

Working with your soil's potential.

Varying input by soil type does pay; the Mallee Sustainable Farming Project has the results to prove it. Sixteen farmer groups in the low rainfall districts across SA are using the innovative 'Your Soil's Potential' program to put these results into practice.

"In the low rainfall districts stored soil plant available water and nitrogen can play a huge part in how a crop finishes, but these vary with the soil clay content and subsoil constraints," explained Rural Solutions SA field crop consultant Chris McDonough.

Working with CSIRO scientists, funded by GRDC through the Mallee Sustainable Farming Project and State Focus Project, Chris has developed the 'Your Soil's Potential' program to help growers better understand the nitrogen and soil moisture content of their different soils before seeding.

Focus paddock information from soil samples collected across many soil types over five seasons have been modelled by CSIRO to produce a decision support tool, the 'Mallee Calculator'.

The free calculator available from www.msfp.org.au, allows growers in low rainfall areas to combine information on stored soil moisture and available nutrients with a modified French Schultz calculation (adjusting for time of sowing and varying evaporation loss), along with local rainfall decile information to more objectively manage their seasonal risk and opportunities.

Deep soil samples (to 80cm) are taken by soil type in late March early April. This includes testing for fertility, texture, soil moisture and root barriers such as boron, salinity, high pH and its cation exchange capacity.

A soil sampling kit is available for commercial agronomists. Samples are sent to Rural Solutions SA for analysis and a 'Your Soil's Potential' report.

"Growers use the information in the 'Your Soil's Potential' report with the Mallee Calculator to produce a more robust indication of potential yield and to decide how much nitrogen to use and whether to split applications."

For example in 2003 a grower near Swan Reach targeted 2.3t/ha of malt barley, requiring 55kg/ha of nitrogen. Results from the deep soil tests showed no subsoil barriers and 26mm of plant available stored water. The paddock was sown early. To put the system to the test 80kg/ha of DAPzinc were applied to part of the paddock; this area yielded 2t/ha of feed quality barley (low protein). On the remainder DAP plus 90kg/ha urea were applied at seeding. This area produced 2.7t/ha malting barley. Based on 100ha paddock this represents an improvement in gross margin of \$14000.

In 2004 a Loxton grower soil tested numerous paddocks and soil types. Generally, available nitrogen was adequate for his targeted yield potential. Without the soil tests 30kg/ha of nitrogen, the standard application, would have been spread. Applying no urea saved \$18000 in what turned out to be a very low yielding year due to the hard finish.

The calculator can be used during the year to reassess nutrient decisions and is continuing to be developed to address other scenarios such as a good finish following a hard start and vice versa.

There are some exciting developments being trialled this year. EM38 surveying and variable rate seeding are being combined with pre seeding soil sampling to manage paddocks based on spatial difference in potential.