Minnipa Agricultural Centre update

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SARDI, Minnipa Agricultural Centre

Welcome to the twenty first Eyre Peninsula Farming Systems Summary, providing detailed reports on the outcomes of RD&E carried out on Eyre Peninsula and related environments across Australia.

We would like to thank SAGIT, GRDC, the Australian Government (National Landcare Program, Rural R&D for Profit, Soils CRC) and EPARF for their contribution to Eyre Peninsula for research, development and extension and for enabling us to extend our results to all farm businesses on EP and beyond in other low rainfall areas. All articles since 2010 are also available on the EPARF website www.eparf.com.au. Many of the trials are also catalogued in the GRDC Online Farm Trials Database, www.farmtrials.com.au, which is an excellent searchable resource for finding trials and research outcomes from across Australia.

At MAC, 2019 was the final year for a number of larger projects. We have been fortunate to receive some new project funding via the National Landcare Program. Amanda Cook will be working on project that will demonstrate the benefits of increasing the distribution of seed per m^2 to increase crop competition with barley grass, and Fiona Tomney will be demonstrating perennial pastures as an option for improving the productivity of low productive cropping land on upper EP.

EPARF have also been successful in securing funds from the National Landcare Program for 'resilient and profitable dryland farming on the Eyre Peninsula using data to improve on-farm decision making'. New and emerging technologies will be used to assist farmers make efficient use of soil moisture using the existing soil moisture probe network which is under-utilised. A Regional Innovators group of farmers and advisers will engage researchers and link with the region's farmers to develop techniques to integrate information generated from the probe network, satellite imagery, climate and yield models. Farmers will be able to make more informed, timely decisions underpinned by innovations in agronomy and livestock management in order to optimise the region's productive potential whilst protecting soil and water resources in a changing climate.

We are currently putting the finishing touches on a major calcareous soils research project proposal, watch this space!

Current projects in which MAC and/or EPARF is a partner are listed in Table 1 below.

Staff

In 2019 we welcomed Neil King to the research team as an Agricultural Officer, and also Holly Whittenbury, employed by DEW, based at MAC two days per week to deliver the Regional Agricultural Landcare Facilitator role.

We farewelled Linden Masters in mid 2019 as he completed the his Regional Agricultural Landcare Facilitator role, we wish Linden all the best in future endeavours and will miss his enthusiasm and passion for working with farmers and groups across EP.

Students/work experience

We hosted two students in 2019, Will Long completed practical placement as part of his Marcus Oldham College qualification and Dusty Wheare from Navigator College completed Year 10 work experience.

Tom Flinn, University of Adelaide, assisted with the collection of lambing data while working on his PhD.

Visitors

The GRDC Southern Panel visited MAC and a number of project trial sites on their EP tour in August. This was a valuable exercise for the Panel members to gain insight into our local farming systems and experience first-hand some of the issues and opportunities for the region.

Events

A range of events were held or attended by MAC staff, with details listed in the following article Minnipa Agricultural Centre Events in 2019.

Thanks for your continued support at farmer meetings, sticky beak days and field days. Without strong farmer involvement and support, we lose our relevance to you and to the industries that provide a large proportion of the funding to make this work possible.

We look forward to seeing you all at farming system events throughout 2020, and wish you all the best for a more productive and profitable season!

To contact us at the Minnipa Agricultural Centre, please call 8680 6200.

Table 1. Research projects being delivered by SARDI Minnipa Agricultural Centre in 2019.

