



The SAGIT Snapshot

SA grain growers
funding research
solutions

2024

The South Australian Grain Industry Trust ...

SA grain growers funding research solutions

YOUR support keeps SAGIT going

The South Australian Grain Industry Trust Fund (SAGIT) was established in 1991 to administer the voluntary research levy contributed by SA grain growers. SAGIT is funded by a 30 cents per tonne contribution on all grain delivered by SA grain growers. Without your support, there would be no SAGIT.

SAGIT is directed by, and accountable to, growers

SAGIT has a board of four grower trustees and a trustee appointed by the South Australian Minister for Agriculture. An open call is held annually and the trustees take into consideration issues affecting SA grain production and innovative ideas to progress the industry. Trustees receive specialist agronomic and scientific advice to ensure their funding decisions are informed and credible.

An annual report on how levy funds are spent is available to growers and provided to Grain Producers SA and the South Australian Minister for Agriculture.

SAGIT is unique - No other state has a research fund supported by growers for state-based, grains industry research. We are the envy of other states!

Key project dates

August 2024	Trustee visits to projects.
31 August 2024	Final reports and financial statements (Form A) due.
September 2024	Trustee visits to projects continue. Final reports reviewed.
November 2024	Call for applications for next round of funding.
1 January 2025	Current project invoices to be submitted 14 days prior to the payment date.
7 February 2025	Project applications due.
1 March 2025	Progress reports (continuing projects) due.

Trustees



Dr Andrew Barr

CHAIR

0428 277 085
arhebarr@baonline.com.au



Ted Langley

GROUP A TRUSTEE

0407 398 165
eclangley@bigpond.com



John Harvey

GROUP A TRUSTEE

0407 170 787
john@directthinking.com.au



Andrew Polkinghorne

GROUP A TRUSTEE

0427 212 679
andrew.polk@bigpond.com



Lou Flohr

GROUP A TRUSTEE

0429 083 927
flohlouise@gmail.com

SAGIT extends its thanks to former trustee and chair Max Young, who was involved in the project funding allocation for 2023-24. We wish Max all the best as he retires from SAGIT following eight years as trustee and chair.

SAGIT Management



Malcolm Buckby

PROJECT MANAGER

0417 722 231
admin@sagit.com.au



Dr Jenny Davidson

SCIENTIFIC OFFICER

0429 695 505
fj davidson@hotmail.net.au

March 2025

Applications assessed by SAGIT. Applicants notified of results of applications by the end of March.

1 July 2025

First payment*. Applicants must submit invoice 14 days prior to payment date.

November 2025

Call for applications for next round of funding.

1 January 2026

Second payment. Applicants must submit invoice 14 days prior to payment date.

**Contract and payment can be earlier than 1 July.
Please contact SAGIT management if this is required.*

Investment Index

✓ = new investments starting in 2024 totalling \$2.6 million

Code	Organisation	Supervisor	Project title	New	Co-funding	Pg
AAC0723	Agrilink Agricultural Consultants	Mick Faulkner	Evaluation of agronomic practices for SHO safflower production			8
AEG4022	Aust Export Grains Innovation Centre	Siem Siah	Developing a new high value noodle market for South Australian growers		GRDC	8
AEX0524G	Ag Excellence Alliance	Kerry Stockman	Ag Excellence Forum 2024	✓		8
AGC6724	AgCommunicators	Belinda Cay	Lead Agriculture Teacher	✓	SA Sheep Industry Fund	9
ASO5624	Agronomy Solutions	Sean Mason	Unravelling crop yield response to application of organic amendments on different soil types	✓		9
AGX4724	AgXtra	Richard Porter	Wheat powdery mildew management strategies	✓		9
AGX4223	AgXtra	Richard Porter	Genetic and fungicidal control of septoria tritici blotch and stripe rust in wheat			10
AGX3822	AgXtra	Richard Porter	AgXtra high school and university crop competition			10
AIA1122	Ag Institute Australia	Craig Davis	Student Compendium – supporting the next generation, 2023-25			10
CAS5724	Central Ag Solutions	Sam Holmes	Appropriate fertiliser strategies for on-row lentil sowing in saline soils	✓	GRDC	11
GGG6624	Global Grain Genetics	Larn McMurray	Lentils for sustainable rotations on low- rainfall highly alkaline calcareous soils	✓		11
HAR5524	Hart Field-Site Group	Rebekah Allen	Regional internship in applied grains research	✓	SA Drought Hub	11
HAR0423	Hart Field Site Group	Rebekah Allen	Regional internship in applied grains research		SA Drought Hub	14
MFM2123	McKillop Farm Management Group	Sally Klose	MacKillop Farm Management Group Annual Trial Results Book 2023-2025			14
MSF0823	Mallee Sustainable Farming	Tim Smythe	Enhancing farmer knowledge of soil function to improve management outcomes			14
NEW0224	Next Level Agronomy	Chris Davey	Optimising lentil yields through rotation in transient salinity soils	✓		15

