

Sustainable land management- Sea Lake, Hopetoun and Waitchie

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Take Home Messages

- Test your soil- soil testing individual paddocks for nutrient status and plant available water at the start of the season allows you to determine the paddocks yield potential and requirements. Knowing this information at sowing can assist in making decisions throughout the season.
- Yield Prophet®- the crop simulation model is a great tool for assessing crop risk and predicting potential yields.

Background

In 2006 seven Demonstration Sites funded by the National Action Plan for Salinity and Water Quality and the National Landcare Program continued to be used to demonstrate and measure the potential impact of best management practices for dryland agriculture in the Mallee. These demonstration sites at Sea Lake, Hopetoun, Waitchie, Manangatang, Carwarp, Cowangie and Walpeup represent a range of land and farming systems. Various aspects of sustainable agriculture such as salinity management, soil erosion and soil health form the basis of investigation at each site. The sites also provide a focus for local Landcare Groups' activities.

BCG, in collaboration with the Department of Primary Industries and the Mallee Catchment Management Authorities, undertake monitoring and reporting at each site. BCG is responsible for monitoring the three southern sites, Sea Lake, Hopetoun and Waitchie. Monitoring throughout the 2006 season compared soil variation with crop growth and plant water use. The erosion risk in each paddock was also measured. Yield Prophet® was run at each site throughout the season to monitor yield probability, soil water, crop stress and the risk and return associated with proposed fertiliser applications at different stages throughout the year.

Sea Lake Demonstration Site

The site, situated 1 km East- South East of the Sea Lake township, is 118ha in size. In 2004 the paddock changed to a No Till farming system to try and reduce erosion and increase weed control, by retaining stubble and keeping the weed seeds on the surface. The paddock, sown into Barley stubble on 12th May with Yitpi wheat, has quite distinct soil types. Determining the best fertiliser management strategy across the paddock and different soil types was one of the assessments carried out in 2006. Yield Prophet® was also run at two points in the paddock with different soil types to look at the potential yield and risk associated with fertiliser treatments.

Hopetoun Demonstration Site

The Hopetoun site is a paired paddock site, where a Lucerne pasture is compared with an adjacent cropped paddock. The site consists of sandy hills and rises moving into sandy clay loams and light clays with large amounts of limestone on the surface and through the profile on the lower slopes and depressions. The depressions in these paddocks have areas of saline discharge and bare ground. In 2006, the 2005 cropped paddock was sown to Morava Vetch @ 40kg/ha with no fertiliser and used as a green manure crop to hold the soil, provide a break crop and help control the grass weeds. One of the demonstrations at the site in 2006 looked at potential pasture alternatives to Lucerne. The demonstration was designed to investigate

establishment, growth and persistence of alternative species; their suitability to the soil type, saline areas and the district.

Waitchie Demonstration Site

The Waitchie site, like Hopetoun is a paired paddock site, the Lucerne pasture is compared with an adjacent cropped paddock. Both paddocks include an area of Copi (gypsum) hills caused by deposits of calcium sulphate (gypsum) and sodium chloride from the Timboram and lake systems then move down slope to light clay flats. The Lucerne paddock also has a large saline discharge area which has been fenced and planted to trees. In 2006 the cropped paddock was dry sown and direct drilled on 10th May with Yitpi wheat.

In 2006 two demonstrations were set up. One was to look at new and existing crop and pasture variety possibilities. The demonstrations investigated the establishment and growth of new and existing crop and pasture varieties and their suitability to the soil types within the district. The second demonstration was a varied fertiliser demonstration which was sown by the landholder in the cropped paddock to look at grain yield, quality and soil type at the site.

Discussion

The conditions of the 2006 season saw that the results from the demonstrations at the three sites were limited. Results from the work carried out, is currently under review and were not available at the time of publication.

Preliminary analysis of the fertiliser trials showed that due to the poor growing season conditions applying fertiliser failed to produce any significant cost effective responses. Given the year it was not cost effective to apply any additional fertiliser. It will be important to note if there is a benefit from the residual fertiliser seen in 2007. Soil testing prior to sowing will give a better indication of what has remained from the 2006 season.

The three sites were used to describe the potential use of Yield prophet as a management tool. Yield Prophet can guide growers in determining their level of inputs both at the start and during the season. The 2006 season has been important in demonstrating that each time Yield Prophet is used, the tool produces a range of probability outcomes, dependent on the seasonal rainfall from that point in the season onwards whilst taking into account the seasonal conditions to date. It is up to the grower to make the decisions on whether he should take optimistic or pessimistic views of the likely outcome to the season. The grower should be guided by a range of factors, including long range weather forecasts and his ability to tolerate financial risks associated with high input costs.

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