

The 2009 Mallee Challenge Paddock

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Various locations in the South Australian Mallee

Background:

Last season the “Mallee Challenge Paddock” program involved about 40 SA farmers setting up split paddock demonstrations to try and find some answers to various issues in sustainable farming. As MSF members they were able to access highly subsidised soil, root disease and leaf tests, giving them key information about what problems may occur, or what management strategies might help.

As a result, 5 regional prize winners of \$250 Toolboxes (with tools) were chosen, based on the importance of the issue for sustainable Mallee farming, how well the demonstration was conducted and consequently reported. The SAMDB NRM also donated a prize of \$500 for the overall Mallee winner.

Regional Toolbox Prize Winners:

Peter Loller of Borrika who wanted to know if the areas he had clay spread were suffering manganese deficiency. After testing he found that he not only had deficiency where he clayed, but also on his non-clayed red ground. He applied 5.7l/ha of 17.3% manganese complex or approx. 1kg/ha of manganese, costing about \$7/ha. The yield was 0.825t/ha in the control, and 1.0t/ha where the manganese was sprayed. This increased barley yield resulted in \$22/ha extra income. Peter will continue to test more paddocks this coming season.

Wade Nicholls of Pinnaroo tested 4 varieties in a paddock to see which might be the best option for wheat on wheat. Catalina resulted in the highest yield of 1.79t/ha, followed by Wyalcatchem (1.73t/ha), Gladius at 1.70t/ha and finally Espada at 1.55t/ha. However, after last years 85mm harvest rainfall only Wyalcatchem and most of his Catalina passed the falling numbers test, making them clearly the most profitable at \$190/t, against the downgraded feed wheat price of \$160/t.

After grading his Tanami canola to maintain excellent seed quality, he sowed it on 60cm row spacing at 1kg/ha which gave a 20% yield increase over sowing 2kg/ha at 60 or 30cm row spacings. This was worth an extra \$50/ha income, which means Wade will definitely giving this seeding strategy a go.

Mark Stoeckel of Paringa, who tried various fertiliser rates, wheat varieties and tillage treatments across different soil zones on a paddock he has had zoned through EM38 mapping. Mark was aiming to tackle rhizoctonia, test the potential benefits of moving to variable rate farming, as well as explore the worth of cutting costs and better managing risk. While this was a fairly complex arrangement, some key findings included:

- the benefits of zinc application
- 25kg/ha of urea to all DAP rates from 0-50kg/ha gave a dramatic yield response and with 30kg/ha DAP giving the best gross margin.
- While zero fertiliser generally gave the best gross margins across the zones, the highest yields were obtained from a base rate of 50kg/ha DAP (33% ave yield increase). This suggests that while dramatically cutting fertiliser may be okay in the short term in low yielding years, it will not be sustainable and could be quite costly for him in years of higher potential.

Mark said that he has also gained a clearer understanding of how to set up trials this season that will better target his issues and give him even more meaningful results.

Dean Wormald of Caliph wanted to explore some different fertiliser options that would indicate which strategies are going to be the most efficient in light of increasing fertiliser costs for his intensive farming system. Each of the fertiliser rates were set so that the cost per hectare was the same, therefore yield differences would determine the result. Soil tests showed that soil P levels were adequate at 22ppm, with an organic carbon of 0.8 and estimated plant available N in the rootzone of 36kg/ha and that an extra 25kg/ha N would be required to target a 1.5t/ha crop at 12% protein. All areas were seeded with Wyalcatchem wheat at 45kg/ha and 30kg/ha MAP+3%Zn. After a very difficult growing season, Dean found the area with 30kg/ha urea yielded 0.70t/ha, while 30kg/ha SOA produced 0.66t/ha (6% less) and a seed dressing product with 10lt/t VAM and 5kg/ha humates yielded 0.63t/ha (10% less).

Tim Starkey of Cambrai was able to test 2 no till seeding machines into a paddock with high rhizoctonia soil inoculum and found that the Morris Contour Drill with increased soil disturbance with fertiliser placement below the seed gave 8% yield advantage and confirmed his move toward purchasing this machine. He was also able to test a range of fertilisers (including fluids) and seed dressings and found that liquid zinc in furrow with granular fertiliser gave the best return and that his soils were not responsive to liquid P.

Overall Winners:

Peter Loller of Borrika and Wade Nicholls of Pinaroo were joint overall winners of the 2009 Mallee Challenge Paddock.

Other points to note:

While paddock results were not all scientifically replicated trials, they have often given good indications of things that may require further investigation or where farmers can easily improve their management. One of the main benefits has been farmers getting out, doing tests and trying things out on their own farms. All farmers are to be congratulated for having a go, especially those visited by farmer groups during the year.

Other trial work has resulted from some of these paddocks, including a SARDI Variety Trial for low phosphorus soils and P response.

General trends also emerged. It was interesting that out of about 30 root disease soil tests conducted, all but one came back with high rhizoctonia, no matter what soil type or farming system. The run of dryer winters has generally favoured this disease over its microbial competitors that require a higher crop growth and fresh carbon turnover to build up. Despite this disease potential being widely present, it did not always cause major visual crop symptoms in paddocks. This may have been due to a number of reasons:

- The greater use of early sowing and deep working narrow points mean that the primary roots are quickly growing away from the disease, and the disease tends to attach the secondary crown or surface roots as they develop when the soil temperature has lowered in June. Although rhizoctonia is present, it does not result in the classic distinct patches that we are used to seeing when the primary roots are lost.
- Many intensive farming systems with high residue retention, deeper working points and good seed placement and adequate fertility find that these things all work together to overcome the disease presence within the crop. It is worth mentioning that one Copeville farmer, (long with other anecdotal evidence) has noticed significantly less rhizoctonia with slightly deeper seed placement. Whether this was due to particular sowing conditions last years, or a general trend worth pursuing remains to be seen.

Future Directions:

The Mallee Challenge Paddock will continue in South Australia 2010 and will be extended to Victoria and New South Wales.

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