Code	Organisation	Supervisor	Project title	New	Co-funding	Pg
SAR0624	SARDI	Sarah Ewers	Convenient, delicious and nutritious value-added foods from Australian pulses	✓		15
SAR1224	SARDI	Guisella Yarasca	Novel healthy food products from oats – fermented, spoonable snacks	✓		15
SAR2424	SARDI	Nicole Baty	Eyre Peninsula Farming Systems Summary 2024-2026	✓		16
SAR3324	SARDI	Nicole Thompson	Grains pathology internship	✓		16
SAR3424	SARDI	Liz Farquharson	Specialised research seeder to advance management of soil biological constraints	✓	SANTFA legacy funding	16
SAR5124	SARDI	Brendan Kupke	Drought preparedness using barley architecture and phenology for biomass production	✓		17
SAR1023	SARDI	Rhiannon Schilling	SA Crop Variety Sowing Guide publication			17
SAR2223	SARDI	Stuart Nagel	Profitable vetch - agronomy, breeding and market development		GRDC	17
TCO6024	Trengove Consulting	Sam Trengove	Making the most of phosphorus (P) fertiliser inputs: Managing spatial variability and long-term strategies	✓	GRDC	20
TCO6424	Trengove Consulting	Sam Trengove	The impact of annual ryegrass seed size on harvest weed seed control mill efficacy	✓		20
TCO2423	Trengove Consulting	Sam Trengove	Using grain protein maps to optimise nitrogen fertiliser to paddock scale nitrogen variability		SA Drought Hub	20
UAD1424	University of Adelaide / SARDI	Maarten van Helden	Multi-scale monitoring of pests and beneficial insects in canola cropping	✓		21
UAD2624	University of Adelaide / SARDI	Blake Gontar	Increasing pulse yields: focus paddocks to identify & manage soilborne constraints	✓		21
UAD4624	University of Adelaide	Luke Mosley	An improved and rapid test to inform sodic soil management	✓		21
UAD1223	University of Adelaide / SARDI	Lachlan Lake	Pairing pulses for improved yield, protein, agronomy, and profit			22
UAD1323	University of Adelaide	Glenn McDonald	Optimising crop establishment under dry and marginal soil moisture		SA Drought Hub	22

Code	Organisation	Supervisor	Project title	New	Co-funding	Pg
UAD1423	University of Adelaide / SARDI	Maria Saarela	Colour preservation in faba beans to enhance quality & value			22
UAD1623	University of Adelaide / SARDI	Rhiannon Schilling	Preparing for a pulse protein market - pulse options for expansion areas			23
UAD2023	University of Adelaide	Phil Brewer	Developing new breeding material to stabilise barley yields			23
UAD3023	University of Adelaide / SARDI	Tara Garrard	Improving industry response to white grain disorder and fusarium head blight outbreaks while protecting export markets		GRDC	23
UAD3223	University of Adelaide	Matthew Tucker	Screening for genetic components of head-retention in barley			26
UAD4423	University of Adelaide	Matthew Denton	Delivery of beneficial organisms through seed coating to improve grain yield			26
UAD2522	University of Adelaide	Kym Perry	Revegetation for enhanced biocontrol of pest conical snails		GRDC	26
UNF1724	Upper North Farming Systems	Jade Rose	Strategies for mitigating frost damage in the Upper North region	✓	GRDC	27
UNF2822	Upper North Farming Systems	Jade Rose	Canola profitability as a break crop in the Upper North			27
USA3323	University of South Australia	Casey Doolette	Pesticide effects on soil microbial functions in contrasting SA soils		GRDC	27



Have you heard?

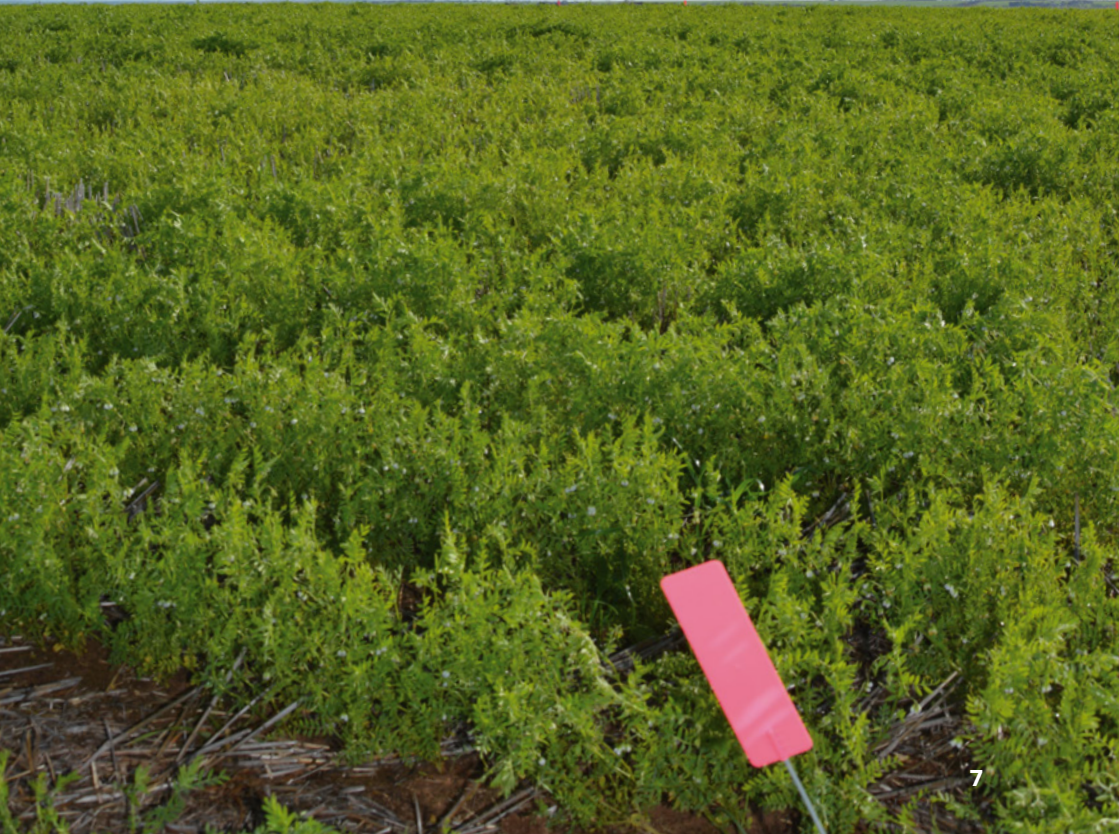
SAGIT is now bringing research insights and results to you via a podcast!

