weather station at Tyntynder (north of Swan Hill) has measured nine such days. The top speed measured was 57 km/hr on September 10. Last summer yielded a total of 22 days with wind speeds in excess of 35 km/hr.

Our summer climate is synonymous with hot dry conditions with frequent days of erosive winds. These erosive winds are often associated with short, intense bursts of rain and contrary to common thought can increase soil erosion. This type of rain can flatten fragile clods on the surface of sandy and sandy loam soils, further exposing them to the high winds associated with this weather.

Wind erosion can be deceptive in its development. A “smoking” fallow occurs when clay particles are lifting from the soil surface, yet there is no sand movement. This has a low impact on the soil.

A “sweeping” fallow occurs when sand particles are lifted and dropped from and to the soil surface. The impact of which exposes and lifts more clay particles into the air, resulting in soil loss.

Management options

Ridging operations should be implemented at the first signs of soil loss. It is important to adhere to ridge forming guidelines to ensure that the operation works. If the ridges need to be knocked down in autumn the operation should be considered a success.

The ridging implement must bring up cloddy material to ensure longevity of the ridge. Aim to get a ridge height of 30cm above the natural soil surface. The depth of the furrow is unimportant. A ridge 30cm high provides three metres of protection therefore a maximum of 3m between each ridge should be targeted. This also allows for repeat operations in between if necessary.

Ridges must be placed across the whole area drifting or likely to drift, preferably starting at the west side of the drift. A north/south orientation will provide protection from the majority of the prevailing winds.

On areas already drifting, cultivation should only be attempted if a rough cloddy surface can be achieved.

Failed crops provide cover no matter how poor. Whether it is crop or weed growth cover must be maintained. Stock should therefore be restricted to heavier less erodable soil types. Stock containment areas are specifically designed for this type of season.

Over the summer of 2002/03 soil conservation is as critical as summer weed control to ensure that your soil resource is in the best possible condition to produce high yielding crops in 2003.