



Protection of agricultural land against erosion in the South East Region of South Australia

Seasonal Report November 2009

Issued by:
Department of Water, Land and Biodiversity Conservation

Summary

- Crop and pasture growth has been good in the South East Region this year resulting in reasonable soil surface cover levels.
- The proportion of land in the region protected from wind erosion in October is at the average for the monitoring period.
- If surface cover levels decline this summer at the average rate experienced since monitoring began, by March 2010 they should still be sufficient to protect against erosion.

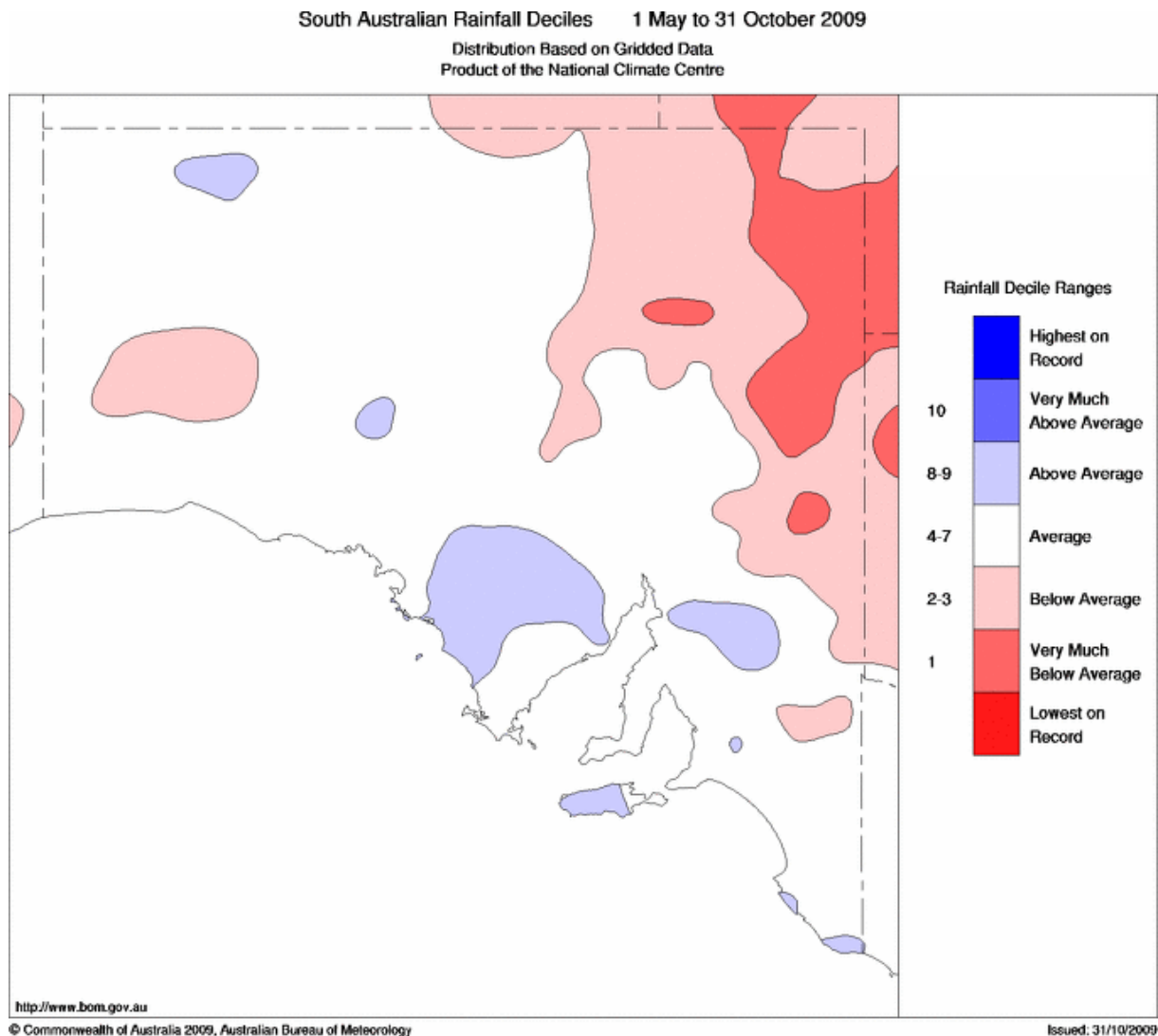
Seasonal Conditions

Rainfall deciles for the period May to October 2009 show that most of the South East Region had average rainfall for the growing season, with small areas around Beachport and Port MacDonnell experiencing above average rainfall (Figure 1).

Rainfall late in April triggered the start of annual plant growth. There were generally light rain falls through May into June but in July, August and September, rainfall increased. Waterlogging became apparent in some areas during July and this persisted through to September but the majority of cropping land was not seriously affected.