Head to <https://sagit.com.au/podcasts/> or subscribe wherever you listen to podcasts.

SAGIT INVESTMENTS

Research Projects

✓ indicates new project starting in 2024-25



AAC0723: Evaluation of agronomic practices for SHO safflower production



Agrilink Agricultural
Consultants



\$159,488



1/7/2023 – 30/6/2025

Super high oleic oil content safflower is a new crop to SA. This project will investigate variety, sowing time, water use efficiency, herbicide tolerance, nutrient responsiveness, phenology, residual soil water and canopy manipulation to determine where the crop can be profitably grown.



Mick Faulkner, 0428 857 378, mick.faulkner@bigpond.com

AEG4022: Developing a new high value noodle market for South Australian growers



Australian Export Grains
Innovation Centre



\$399,700



1/7/2022 – 30/6/2025

This project aims to establish a new high-value noodle wheat market for South Australia, increasing demand in Taiwan, South Korea and Hong Kong, estimated at \$95 million annually for SA wheat and improving returns for growers. It will position a segment of the Australian Hard (AH) class as a premium noodle grade in Asia, creating additional value for selected hard wheat varieties grown in SA at AH protein levels. This project is a co-investment, with GRDC providing 50% of the total funding (above).



Siem Siah, 02 8025 3200, siem.siah@aegic.org.au

AEX0524G: Ag Excellence Forum 2024



Ag Excellence Alliance



\$3,000



1/7/2024 – 30/6/2025



The Ag Ex Forum is held to bring together grower groups with industry, government, researchers and other expertise to address timely issues and an opportunity to extend networks. Forum 2024 will address the increasing pressure of sustainability trends and the role of technology.



Kerry Stockman, 0418 841 331, admin@agex.org.au



SA SHEEP
INDUSTRY FUND

SA SHEEP INDUSTRY
FUND CO-INVESTMENT

AGC6724: Lead Agriculture Teacher



AgCommunicators



\$205,030



1/7/2024 -
30/6/2025



The Lead Ag Teacher role supports schools to more effectively teach and implement agriculture throughout their curriculum. The program, now in its third year, is delivered by AgC consultant Sue Pratt, an experienced agriculture teacher and past President of the Agricultural Teachers Association of SA (ATASA). The program provides support to teachers to help them confidently deliver high quality, engaging food and fibre content. This project is a co-investment, with the SA Sheep Industry Fund providing 50% of the total funding (above).



Belinda Cay, 0423 295 576, belinda.cay@agcommunicators.com.au

ASO5624: Unravelling crop yield response to application of organic amendments on different soil types



Agronomy Solutions



\$125,225



1/7/2024 – 30/6/2027



This project aims to assess the impact of organic amendments on soil condition and crop response on three contrasting soil types. Through this process, the aim is to provide growers with recommendations on 'target soils' where organic amendment applications can provide maximum benefit. Researchers will endeavour to define suitable frequency and application rates of organic amendments in combination with inorganic fertiliser.



Sean Mason, 0422 066 635, sean@agronomysolutions.com.au

AGX4724: Wheat powdery mildew management strategies



AgXtra



\$37,630



1/7/2024 – 30/6/2025



This project aims to demonstrate to growers and agronomists the effectiveness of existing and emerging wheat powdery mildew (WPM) control options across varieties with diverse susceptibility ratings. It will also raise awareness of the importance of cultural considerations with regards to WPM management and an understanding of pathogen resistance to commonly used fungicides. This project provides an opportunity to extend existing knowledge generated through current SAGIT-funded WPM projects.