Project name	Funder	Summary
EPARF Sponsored Projects		
Adapting cropping systems through improving crop competitiveness	NLP *4-BA9KBX5*	The project will demonstrate the benefits of improving crop competitiveness with weeds by increasing the distribution of seed per m^2 using innovative farmer equipment. Two demonstration sites will be monitored to measure ground cover, water use, erosion risk and weed numbers. The sites will be a focus for farmer discussion groups to discuss ways of incorporating the practices into their farming systems. EPARF will promote the outcomes of the project to the broader farming community. End: September 2021
Perennial pasture systems for the upper Eyre Peninsula and other dryland farming areas	NLP *4-BA96C6H*	This project will demonstrate perennial pastures as an option for improving the productivity of low productive cropping land on the upper Eyre Peninsula. The aim will be to turn this land into productive livestock pasture, with only minimal inputs of fertiliser, and without the need for herbicide and tillage. Two demonstration sites will be established; one on a grey calcareous soil and the other on a red sandy loam/typical Mallee soil. A mixture of species including grasses and legumes will be sown based on their suitability for local soil and rainfall conditions. End: September 2021
Dryland Legume Pasture Systems (DLPS) demonstration sites	MSF *9175959*	Delivery of upper EP demonstration sites for DLPS project, local awareness raising activities, host a technical pastures workshop on EP, entry and exit surveys, publish 3 x local awareness articles in local media, case studies produced on demo sites. End: March 2022
Demonstrating and validating the implementation of integrated weed management strategies to control barley grass in the low rainfall zone farming systems	GRDC *9176981*	Demonstrating and validating the implementation of integrated weed management strategies to control barley grass in the low rainfall zone farming systems. Research into the ecology and control tactics of barley grass has occurred and now this needs to be transferred into the development and testing of localised IWM strategies. This investment will test localised IWM strategies against barley grass utilising large plot replicated demonstration sites and delivered within key areas of the low rainfall zone. End: December 2021
Regional Agriculture Landcare Facilitator service delivery	EPNRM	Providing a central contact person for farmers, industry, and community groups. Collection of regional intelligence – understanding the needs of the agricultural community and keeping abreast of emerging challenges, issues or threats that may affect the agricultural sector in the region. Supporting agriculture groups to develop new projects and seek grant funding. End: June 2023
Warm and cool season mixed cover cropping for sustainable farming systems	NLP2/GRDC *4-60A5VY4*	The performance of a broad range of cover crops will be evaluated in targeted field trials across the southern region to answer two key questions: What are the new and emerging plant species/varieties, summer and winter active, most suited to different environments across the region? What are the most effective strategies and timings to terminate a cover crop for achieving the optimum benefits for subsequent crops and soil health? End: June 2022
Developing knowledge and tools to better manage herbicide residues in soil	Soils CRC *4.2.001*	Development of tools to enable in-field assessment of risk of herbicide carry-over to the crop. A replicated field trial at MAC N7 and in season soil sampling of five growers paddocks to monitor the breakdown of clopyralid in EP farming systems. End: June 2022
Using soil and plant testing data to better inform nutrient management and optimise fertiliser investments for grain growers	GRDC *9176604*	Work with 5 EP growers x 6 paddocks = 30 paddocks on EP. Soil testing of 2 sites per paddock, with fertiliser test strips in 3/6 paddocks sampled on their property. In-season tissue testing (GS30) in the paddocks where test fertiliser strips are located and biomass cut. Field day/workshop to be held at one of the test strip sites in-season. Discussion of soil testing, nutrition and determining fertiliser rates. At the end of the season need to obtain the yield map data from the growers. End: June 2022