Cumulative growing season rainfall data for selected sites across the South East Region are shown in Appendix 1.

Figure 1:



Soil surface cover levels

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 the cropping areas four times a year. Surface cover levels and soil disturbance are visually rated during these surveys. The rating system used is based on a scale of 1-8 where 1 = full cover and 8 = bare ground.

Stubble burning was widespread in the region during April, reducing cover levels. Rain towards the end of the month caused a flurry of paddock preparation activity for sowing. The lack of rain during May stalled these activities, however in June, sowing was largely completed and crops and pastures emerged and grew well.

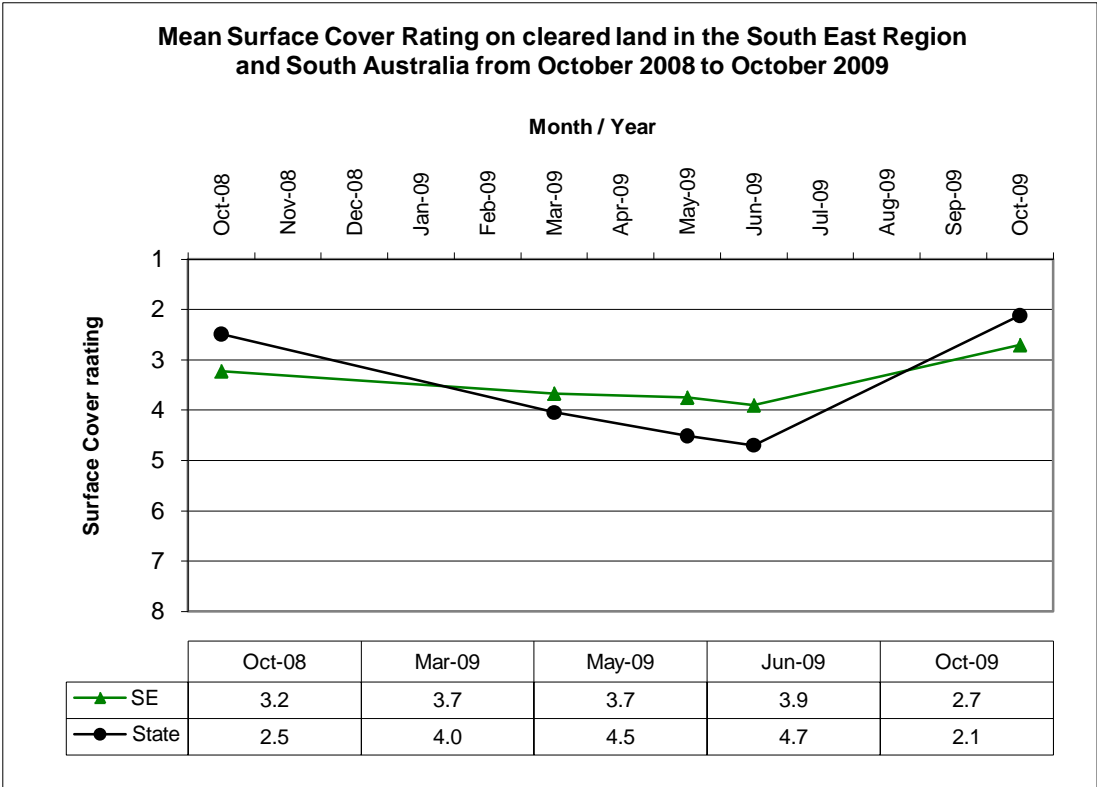
Good growing conditions occurred during July, August and September, with most production areas reported as looking their best for years.

Appendix 2 shows estimated pasture growth in kilograms per hectare per day for some district councils in the South East during the growing season. These estimates

are derived using remote sensing of plant biomass combined with climate and soil data, and are available from the CSIRO's "Pastures From Space" program. The effect of the warm conditions in late spring on plant growth is evident in graphs from most district councils.

The change in surface cover levels from October 2008 to October 2009 is shown in Figure 2. Cover levels in October this year were better than in October 2008. A Rating of greater than 5 is regarded as being inadequate for protection against erosion. Cover Ratings throughout the year in the South East overall were less than 5 so the region generally had adequate cover for erosion protection.