Richard Porter, 0413 027 670, rporter@agxtra.com.au

AGX4223: Genetic and fungicidal control of *Septoria tritici* blotch and stripe rust in wheat



AgXtra



\$88,740



1/7/2023 – 30/6/2025

This project will seek to evaluate the effectiveness of various fungicide treatments for control of *Septoria tritici* blotch and stripe rust in a range of wheat varieties with differing levels of resistance at different rainfall zones. It will also determine the genetic influence of yield loss from disease and find a suitable application package of fungicide to reduce the cost of production.



Richard Porter, 0413 027 670, rporter@agxtra.com.au

AGX3822: AgXtra high school and university crop competition



AgXtra



\$116,790



1/7/2022 – 30/6/2025

A wheat production competition for high school students and university agricultural students which promotes agriculture as a career choice to high school students and engages tertiary students with agribusiness and consultants for career option awareness. Promotes hands-on learning to participating students and addresses the urban/rural disconnect by moving students out of the classroom and into the field to experience, and participate in, field crop agronomy.



Richard Porter, 0413 027 670, rporter@agxtra.com.au

AIA1122: Student Compendium – supporting the next generation, 2023-25



Ag Institute Australia



\$22,500



1/7/2022 – 30/6/2025





The Student Compendium is an annual collation of graduate programs, internships, training, competitions, conferences, associations, awards and scholarships for high school and vocational training students and tertiary agricultural, animal and veterinary and agribusiness undergraduates. It assists the next generation of South Australian students to find opportunities to connect them with industry and broaden career horizons and empower students in agriculture.




Craig Davis, 0447 541 654, craig.davis.nominees@outlook.com

CAS5724: Appropriate fertiliser strategies for on-row lentil sowing in saline soils







 Central Ag Solutions  \$123,760  1/7/2024 – 30/6/2026 


This project aims to determine the residual benefit of on-row and off-row sowing and appropriate fertiliser strategies for sensitive lentil crops in phosphorus deficient and moderately saline calcareous soil types of Yorke Peninsula. Research will investigate management techniques of utilising residual phosphorous in a cereal phase along with phosphorous placement at seeding to optimise lentil grain yields and economic returns. This project is a co-investment, with GRDC providing 50% of the total funding (above).

 Sam Holmes, 0427 700 219, sam@centralagsolutions.com.au

GGG6624: Lentils for sustainable rotations on low-rainfall highly alkaline calcareous soils





 Global Grain Genetics  \$297,241  1/7/2024 – 30/6/2027 

This project will improve the sustainability of SA's diverse and expansive low rainfall cropping areas by expanding lentil production, as a legume break crop for cereals, on highly alkaline calcareous soils in these regions. It will build on the recent successful research, extension and expansion of lentil through the low rainfall Mallee type areas across South Australia, by targeting constraints to profitable production with a focus on the Upper Eyre Peninsula (UEP).


 Larn McMurray, 0466 113 848, lmcmurray@globalgraingenetics.com

HAR5524: Regional internship in applied grains research



 Hart Field-Site Group  \$77,140  1/7/2024 – 30/6/2026 

This project offers a regionally based internship program, providing a stepping-stone for early career researchers to receive high quality training and hands-on experience to develop their research skills. This program supports young researchers interested in grains RD&E to pursue further research roles while increasing research capacity within the grains industry. This project is a co-investment, with the SA Drought Hub providing an additional \$34,068 funding.

 Rebekah Allen, 0428 782 470, rebekah@hartfieldsite.org.au

Management of fungicide resistant wheat powdery mildew

The strategic use of fungicides and planting more resistant varieties can reduce the input costs, yield losses and other impacts associated with wheat powdery mildew.

Wheat powdery mildew (WPM) has been shown to cause yield losses of up to 25 per cent in Australia. Now, research led by Sam Trengove on the Yorke Peninsula between 2020 and 2022 has helped calculate the yield potential of more resistant wheat varieties against the likely input costs, efficacy and residual yield loss of applying fungicides to popular high yielding varieties with SVS resistance.

Cases of fungicide resistance to Group 11 fungicides and reduced sensitivity to Group 3 fungicides are increasing rapidly across the southern cropping region.

At the same time, there has been a tendency for growers to replace moderately susceptible to susceptible (MSS) varieties like Mace with the susceptible to very susceptible (SVS) variety Scepter, for its higher yield potential.

Sam said the project looked at the interactions between fungicide products, application timings and varietal resistance, but ultimately, it was important for growers to understand the costs involved with selecting less resistant varieties.

“Fungicide resistance in wheat powdery mildew is present in SA and increasing, reducing the options available for control where it occurs,” he said.

“Varietal resistance is effective at reducing mildew infection, however most adapted main season wheats in SA currently have poor resistance to WPM. These varieties dominate plantings and are estimated to account for more than 80 per cent of SA wheat planting.

“The results from this project have shown that losses of 0.7t/ha are common for these varieties in these scenarios with no fungicide in the northern YP region.

“In our 2021 trials with Scepter, a single spray fungicide at \$18/ha and two spray fungicides at \$45/ha still incurred a 0.5t/ha and 0.2t/ha yield loss, respectively.

