

Driving adoption of robust profitable agricultural land management systems in medium rainfall conditions

- Location:** South Australia: - Yorke Peninsula
- NRM Region:** Northern Yorke Natural Resource Management Region
- Industry:** Grains
- Group:** Yorke Peninsula Alkaline Soils Group
- Issue:** Soil erosion, soil salinity and the adverse impact of current farming systems on the natural resource base of the region
- Key Outcomes:**
- Increased interest and adoption of disc- and tine-reduced tillage seeding systems
 - Increased farmer evaluation of liquid fertilizers
 - An increase in precision guidance and inter-row sowing
 - The adoption of more efficient nitrogen application strategies
 - Greater adoption of improved spray application practices and technologies

Background

The Yorke Peninsula Alkaline Soils Group (YPASG) was established in 1999 by farmers and consultants to identify, research, demonstrate and promote best practice farming systems in medium rainfall areas with alkaline soils. The group has over 200 members, and has influence beyond the membership base through field days, workshops and an ongoing media presence. The group also accesses funding from a range of sources to achieve its goals.

The Project

The aims of this project were to establish robust, profitable farming systems that reduce soil erosion, reverse the increase in soil salinity and reduce the impact on natural resources. Latest research outcomes are applied at the district level, with a focus on reducing soil disturbance, retaining stubble, increasing water use and reducing off-target damage through efficient use of inputs. Activities were constructed around five key components:

- comparison of disc seeding technologies with tine equipment in stony soils (2 sites);
- control of annual ryegrass using innovative techniques (5 sites);
- evaluation of new liquid fertilizer technologies (15 sites);
- improved crop establishment using precision guidance (inter row sowing 2cm accuracy) (1 site); and
- increasing adoption of improved spray technologies (2 sites)

Sites for these activities were established on farmers' properties in relevant districts throughout Yorke Peninsula. Project objectives and outcomes were promoted through media articles, field days, specific site inspections, publication of results and technical presentations at grower and advisor meetings.

Outcomes

The project attracted strong grower and community interest on the Yorke Peninsula and also from other agricultural regions across the state. Changes in community attitudes and farming practices have been monitored throughout the project using exit surveys, member surveys, feedback from machinery dealers, commercial resellers, private consultants and YPASG members. The project has clearly demonstrated the benefits of these new technologies in local farming systems. This has resulted in uptake of these improved practices by growers.

The demonstration of disc- and tine-reduced tillage seeding systems highlighted that vigorous crop establishment is possible with disc seeder technology and the fact that full soil disturbance is not required for good crop establishment. Crops sown with the disc seeders were planted later than tine machines and yet crop growth and vigour was greater around 6 weeks after seeding. Disc seeders cause no soil disturbance and eliminate soil erosion risks.



Field day inspecting nitrogen timing application treatments (Photo: Mark Stanley)



Spray application technology training day (Photo: Mark Stanley)

The liquid fertilizer demonstrations showed that half rates of liquid fertilizers are as effective as the full rates of solid fertilizer treatments. A reduction in the price of the liquid fertilizers may be required before this technology is widely adopted as there is a cost to farmers to change over to managing liquid fertilizer types.

There was a huge interest in the precision guidance and inter row sowing trials where crop growth appeared more vigorous in inter-row sown crops compared to those sown along the stubble row of the previous crop. A 6% yield increase was measured as a result of reduced root disease levels in the inter-row sown plots.

The adoption of more efficient nitrogen application strategies demonstrated that there is no benefit from applying early nitrogen to create tillers for extra yield compared with later nitrogen. This strengthens previous work that indicated nitrogen can be applied at much later crop growth stages than previously thought. This allows a better assessment of seasonal conditions which alters the risk profile of nitrogen management.

New low-drift nozzles were evaluated for spray application efficacy in the field and 200 farmers inspected these plots at a combined YPASG/ SA No Till Farmers Association field day. The demonstration trials and field day will result in increased use of low-drift nozzles which will reduce the amount of off target

The YPASG believes the project has been highly successful in increasing awareness and adoption of improved land management practices. Key success factors were:

- The technologies being trialled and demonstrated being innovative and relevant to increased profitability and sustainability of local farming systems.
- The engagement of local consultants with technical expertise to design, implement and extend the programs.
- Engaging farmers as part of the project, providing a “hands on” approach to research which is more likely to result in the adoption of the new technologies.
- Employing a communications specialist to extend the information across the region and beyond.

The Future

The project raised several opportunities for further investigation. The project also identified significant advantages from the stronger collaboration between grower groups. As a result the YPASG has been successful in obtaining NLP Community Support funding to increase the strategic collaboration between these groups. YPASG has also supported the Northern Yorke NRM Board in obtaining NLP funding for a Community Landcare Coordinator to increase collaboration between the board and resource managers. Our aims are to bring the aims and activities of growers and conservation-based bodies closer together.



Inter-row planting using GPS technology. (Photo: Mark Stanley)



YPASG consultant and project manager inspecting disc no-till seeding equipment. (Photo: Mark Stanley)