Figure 2:

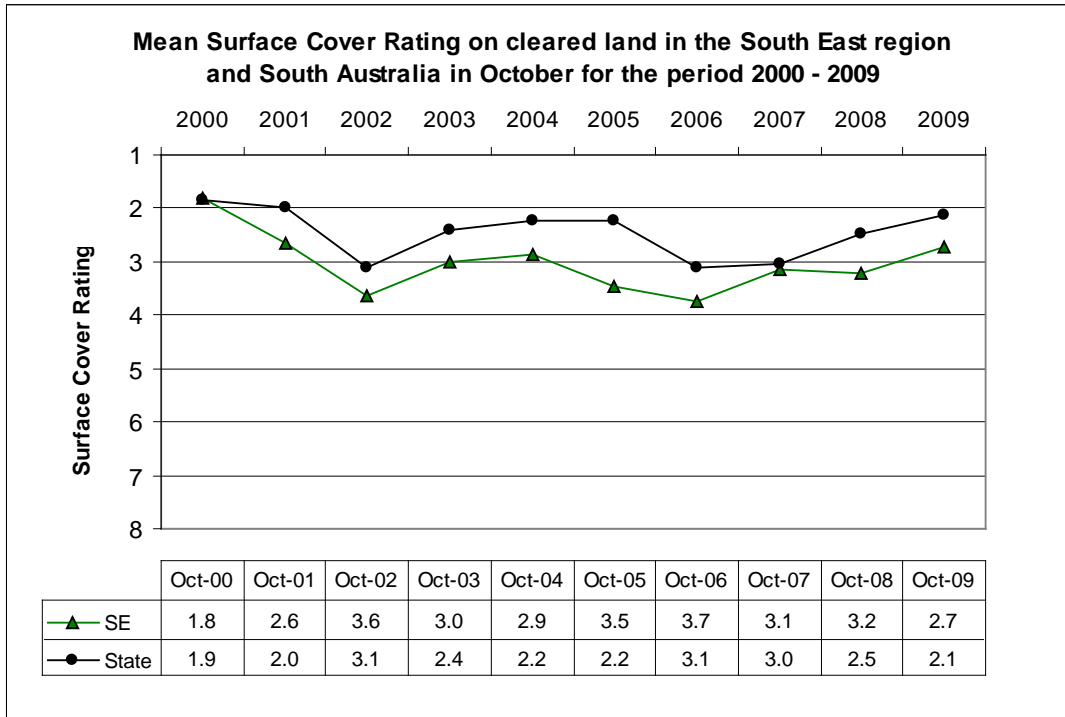


Note: Cover rating of 1 = full cover; 8 = bare

Surface cover is usually at its maximum in October. Cover levels decline over summer and into autumn as plant residues break down. Grazing reduces cover levels further. The average change in Cover Rating between October and March in the South East Region is 0.8 since monitoring began. If this change occurs this summer, the average Cover Rating in the region in March 2010 is likely to be around 3.5, less than the critical rating of 5.0, above which land is considered to be at risk of erosion.

Figure 3 shows the trend in surface cover levels in October since 2000. The average Surface Cover Rating of 2.7 in October this year is around the average of 3.0 over the monitoring period from 2000 - 2008.

Figure 3:



