Protection of agricultural land against erosion in the South East Region

Seasonal Report April 2010

Issued by:
Department of Water, Land and Biodiversity Conservation

Summary

- Good growing season conditions in 2009 provided high amounts of biomass leading to adequate surface cover levels over summer.
- Surface cover levels observed in March 2010 were the best recorded for March during the monitoring period of 2000 – 2010.
- The proportion of land protected from wind erosion in March 2010 was similar to the March proportions of the previous two years and higher than the March average for 2000 – 2010.
- Higher stubble loads will probably result in more stubble burning this autumn in preparation for seeding. This will increase the risk of erosion on susceptible land.

Seasonal Conditions

Wetter conditions in spring were interrupted by a week of maximum temperatures in the high 30^0C's in November however this was followed by cool weather and rain.

Fluctuations in temperature continued through December and January ranging from cool days to very hot ones.

Scattered rainfalls over summer and early autumn generated recordings of up to 20 mm in places.

Soil surface cover levels

The favourable growing season generated a high bulk of biomass so there were good surface cover levels at the start of summer.

Most crops senesced following the hot weather in November although there were still some unripe crops in December on heavier soils in the mid and lower South East.

Pasture feed supplies were high at the start of summer.

Harvesting was mostly finished in January. Sheep were turned onto stubbles as harvest finished. The later harvest time in the South East region means that the period over which stubbles break down or can be grazed is shorter compared to other regions

Rainfalls over summer promoted growth of perennial pastures such as lucerne. Some germination of annual pastures occurred after rain in March.

The Department of Water, Land and Biodiversity Conservation conducts a Land Condition Monitoring Program which assesses the risk of wind and water erosion on susceptible land in cropping areas four times a year. Surface cover levels and soil disturbance are visually rated during these surveys.

The surface cover rating system used is based on a scale of 1-8 where 1 = full cover and 8 = bare ground.

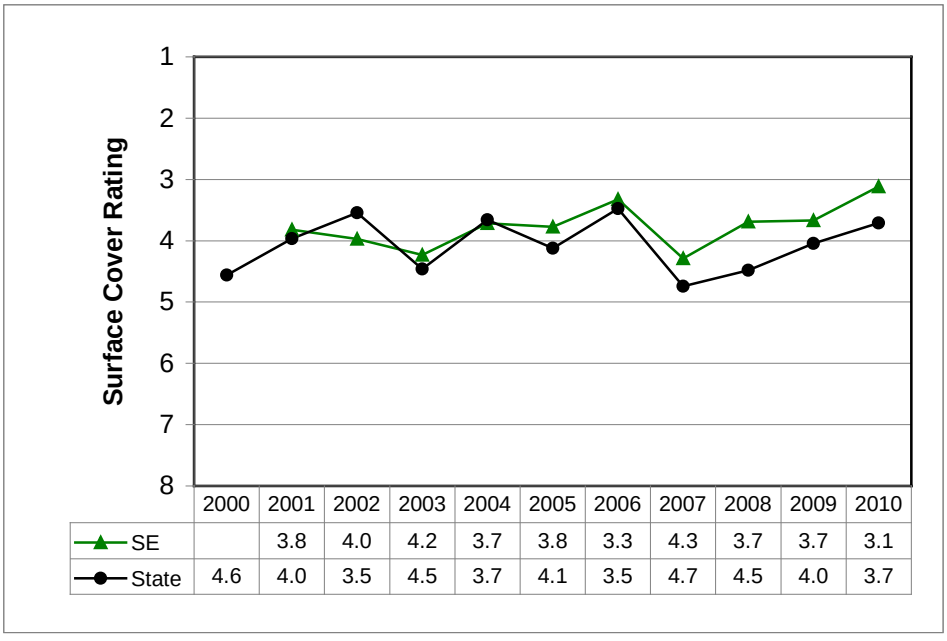
Assessments in October 2009 showed that surface cover levels then were better than the average October level observed over the monitoring period since year 2000.