Project name	Funder	Summary
Using soil water information to make better decisions on Eyre Peninsula	SAGIT *EP216*	To use an existing network of soil moisture probes across EP to provide growers across the region with information on how data the soil moisture probes collect can be converted into easily utilized decision support tools that will assist them in targeting yield potential and tailoring inputs to match. End: June 2019
Eyre Peninsula Farming Systems Summary 2016-2018	SAGIT *EP116*	This project will support the cost of printing Eyre Peninsula Farming Systems Summaries 2016, 2017 and 2018, enabling the free distribution to all growers on Eyre Peninsula. End: June 2019
SARDI Projects		
Delivering value from Soil Moisture Probes on EP	GRDC *DAS1911-004BLX*	Full characterisation of ten soils within the EP soil moisture probe network for better soil characterisation and understanding of the plant available soil moisture. End: June 2020
Improving the early management of dry sown cereal crops	SAGIT *S419*	This research project will assess the impact of management on seed germination and establishment on three different soil types in field trials and pot experiments which are kept very low in moisture; a red loam [MAC] and two grey calcareous soils [Cungena and Streaky Bay] for: impact of fertiliser type [P and N] and fertiliser placement, impact of herbicides, impact of seed dressings. These investigations will also be undertaken in pots so that a range of moisture regimes can be accurately implemented and maintained. Further pot experiments will assess how much moisture is needed on the three soil types to germinate wheat and achieve emergence, and how long a germinated seed can survive in dry or barely moist soil and still establish. End: June 2022
Boosting profit and reducing risk of mixed farms in low and medium rainfall areas with newly discovered legume pastures enabled by innovative management methods	Rural R&D for Profit *RnD4Profit-16-03-010*	Dryland Legume Pasture Systems (DLPS) Develop recently discovered pasture legumes together with innovative management techniques that benefit animal and crop production and farm logistics, and promote their adoption on mixed farms over one million hectares in the low and medium rainfall areas of WA, SA, Victoria and southern NSW. At MAC, a large scale grazing trial and several small plot species evaluation trials will be conducted. End: June 2022
Updated nutrient response curves in the northern and southern regions	GRDC *UQ00082*	This project is developing critical levels for commercial soil tests of N, P, K and S for the major break crops. Two trial sites have been set up on the EP. One is at Minnipa to calibrate Colwell P for canola on a red sandy loam. The other is at Mt Hope on a gravelly sand over limestone and is to calibrate the deep mineral N test for canola. End: June 2022
Improving production on sandy soils in low and medium rainfall areas	GRDC *CSP00203*	There are opportunities to increase production on deep sands by developing cost effective techniques to diagnose and overcome the primary constraints to poor crop water-use or by reducing the impact of constraints with modified practices. Commonly recognised constraints that limit root growth and water extraction on sands include compaction (high penetration resistance), poor nutrient supply and low levels of biological cycling and poor crop establishment. The project has set up trials at Murlong to investigate both low cost modified agronomy (e.g. use of wetters) and high cost interventions (e.g. spading incorporation of organic matter). End: June 2021
Swathing for barley grass weed seed collection and applying drone technology	SAGIT *S117*	Swathing cereal crops with problem weed issues early (between 20 and 40% grain moisture) for grass weed seed capture into windrows, followed by harvest and using a chaff cart for weed seed collection may provide farmers with another tool for integrated weed management. Testing the use of UAV (drone) technology to assess barley grass weed density in crop. End: June 2020

Project name	Funder	Summary
Delivering enhanced agronomic strategies for improved crop performance on water repellent soils in WA	GRDC *DAW00244*	The main focus of this project is to explore management techniques that promote water infiltration into non-wetting soils and increase crop production and profitability. A trial has been conducted at Wharminda since 2015 investigating the impact of wetting agents and near-row seeding on crop establishment and performance. End: June 2019
Application of CTF in the low rainfall zone - MAC Research Site	GRDC via ACTFA *ACT00004*	Adoption of Controlled Traffic Farming (CTF) in the LRZ is very low (eg SA/Vic Mallee, 4%) compared to other zones in the Region (eg Vic HR, 26%). This is believed to reflect scepticism about its benefits in many LRZ environments when weighed up against the cost of adopting the practice. The project will evaluate whether or not this scepticism is justified. End: June 2019
National Variety Trials	GRDC	Yield performance of cereal & break crop varieties at various locations across upper EP.
Crop Improvement Trials	Various	Various trials including district variety trials, product trials, species trials.

MAC staff and roles 2019

Nigel Wilhelm	Science Program Leader Farming Systems
Dot Brace	Senior Administration Officer
Leala Hoffmann	Administration Officer
Naomi Scholz	Project Manager
Jake Hull	Farm Manager
Amanda Cook	Senior Research Officer (Farming Systems)
Fabio Arsego	Senior Research Agronomist (Minnipa/Port Lincoln)
Jessica Gunn	Research Officer (Livestock)
Fiona Tomney	Research Officer (Pastures)
Brenton Spriggs	Agricultural Officer (NVT, Contract Research)
Ian Richter	Agricultural Officer (Farming Systems)
Neil King	Agricultural Officer (Farming Systems)
Wade Shepperd	Agricultural Officer (MAC Farm)
John Kelsh	Agricultural Officer (MAC Farm)
Sue Budarick	Casual Field Assistant
Katrina Brands	Casual Field Assistant
Steve Jeffs	Casual Field Assistant
Ashley Scholz	Casual Field Assistant
Bradley Hutchings	Casual Field Assistant

DATES TO REMEMBER

EPARF Member Day, Pre-emergent herbicides: 29 January 2020

MAC Annual Field day: Wednesday 9 September 2020

SARDI
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