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

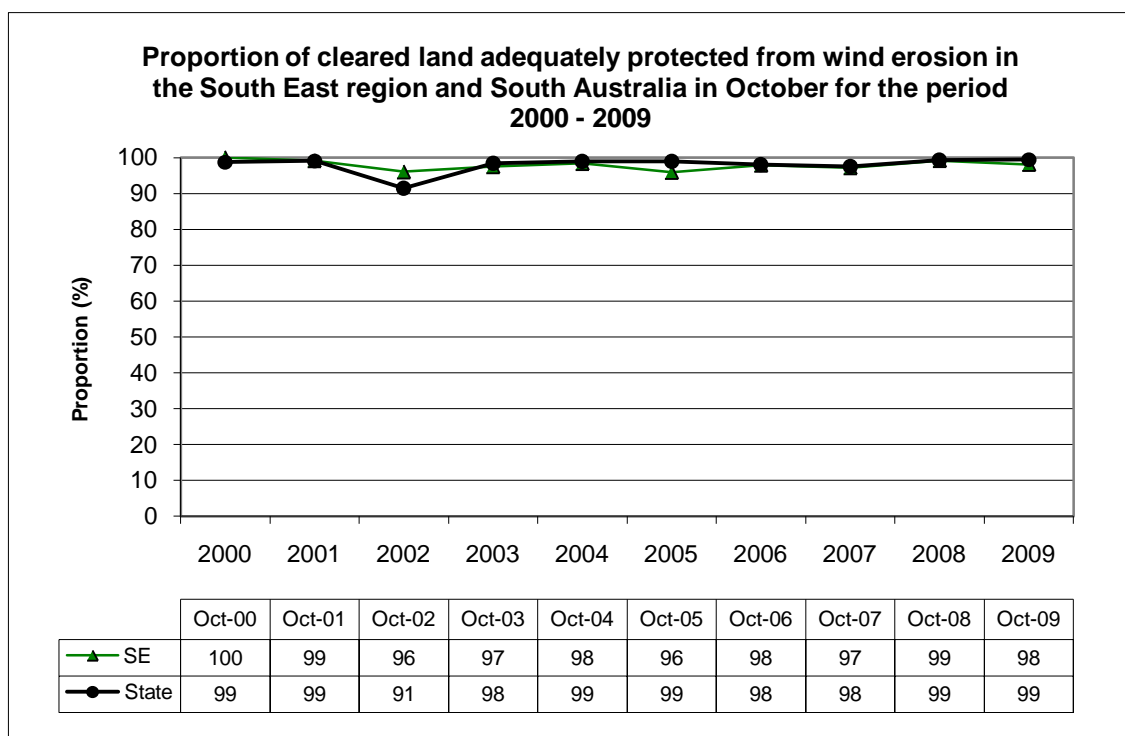
Protection of land from wind erosion

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 (new regional boundaries as at July 2009). This is mainly found on the sandier soil types of the Upper South East .

In October 2009, 98% of the land was protected from wind erosion, which equals the average since monitoring began (Figure 4).