Crop and pasture residues break down naturally over summer, particularly if there is rain that stimulates micro-organisms. Natural breakdown, combined with management practices, reduce surface cover levels. Based on the average change in cover ratings between October and March in previous seasons, it was anticipated that surface cover ratings in March 2010 would not be in the range considered to be at risk of erosion.

Data from the Land Condition Monitoring survey show that the mean surface cover rating in March 2010 was 3.1 (Figure 1). This is the best March surface cover level recorded since monitoring began. It is outside of the critical rating range for erosion risk (greater than 5) and better than the rating of 3.7 in March 2009 and the March average from 2000 to 2010 of 3.8. The change in the surface cover rating of 0.4 units from 2.7 in October 2009 to 3.1 in March 2010 is less than the average change in cover ratings from October to March for the period 2000 to 2010 of 0.7.

Figure 2 shows the change in surface cover in the 13 month period from March 2009 to March 2010.

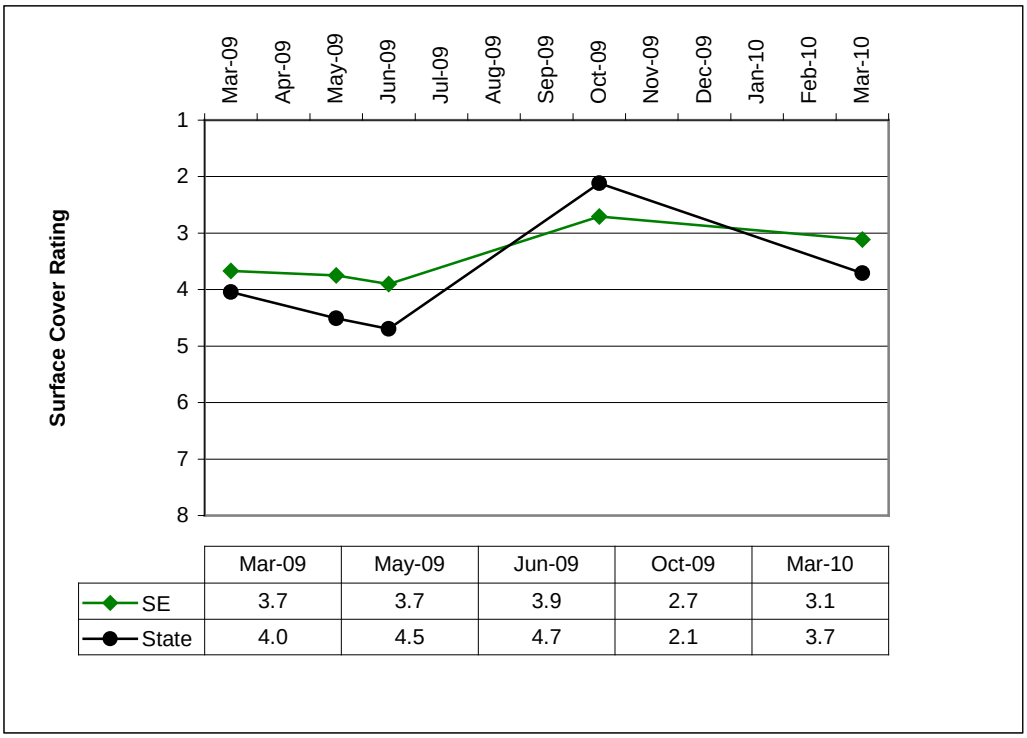
Figure 1: Mean Surface Cover Rating on cleared land in March in the South East Region and South Australia for the period 2000 - 2010



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
SE		3.8	4.0	4.2	3.7	3.8	3.3	4.3	3.7	3.7	3.1
State	4.6	4.0	3.5	4.5	3.7	4.1	3.5	4.7	4.5	4.0	3.7

Note: Cover rating of 1 = full cover; 8 = bare

Figure 2: Mean Surface Cover Rating on cleared land in the South East region and South Australia from March 2009 to March 2010



	Mar-09	May-09	Jun-09	Oct-09	Mar-10
SE	3.7	3.7	3.9	2.7	3.1
State	4.0	4.5	4.7	2.1	3.7

Note: Cover rating of 1 = full cover; 8 = bare

Surface cover will deteriorate more in the next few weeks, increasing the risk of erosion. The length of the risk period will depend to some extent on the timing of break of the season rains that will produce enough plant growth to protect the soil from erosion.

