

Minnipa Agricultural Centre update

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Welcome to the nineteenth Eyre Peninsula Farming Systems Summary. This summary of research results from 2017 is proudly supported by the South Australian Grains Industry Trust (SAGIT) and the Grains Research & Development Corporation (GRDC) through the Eyre Peninsula Farming Systems projects.

We would like to thank SAGIT, GRDC 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.

Over the past four years SARDI and EPARF have been working on a project as part of the *Maintaining profitability in retained stubble systems program* (also known as the GRDC Stubble Initiative for short). As we near completion of the project this year, we have produced a series of locally relevant guidelines to overcome the barriers of retaining stubble. These guidelines are included in a supplementary booklet, and will also be available via the EPARF website, and at coming events.

2017 was the final year of trials for several larger projects, and we are currently working on new project submissions on topics such as crop competition for weed control, improving productivity on grey calcareous soils, soil amelioration in sandy soils, a new mixed farming extension program, EP farmer resilience, cover crops etc., with numerous collaborators and funding sources. Fingers crossed that we are successful on at least some of these!

MAC is also involved in a new major project, commencing in 2018, *"Boosting profit and reducing risk of mixed farms in low and medium rainfall areas with newly discovered legume pastures enabled by innovative management methods"*, or Dryland Legume Pasture Systems (DLPS) for short. This project is supported by funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit program, the Grains Research and Development Corporation, Meat and Livestock Australia and Australian Wool

Innovation. The research partners include SARDI, Murdoch University, CSIRO, the WA Department of Primary Industries and Regional Development, and Charles Sturt University, as well as grower groups. The aim of the project is to 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.

Staff

In 2017 we welcomed Fiona Tomney (Research Officer) who has replaced Brian Dzoma and is working on the SAGIT funded *Improving Medic Pastures* project, and Fabio Arsego (Senior Research Agronomist, based between Port Lincoln and Minnipa) who has replaced Mariano Cossani, and is working on assessing nitrogen and water co-limitations by remote sensing as a tool to improve wheat and canola profitability and risk management.

Both Brian and Mariano have moved to the Waite Campus in Adelaide to continue their work with SARDI under the GRDC-SARDI Bilateral project, with Brian focussing on nitrogen and soil improvements and Mariano developing risk management tools for managing nitrogen in legumes and wheat in extreme temperatures.

We also farewelled Brett Hay, Agricultural Officer, who has taken up a teaching position in Riverton. We wish Brett all the best for his teaching career.

Students/work experience

Max Winnen, Year 11 student at Urrbrae Agricultural High School undertook work experience at MAC on 10-13 April and 10 -14 July. Lauren Innes, University of Adelaide third year student did work experience from 3-13 July.

Visits

Eighty students from years six to twelve from Cleve, Karcultaby, Miltaburra and Wudinna Area Schools visited MAC on 23 October 2017. The students were given a tour of the farm and heard about what goes on at the Centre. We are always keen to encourage school and university students to visit MAC and welcome any chance to highlight the wide range of opportunities in agriculture, and the great working environment at MAC in particular.

Events

A large range of events were held or attended by MAC staff, with details listed in *Minnipa Agricultural Centre Events in 2017*. Two major events out of the ordinary included the GRDC Dry Start Forums, in response

to the dry start of 2017, and the GRDC Stubbles Extravaganza – an event aimed at researchers and advisors, to discuss the latest research around overcoming the barriers to stubble retention. Both events were very well attended and received great feedback from participants.

Projects

Project name	Funder	Summary
EPARF Sponsored Projects		
Maintaining profitable farming systems with retained stubble - upper EP	GRDC <i>EPF00001</i>	To produce sustainable management guidelines to control pests, weeds and diseases while retaining stubble to maintain or improve soil health, and reduce exposure to wind erosion. Increased knowledge and skills allowing farmers and advisers to improve farm profitability while retaining stubble in farming systems on upper EP. End: June 2018
Using soil water information to make better decisions on Eyre Peninsula	SAGIT <i>EP216</i>	To use an existing network of soil moisture probes across Eyre Peninsula 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 <i>EP116</i>	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
Reducing methane emissions from improved forage quality on mixed farms	DAFF Action on the Ground <i>AOTGR2-0039</i>	Aims to compare a range of alternative pastures and forage crops to existing forages to assess their potential to increase sheep production and reduce methane production from sheep. Completed: June 2017
SARDI Projects		
Boosting profit and reducing risk of mixed farms in low and medium rainfall areas with newly discovered legume pastures enabled by innovative management methods	TBC	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. End: June 2022
Swathing for barley grass weed seed collection and applying drone technology	SAGIT <i>S117</i>	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
Burning of weed seeds in low rainfall farming systems	SAGIT <i>S416</i>	Determine temperature thresholds for killing the seeds of common weeds for low rainfall farming systems in South Australia, allowing farmers to assess the value of narrow windrow and other burning strategies as integrated management tools for these weeds and ultimately to manage weeds more effectively. Completed: Feb 2018

Project name	Funder	Summary
Identifying the causes of unreliable N fixation by medic based pastures	SAGIT <i>SARDI1515</i>	Assess the impacts of current weed control chemicals, adjuvants and rhizobial inoculants on N fixation by medics under field conditions typical of the upper EP and other low rainfall mallee systems. Also assess the impact of nutrition (esp N and P) on N fixation by medics under field conditions and investigate their effects on tolerance to current weed control chemicals. End: June 2018
Extension of the Improved management of soil organic matter for profitable and sustainable cropping	GRDC <i>CRF 00002</i>	The network of trial sites to be continued by BCG, FarmLink, EPARF and Hart farm groups to: <ul style="list-style-type: none"> • improve scientific understanding of practical strategies used to manage soil carbon and the techniques required for carbon sequestration and the functions of healthy soils on commercial farms • provide baseline soil carbon stocks and how these stocks may be increased across a range of regions, climatic zones, soils, land uses and farming practices. This will be a valuable data source with which to assess opportunities for soil carbon sequestration in the southern sheep/wheat zone. Completed: June 2017
Application of CTF in the low rainfall zone - MAC Research Site	GRDC via ACTFA <i>ACT00004</i>	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
Overdependence on agrochemicals	GRDC via CWFS <i>CWF00020</i>	By 30 June 2017, 1500 growers and 20 advisors of the low rainfall zone of the southern GRDC region have the knowledge (technical & economic) and tools to reduce their dependence on agrochemicals. The reduced dependence will be demonstrated by a minimum of 200 examples of growers changing their practices to reduce their dependence on agrochemicals. Completed: June 2017
Improving fertiliser efficiency and reducing disease impacts using fluid delivery systems	SAGIT <i>S614</i>	To provide guidelines to farmers on the best options for fluid delivery systems at seeding for increases in crop yields and decrease impacts of crop diseases in current farming systems across southern cropping regions. Completed: June 2017
Maintaining profitable farming systems with retained stubble -Component 1 Coordination Support	GRDC <i>DAS00145</i>	Coordination Support provided by Naomi Scholz, SARDI. The role includes organisation of national meetings, facilitate sharing of resources and communication between Component 2 grower groups and Component 1 research, and ensuring guidelines and other project products are accessible to growers across Australia now and in the future. End: Sept 2018
National Variety Trials	GRDC	Variety yield performance of cereals & break crops at various locations across upper EP.
Crop Improvement Trials	Various	Various trials including district variety trials, product trials, species trials.

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 2018, and wish you all the best for a productive season!