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 4:



Conclusions

Crop and pasture growth has been good in the South East Region this year resulting in reasonable soil surface cover levels.

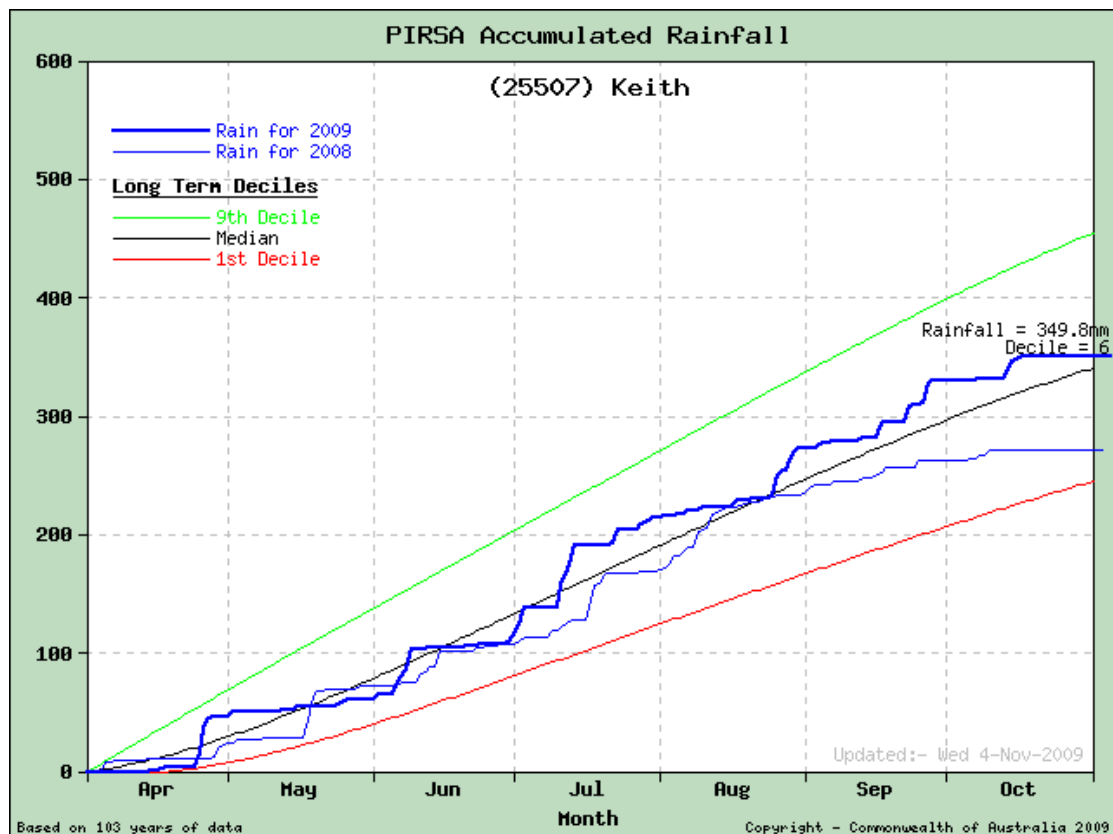
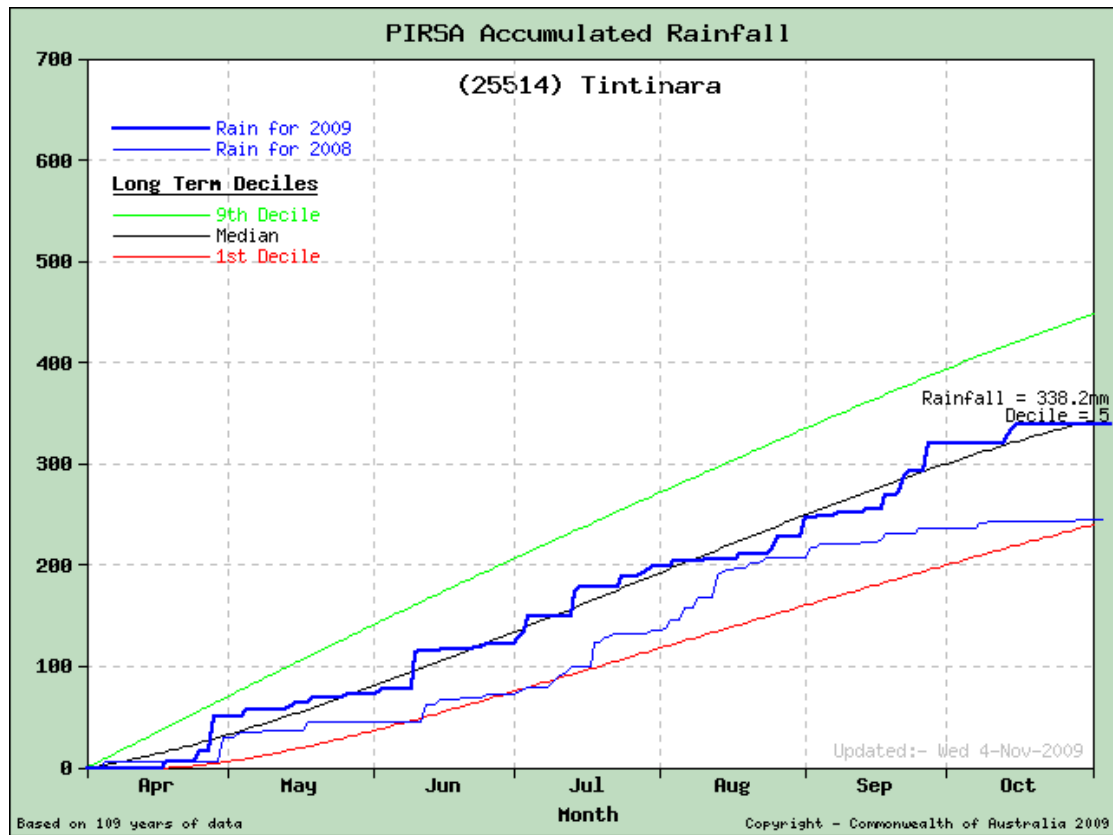
The proportion of land protected from wind erosion is at the average for the monitoring period.