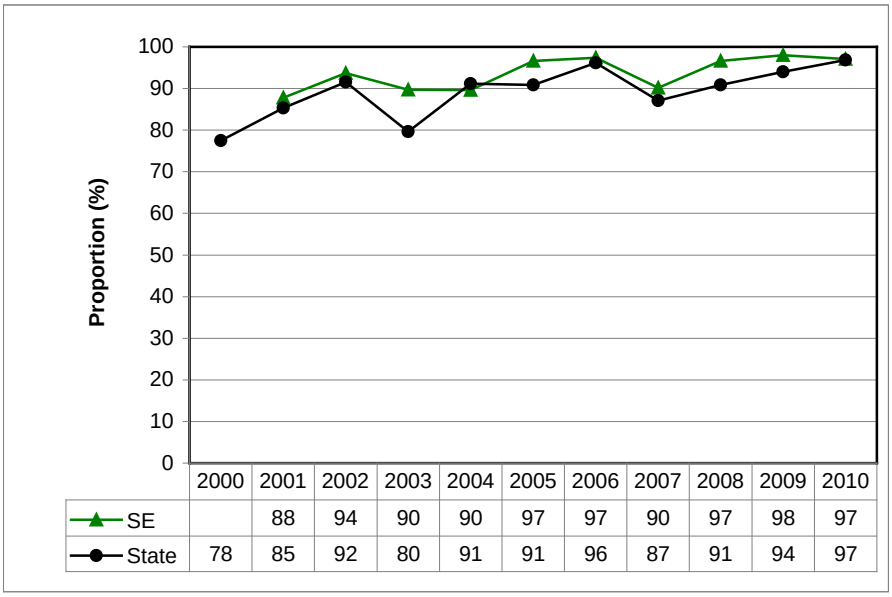
Protection of land from wind erosion

The area of cleared land inherently susceptible to wind erosion due to soil type, rainfall and topographic features (Class III_a, IV_a and V_a) is approximately 540,000 ha or 25% of cleared land in the South East NRM Region. This is found on the sandier soil types throughout the region but cropped areas of the upper South East are at greater risk because their soils are loosened by tillage.

In March 2010, 97% of the land was protected from wind erosion, which is the about the same as March last year (Figure 3). The average proportion of land in the region protected from wind erosion in March for 2000 – 2010 is 94%.

At this time of the year, the main erosion risk is associated with the lack of surface cover as there is little soil disturbance due to tillage.

Figure 3: Proportion of cleared land adequately protected from wind erosion in March in the South East Region and South Australia for the period 2000 - 2010



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
SE		88	94	90	90	97	97	90	97	98	97
State	78	85	92	80	91	91	96	87	91	94	97

Conclusions

Good conditions during the growing season in 2009 resulted in a high quantity of biomass which provided good surface cover levels in October. This cover did not decline significantly over summer resulting in the best cover levels for March for the monitoring period 2000 – 2010 being observed this year.

The proportion of land protected from wind erosion in March 2010 was similar to the proportions in March for the previous two years and greater than the average proportion of land protected from wind erosion for the period 2000 – 2010.

Scattered rainfalls over summer boosted growth of perennial pastures, and rain in March caused some germination of annual pastures.

Some pasture land in the mid and upper South East was heavily grazed, leaving powdery, loose soil susceptible to erosion. Continued grazing of these areas could result in erosion, however this is only a small proportion of land in the region.

It is unlikely that surface cover levels across the region will decline to a level where they are insufficient to provide protection against erosion, unless they are very heavily grazed, burned or buried by cultivation.

The quantity of stubble residues could cause some farmers problems at seeding time if it is too thick too work through. Farmers with significant residue levels have started burning paddocks to reduce cover levels.

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http://www.dwlbc.sa.gov.au/land/monitoring/current_reports.html