“So, despite a minimum of \$864,000 invested in a single fungicide application across the whole wheat crop in the region, these SVS varieties can still incur a yield loss of 3,840t, valued at \$1.54M.”



SAGIT Project Manager Malcolm Buckby, Sam Trengove, and SAGIT Scientific Officer Jenny Davidson



“In contrast, improving the variety rating from SVS to MS, from Chief CL Plus to Grenade CL Plus, reduced the number of WPM pustules on the flag leaf by 96 per cent without using fungicide.”

The trial program was able to successfully demonstrate the benefits of varietal resistance and pre-emergent fungicide application, while identifying the most suitable post emergent fungicide products for control of WPM with fungicide resistance to strobilurins and reduced sensitivity to DMIs.

The project involved fungicide resistance surveys conducted across paddocks in the northern and central YP and Mid North.

As well as the surveys, a range of registered and experimental Mode of Action group fungicides were tested in 2020 and 2021, with a fungicide sequencing trial included in both seasons. Fungicide timing was assessed, and seven wheat varieties were planted to assess the benefit of varietal resistance and interaction with fungicide use.

“Sequences incorporating Group 3, 7 and 11 fungicides were found to be very susceptible to the rates of resistance and reduced sensitivity in the WPM population and only had a moderate effect on disease levels,” Sam said.

“However, including an alternative mode of action fungicide from Group 13 or U8 lowered mildew levels significantly. We’ve shared this data with GRDC and fungicide suppliers to support recent permit applications and future fungicide registrations.

“We found fungicide timing should be linked to seasonal conditions and targeted at initial disease presence.”

Regardless, the biggest factor influencing disease incidence was varietal resistance. Simply changing to more resistant wheat varieties reduced WPM incidence even more than two post-emergent fungicide applications of group 3 and 11 fungicides.


“Varieties rated MS had lower rates of WPM infection without spraying than Chief CL Plus and Scepter (both SVS) which were treated with fungicides,” Sam said.

This work has been continued through GRDC investment in an expanded trial and extension project, with presentations at GRDC Updates and other field days and grower events.




HAR0423: Regional internship in applied grains research

 Hart Field-Site Group  \$80,280  1/7/2023 – 30/6/2025


The project aims to give graduates with a specific interest in applied RD&E an introduction and hands-on training in the fundamentals of applied RD&E, relevant to the grains industry. Attracting and encouraging agricultural graduates into applied grains research across South Australia, assisting with the succession planning of key staff in research organisations, particularly farming systems groups, is essential. This project is a co-investment, with the SA Drought Hub providing an additional \$26,760 funding.

 Rebekah Allen, 0428 782 470, rebekah@hartfieldsite.org.au



MFM2123: MacKillop Farm Management Group Annual Trial Results Book 2023-2025

 MacKillop Farm
Management Group  \$30,000  1/7/2023 – 30/6/2026


To fund compilation of MacKillop Farm Management Group Annual Trials Results book for trials undertaken in 2023, 2024 and 2025. The book will be available in March the following year. MFMG's Annual Trial Results Book brings together trial, demonstration and other project results from the Limestone Coast together in one publication, for the benefit of members and the agricultural community.

 Sally Klose, 0427 829 143, ceo@mackillopgroup.com.au

MSF0823: Enhancing farmer knowledge of soil function to improve management outcomes

 Mallee Sustainable
Farming  \$84,000  1/7/2023 – 30/6/2025

The focus for this project will be to produce a highly engaging and easy-to-read publication resource titled *101 questions about SA cropping soils you were never game to ask*. This will help farmers identify and understand subsoil constraints, soil-water dynamics and in turn make informed decisions to help them manage emerging soil related issues unique to SA cropping environments.

 Tim Smythe, 0427 772 185, tim@msfp.org.au

NEW0224: Optimising lentil yields through rotation in transient salinity soils



Next Level
Agronomy



\$53,900



1/7/2024 – 30/6/2027



This project aims to make transient saline soils more productive again for growing lentils through the use of a chemical fallow phase of the rotation. The fallow allows both soil moisture to be conserved through stubble load, helping for lentil establishment, and will also aim to reduce the area of saline affected soil for the following crops.



Chris Davey, 0428 466 675, c.d@nextlevelagronomy.com.au

SAR0624: Convenient, delicious and nutritious value-added foods from Australian pulses



SARDI



\$136,012



1/7/2024 – 30/6/2026



This project aims to use a range of local pulses to make a range of attractive, delicious, nutritious and convenient pre-cooked food products that have wide appeal. This will include determining the appropriate processing steps for each grain type that would work in a commercial food manufacturing set-up to achieve acceptable grain texture and provide long shelf-life in can and/or pouch formats. The proof-of-concept products will be packaged in a variety of formats and tested with consumers, food manufacturers and food retailers.