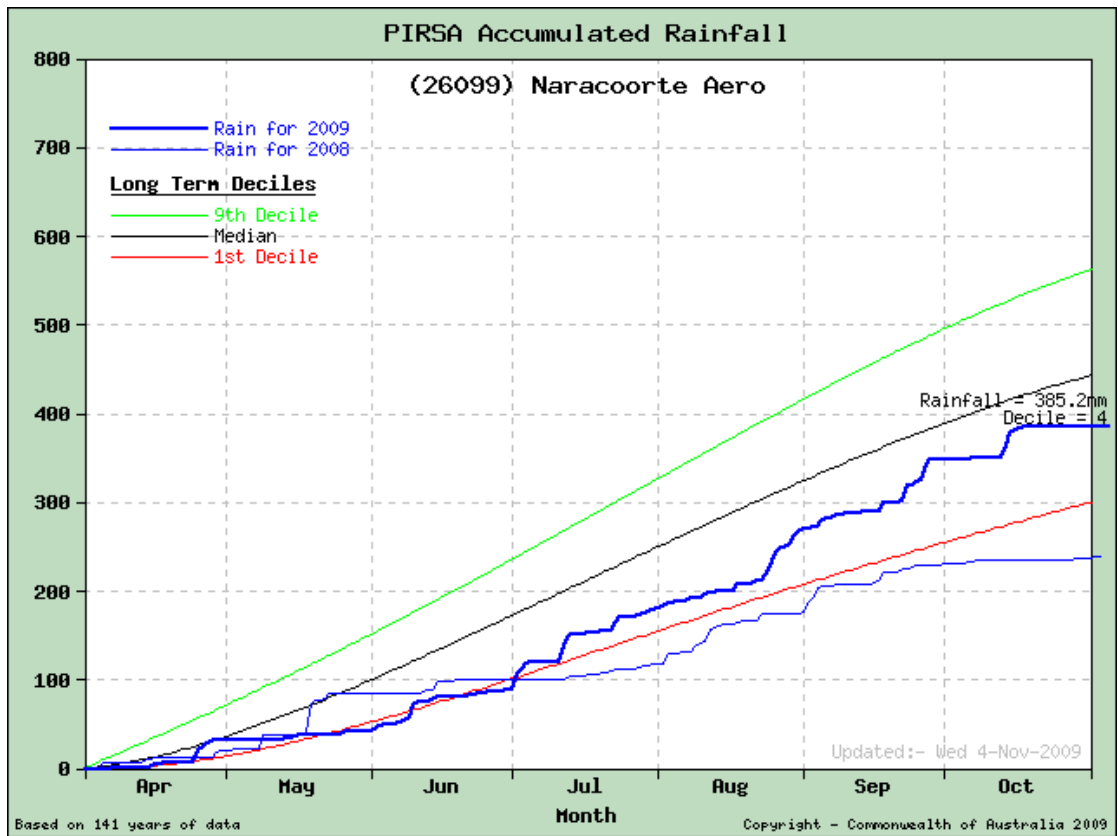
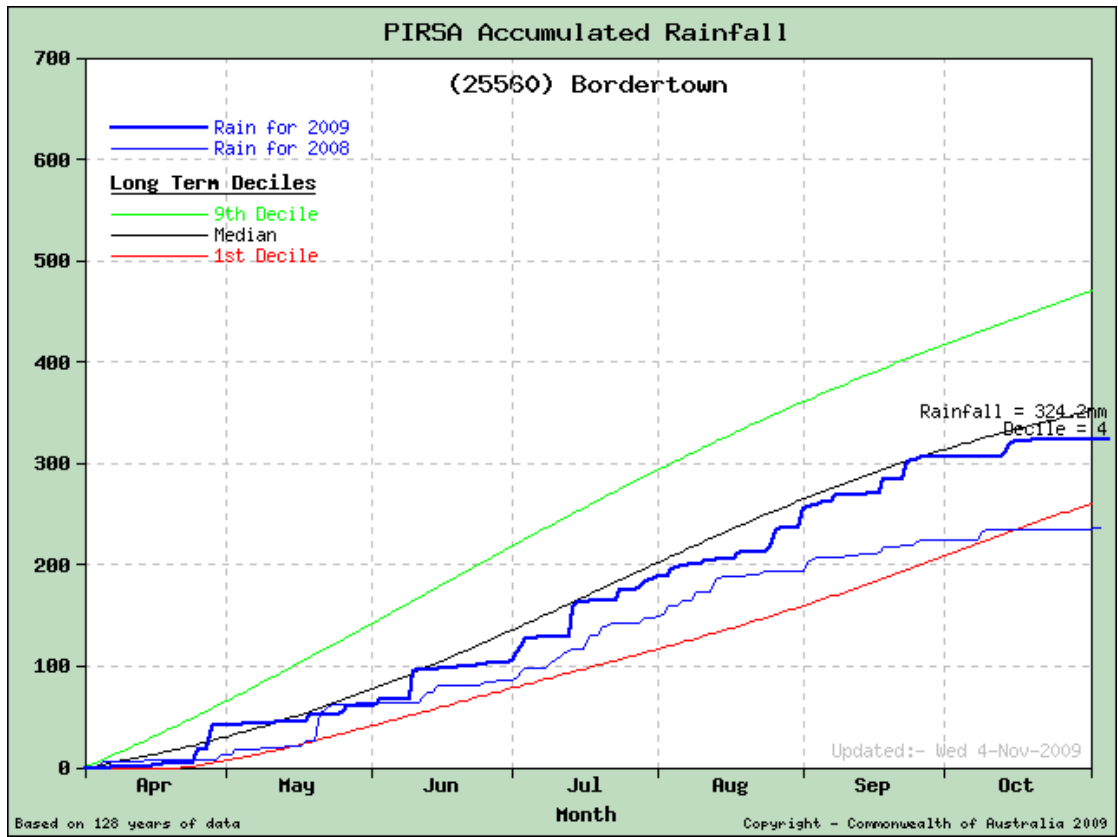
At this time of year, the main erosion risk is usually associated with lack of surface cover as there is little soil disturbance due to tillage. Soil surface cover levels will decline as the plant residues break down naturally and are grazed. Tillage can also reduce cover levels as most tillage implements tend to break up and / or bury plant residues. If the cover levels decline this summer at the average rate experienced since monitoring began, by March 2010 they should still be sufficient to protect against erosion.

