

Improved crop establishment through technological innovation

Background

This project was developed to demonstrate improved crop establishment using the ProTrakker, a hydraulically controlled steerable drawbar with reported accuracy of 0-2cm.

It builds on CSIRO trial work at the Mallee Sustainable Farming trial site at Lowaldie in 2014 where small plot trials tested on-row and inter-row seeding across soil types.

The results of the 2014 trial work showed timely on-row (or near-row) sowing could measurably improve establishment and early biomass, particularly on water repellent sandy soils.

The method

The 5ha demonstration plot was sown on the 22nd May 2015 at the Lowaldie Mallee Sustainable Trial site. The demonstration plot compared crop establishment using RTK auto steer and the ProTrakker.

Above – The diagram of the demonstration design. The trial site was sown with two different crops, barley and canola, in separate machinery passes to enable a comparison of edge row and mid row sowing within the one season.

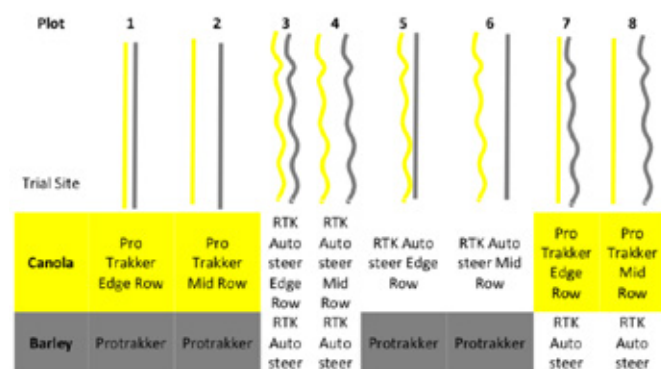


Figure 1. Pastures from space screenshot of case study farm (Nevaome)

The results

The ProTrakker demonstration proved that on-row sowing could be implemented on a commercial scale.

The following observations were also made:

- The advantage of the ProTrakker is precision seed placement. The steerable drawbar and customised seed boot allow for seeding into the side of the previous year's crop row.
- Seed is sown into the residual fertiliser and moisture band to improve crop establishment and ground cover, minimising the risk of soil erosion in vulnerable Mallee soils.
- The ProTrakker has a high level of accuracy, which facilitates seeding in high stubble loads by minimising stubble disturbance and blockages.

This technology is demonstrating advantages over other guidance technologies that only steer the tractor.

The ProTrakker demonstration site was show cased at the Mallee Sustainable Farming Field Day in September 2015.



Paddock scale on-row seeding.



Paddock scale on-row seeding.



Recommendations

This method could be used to more reliably plant break crops in dryer soils than usual and also consider latticing legumes such as peas onto high cut cereals to aid with harvesting and increase ground cover post harvest.

Conclusion

The adoption of this technology by South Australian Mallee farmers is expected to have many benefits. These include better crop and pasture establishment especially in non-wetting soils, and a reduction in soil erosion on vulnerable Mallee soils.

At this stage the high capital investment is the main barrier to adoption of the ProTrakker guidance system.

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For further information contact

Tony Randall

Land and Water Management Team Coordinator

P: 08 8532 9100

E: tony.randall2@sa.gov.au

www.naturalresources.sa.gov.au/samurraydarlingbasin

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