Sarah Ewers, 08 8429 2908, sarah.cornish@sa.gov.au

SAR1224: Novel healthy food products from oats – fermented, spoonable snacks



SARDI



\$95,283



1/7/2024 – 30/6/2025



The aim of this project is to use Australian grown oats in a new product format, that is not a breakfast cereal or bakery ingredient, that capitalises on the current market trends in 'free-from' foods (in this case, free-from lactose or dairy) and fermented foods for improved gut health. The overall objective of the study is to develop healthy fibre enriched fermented spoonable snacks from oat flour/bran with a clean label (minimum number of food additives).



Guisella Yarasca, 0416 897 711, guisella.yarasca@sa.gov.au

SAR2424: Eyre Peninsula Farming Systems Summary 2024-2026



SARDI



\$45,000



1/7/2024 – 30/6/2027



This project will provide partial cost for the printing and development of the Eyre Peninsula Farming Systems Summaries 2024, 2025 and 2026, enabling continued distribution of this important summary to all growers, industry representatives, researchers and consultants on EP. The Eyre Peninsula Farming Systems Summary is an annual publication consisting of research results undertaken on EP and other areas of relevance, and their implications to upper EP farming systems.



Nicole Baty, 0456 801 664, nicole.baty@sa.gov.au

SAR3324: Grains pathology internship



SARDI



\$198,569



1/7/2024 – 30/6/2027



The project will support a Grains Pathology Trainee to be mentored by experienced staff from the grains pathology teams within SARDI Crop Sciences' Plant Health and Diagnostics program. The mentoring will include laboratory and field pathology training provided by SARDI cereal and pulse pathologists, extension of information through written means, such as SARDI's Crop Watch, participation in regional field days, and other industry support for grains pathology diagnostics.



Nicole Thompson, 0459 732 010, nicole.thompson@sa.gov.au

SAR3424: Specialised research seeder to advance management of soil biological constraints



SARDI



\$55,843



1/7/2024 – 30/6/2025



Field research projects on the management of soilborne diseases and rhizobia are severely constrained by the limitations of current research seeders. The development of a specialised research seeder will enable SA researchers to undertake world leading research to develop innovative practices to manage soil biological constraints in broadacre crops. This project is for Stage 1 of a three-stage process to 1. review, 2. design and 3. build a state-of-art research seeder.



Liz Farquharson, 0407 616 507, liz.farquharson@sa.gov.au

Following the dissolution of the South Australian No Till Farmers Association, remaining funds were distributed to SAGIT to continue with research and development for South Australian growers. This project (SAR3424) will be funded by SANTFA legacy funding.



SAR5124: Drought preparedness using barley architecture and phenology for biomass production



SARDI



\$192,150



1/7/2024 – 30/6/2027



The project aims to better understand the plant characteristics, including phenology and architecture, required to maximise biomass production for barley in grazed, grain and opportunistic grain and grazed scenarios across variable rainfall seasons. A diverse set of elite and novel varieties will be tested by different simulated grazing treatments across low, medium and high rainfall zones of South Australia.



Brendan Kupke, 0429 411 032, brendan.kupke@sa.gov.au

SAR1023: SA Crop Variety Sowing Guide publication



SARDI



\$131,448



1/7/2023 – 30/6/2026

The aim of this project is to continue producing the annual SA Sowing Guide for growers and advisers. The SA Sowing Guide communicates the most up-to-date information on new and current varieties across a range of crop types. It combines the most recent yield results from the National Variety Trials (NVTs) with the most relevant varieties for SA as well as agronomic and pathology information. The Guide is compiled by SARDI staff, with printing and distribution costs funded by GRDC.



Rhiannon Schilling, 0407 815 199, rhiannon.schilling@sa.gov.au

SAR2223: Profitable vetch – agronomy, breeding and market development



SARDI



\$342,053



1/7/2023 – 30/6/2025

This project will develop a multi-faceted role for a research officer looking into vetch production, agronomy and breeding. The project will: 1) consolidate current and previous agronomic research conducted in vetch; 2) produce update agronomy recommendations; 3) leverage outcomes from oaten hay research to improve vetch hay production, and 4) integrate new breeding technology into the National Vetch Breeding Program. This project is a co-investment, with GRDC providing 50% of the total funding (above).



Stuart Nagel, 0407 720 729, stuart.nagel@sa.gov.au



Dry sown cereal crops

Large seeding programs and variable autumn rainfall make dry sowing an important strategy for many grain growers.

However, the factors affecting germination and crop establishment are not well understood.

That, combined with seeding conditions on the upper Eyre Peninsula in 2017 and 2018 which saw seed placed in the soil with limited moisture for many weeks, prompted research by the SARDI Agronomy team at Minnipa Agricultural Centre.

The SAGIT-funded project, *Improving the early management of dry sown cereal crops*, explored the effect of soil type and management strategies on germination and establishment through field and pot trials.

SARDI senior research scientist Amanda Cook said the project aimed to provide growers with an increased understanding of ways to improve plant establishment through different management strategies.

“Within the project we had six replicated field trials undertaken each year over three years at three different sites,” she said.

“We tested different soil types on the upper Eyre Peninsula, so we had trials at the Minnipa Agricultural Centre on red loam soil and on a sand, and at Streaky Bay and Cungi on grey calcareous soils.”