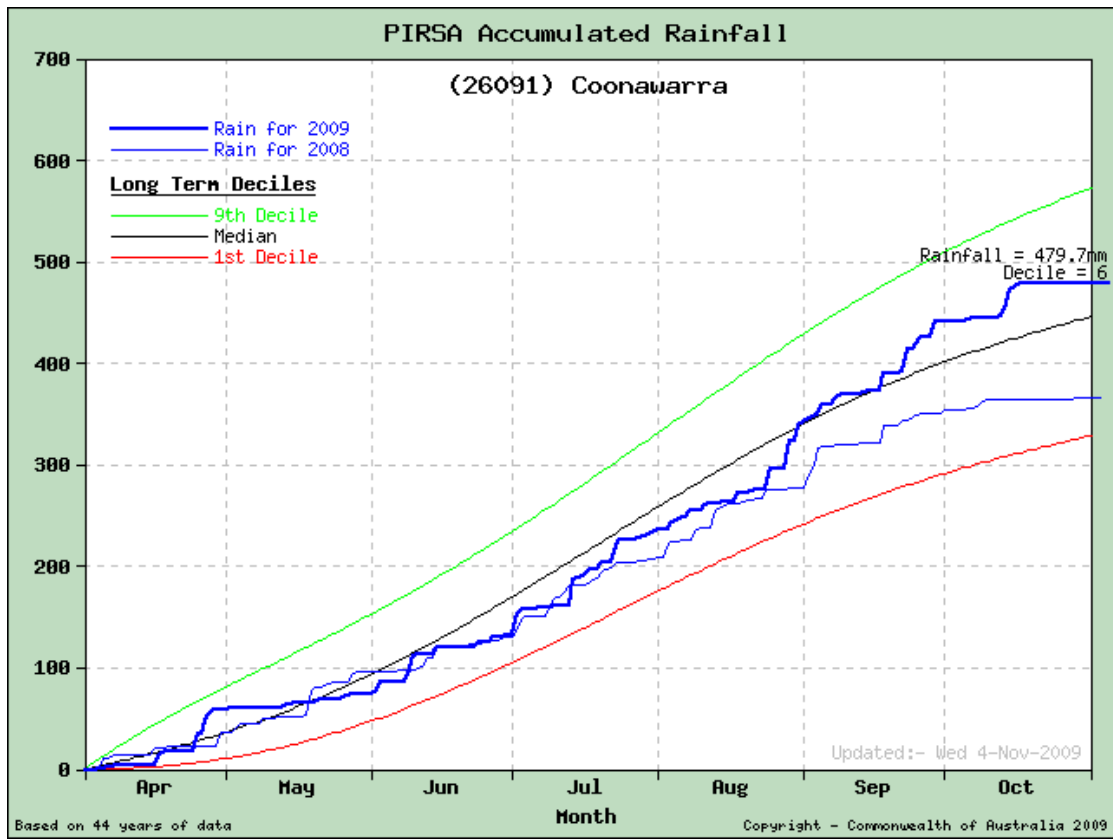
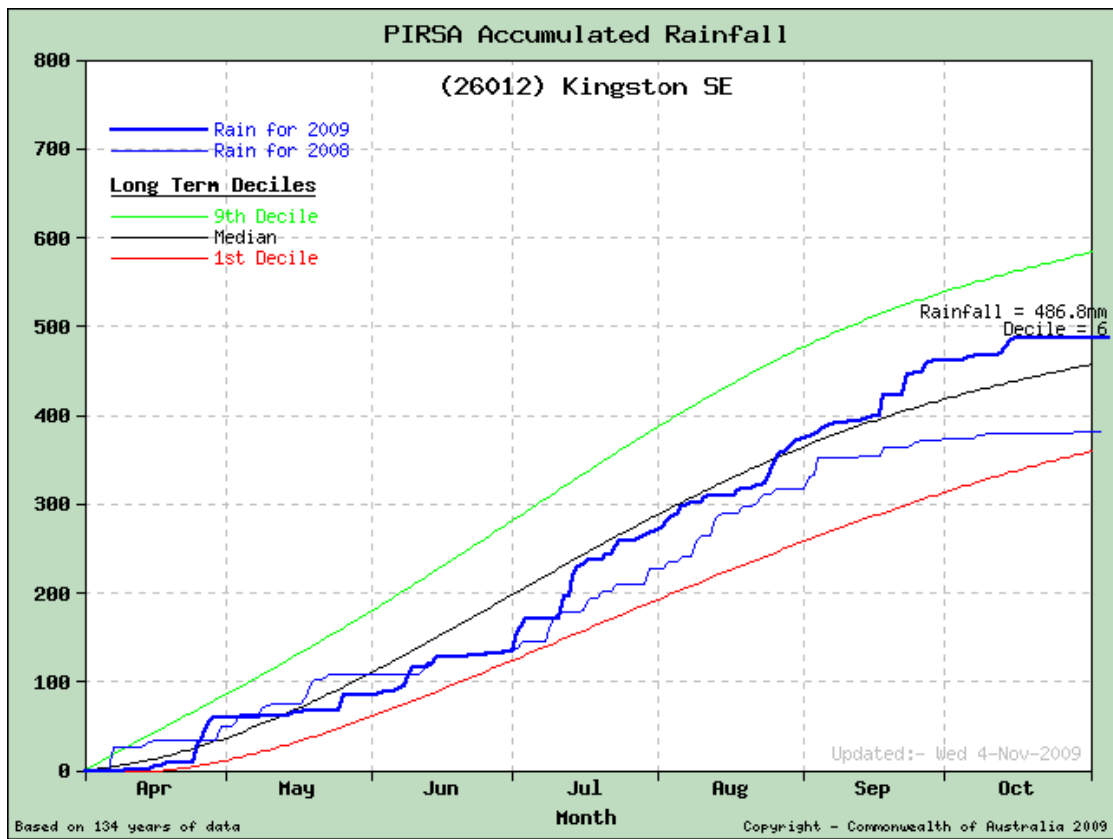
Intense grazing of pastures over summer can reduce surface cover levels significantly so management is required to ensure that adequate levels are retained. Cultivating land as close as practical to, or at seeding time, will leave cover on the soil surface for a longer period of time. Summer rains can stimulate plant growth leading to better cover of the soil, however soil moisture retention and weed control is achieved by killing off this growth. Using herbicides rather than tillage to do this will be better for retaining surface cover. Where summer plant growth is grazed, attention will still have to be paid to maintaining adequate surface cover.