Amanda said at each site there were two trials – a fertiliser placement trial and a management trial.

“We sowed wheat at 72 kilograms per hectare aiming for 180 plants per square metre, and within these trials we looked at nitrogen and phosphorus fertiliser type and the placement of these fertilisers in our seeding systems, as well as different herbicides and seed dressings,” Amanda said.

“We also implemented two different times of sowing - a dry sowing early, around the third week of April, and then on the break of the season around the first or second week of May, when we had moisture in the soil.”

Amanda said the results from the trials showed the importance of fertiliser placement below the seed, especially on the grey calcareous soils, and that barley offered a useful alternative for early establishment and dry sowing.



SARDI senior research scientist Amanda Cook (centre) at the Minnipa trial site

“Generally, we found that even though we got improved early dry matter, especially in our environment where spring rainfall is a bit more variable, we didn’t necessarily get better yields from seeding early compared with seeding on the break,” she said.

“In fact, seeding rate seemed to be more important and led to better establishment in early dry sown crops, especially on the grey calcareous soils.

“Spartacus CL barley demonstrated better establishment and early dry matter production than wheat, making it a better dry sowing option.”

Amanda said soil type was found to be another important factor, with the trials on red loam soil achieving better establishment of dry sown crops, less variability with fertiliser placement and better yields than the grey calcareous soils.

Fertiliser placement was also important in improving plant establishment.

“There was better plant establishment when we placed fertiliser below the seed than with the seed,” Amanda said.

“When fertiliser was applied with the seed, mono-ammonium phosphate (MAP 10:22) supported better plant establishment than di-ammonium phosphate (DAP 18:20) especially on the grey calcareous soils, while urea placed with the seed resulted in relatively poor establishment in all soil types.

“So the type and placement of fertiliser is important and it is better to separate fertiliser from the seed if you can.





“Having fertiliser is important in our systems, as where we sowed without fertiliser we had lower yields in all seasons.

“We also found that sowing depth was important for early crop establishment, so using longer coleoptile varieties gives growers a new option to chase the soil moisture and get those crops up earlier.”


The information gained has been shared via the Eyre Peninsula Farming Systems Summaries, SARDI EP Farmer Harvest Meetings annually, at the annual SARDI Minnipa Agricultural Centre Field Day, local EP grower crop walks, two SAGIT Annual Updates and a SAGIT podcast. The research has also been extended through the SA Drought Hub ‘Best practice for early sowing opportunities’ project.

TCO6024: Making the most of phosphorus (P) fertiliser inputs: Managing spatial variability and long-term strategies







 Trengove Consulting  \$312,519  1/7/2024 – 30/6/2027 


The overall aim of this project is to increase the profitability from phosphorus (P) fertiliser applications and determine sustainable P fertiliser strategies. This project focuses on two key P management areas: improving applications in variable paddocks/landscapes and refining long-term P management strategies on highly P responsive soils. This project will build on the results from SAGIT projects TC219 and TC221. This project is a co-investment, with GRDC providing 50% of the total funding (above).

 Sam Trengove, 0428 262 057, samtrenny34@hotmail.com

TCO6424: The impact of annual ryegrass seed size on harvest weed seed control mill efficacy




 Trengove Consulting  \$101,708  1/7/2024 – 30/6/2025 

This project will quantify the variability in seed weight from field samples of the weed annual ryegrass (*Lolium rigidum*) and quantify how seed weight of annual ryegrass impacts the efficacy of harvest weed seed control (HWSC) impact mills.


 Sam Trengove, 0428 262 057, samtrenny34@hotmail.com

TCO2423: Using grain protein maps to optimise nitrogen fertiliser to paddock scale nitrogen variability



 Trengove Consulting  \$123,201  1/7/2023 – 30/6/2025

Grain protein map data and other spatial data layers will be investigated for application in targeting nitrogen (N) inputs more precisely to optimise N use, grain yield and protein and profitability. A combination of spatial data and targeted small plot N response trials will improve understanding on how to utilise available spatial data layers for variable rate application of N. This project is a co-investment, with the SA Drought Hub providing a further \$10,000 funding.

 Sam Trengove, 0428 262 057, samtrenny34@hotmail.com

UAD1424: Multi-scale monitoring of pests and beneficial insects in canola cropping



University of
Adelaide / SARDI



\$258,686



1/7/2024 – 30/6/2027



This PhD project will look to develop multi-scale (regional to paddock scale) monitoring methods for canola pests and beneficials, both pre-season and during season. The results will allow for improved risk analysis and decision making for integrated pest management by farmers and agronomists, avoiding over-use of insecticides.



Maarten van Helden, 0481 544 429, maarten.vanhelden@sa.gov.au

UAD2624: Increasing pulse yields: focus paddocks to identify and manage soilborne constraints



University of
Adelaide / SARDI



\$364,225



1/7/2024 – 30/6/2027



This project will assist South Australian growers to increase pulse yields by managing paddock variation associated with soil biotic and abiotic constraints. Data generated will also form the foundation for a decision support model. Focus paddocks will be mapped for pathogen levels and rhizobia as well as physical characteristics including pH, salinity and soil type. These factors will be related to remote sensing imagery and yield maps to determine the drivers of variation.