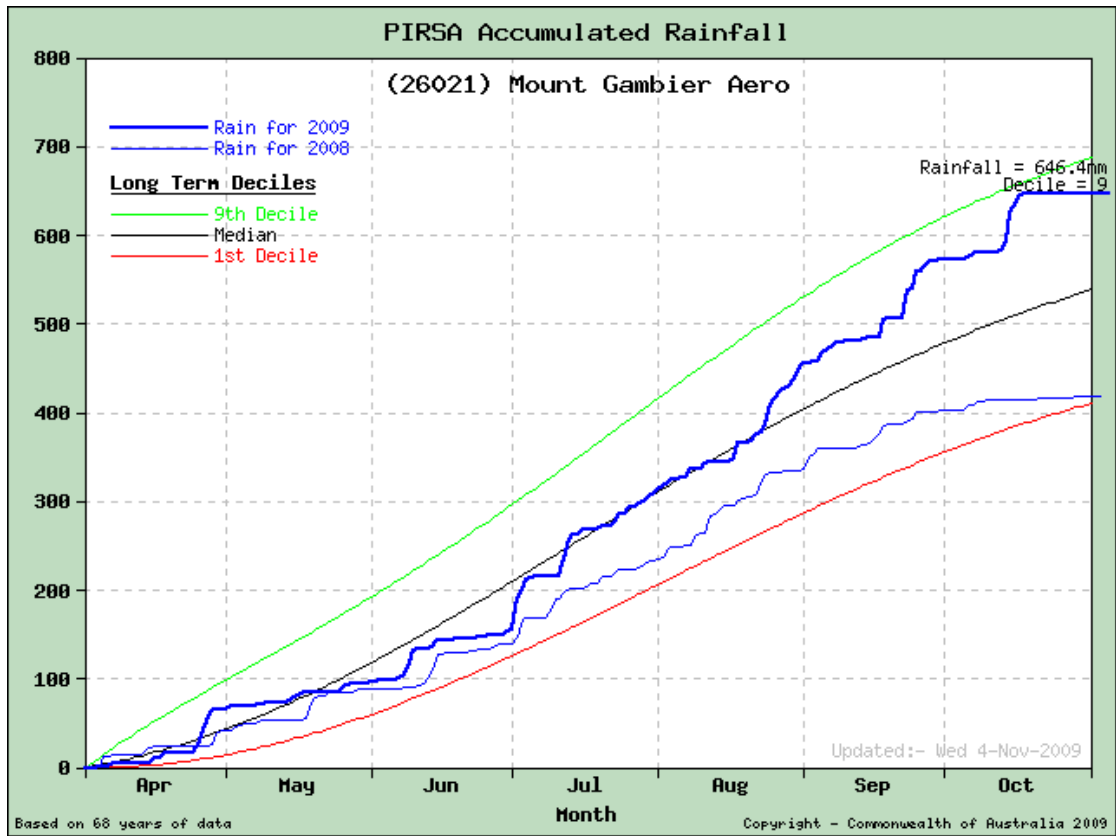
Appendix 1

Cumulative rainfall data for selected sites across South East Region
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Appendix 2

Estimated Pasture Growth Rates (kg/ha/day) during growing season for some district council areas within the South East Region
 CSIRO Pastures from Space Program (www.pasturesfromspace.csiro.au)