Blake Gontar, 0430 597 811, blake.gontar@sa.gov.au

UAD4624: An improved and rapid test to inform sodic soil management



University of
Adelaide



\$58,915



1/7/2024 – 30/6/2025



Large areas of South Australia are affected by sodic soils which results in lost agricultural productivity. Determination of gypsum rate requirements using conventional methods is problematic and can lead to increased costs for producers. The aim of this project is to develop an improved and rapid test for assessing gypsum requirements to improve crop production in sodic soils in South Australia.



Luke Mosley, 0428 103 563, luke.mosley@adelaide.edu.au

UAD1223: Pairing pulses for improved yield, protein, agronomy and profit



University of
Adelaide / SARDI



\$123,263



1/7/2023 – 30/6/2026

This project will be undertaken by SARDI researchers and will investigate if the pairing of faba bean and semi-leafless field pea will benefit both crops by increased seed and protein yield; reduced lodging, disease and harvestability issues; and improved yield and reduced N fertiliser cost of the following wheat crop. This system could increase faba bean representation in more marginal areas and increase yield in drier seasons as field pea is better adapted to drier conditions.



Lachlan Lake, 0418 813 495, lachlan.lake@sa.gov.au

UAD1323: Optimising crop establishment under dry and marginal soil moisture



University of
Adelaide



\$247,195



1/7/2023 – 30/6/2025

The aim of this project is to improve the effectiveness of dry sowing focusing on wheat and canola. It will conduct experiments at three sites with different rainfalls and soils to examine the effect of sowing practices on establishment at a range of sowing times. The project will explore the ability of remote sensing to measure seedbed moisture content to aid decision making. Controlled environment studies on emergence in different soils and moisture contents will support the field studies. This project is a co-investment, with the SA Drought Hub providing a further \$51,327 funding.



Glenn McDonald, 0447 725 285, glenn.mcdonald@adelaide.edu.au

UAD1423: Colour preservation in faba beans to enhance quality and value



University of
Adelaide / SARDI



\$67,515



1/7/2023 – 30/6/2025

Seed colour is an important quality trait required to meet the highest value export market for faba bean, with consumers demanding a pale tan colour. Faba beans darken on storage, and storage temperature and moisture both affect this process. This project will be undertaken by SARDI researchers and has three aims: to determine what chemical mechanism is behind the darkening process; to find a low-cost post-harvest treatment able to slow down the darkening; and to look for varietal differences in storage darkening.



Maria Saarela, 0436 397 407, maria.saarela@adelaide.edu.au

UAD1623: Preparing for a pulse protein market - pulse options for expansion areas



University of
Adelaide / SARDI



\$172,173



1/7/2023 – 30/6/2025

This project will be undertaken by SARDI researchers and aims to provide information to growers when considering a pulse protein market in key pulse expansion areas. This will be achieved by evaluating current genetic variation for protein content and seed quality, evaluating the crop choices for different environments, and by conducting an economic analysis.



Rhiannon Schilling, 0407 815 199, rhiannon.schilling@sa.gov.au

UAD2023: Developing new breeding material to stabilise barley yields



University
of Adelaide



\$115,362



1/7/2023 – 30/6/2025

South Australian crops can be severely impacted by poor and variable growing conditions, which includes low-fertility soils. Crop plants possess strong instincts to reduce grain number due to variable growing conditions or reduced fertiliser. This is a major contributor to the yield gap in SA. This project seeks to help close this yield gap through the import and testing of new genetic material that makes barley less responsive to environmental conditions.



Phil Brewer, 0404 250 110, philip.brewer@adelaide.edu.au

UAD3023: Improving industry response to white grain disorder and fusarium head blight outbreaks while protecting export markets



University of
Adelaide / SARDI



\$223,554



1/7/2023 – 30/6/2025

This project will be undertaken by SARDI researchers and aims to improve industry preparedness for dealing with white grain disorder and fusarium head blight to reduce rejection and down-grading of grain at silos while protecting SA's export markets. Grain samples, trial data, spore trapping data and weather data will be utilised to provide more information on these diseases. Project activities will encourage collaboration and information sharing amongst South Australian researchers, growers, advisers and grain handlers. This project is a co-investment, with GRDC providing 50% of the total funding (above).




Tara Garrard, 0459 899 321, tara.garrard@sa.gov.au



CASE STUDY

03



Former Hart intern
Declan Anderson



EPAG Research Andrew Ware and
former EP intern Rhaquelle Meiklejohn

Internships in applied research

Internships for agricultural graduates have provided a successful pathway into careers in the research space, with the majority of recent interns finding full-time work in research roles.

SAGIT recognises the importance of providing a stepping-stone for early career researchers and, over the past decade, has funded at least 15 internships at SARDI, Hart Field-Site Group and AIR EP.

The internships are designed to encourage graduates to extend their practice and knowledge base, develop applied research skills, and enhance their contributions to grains research, development and extension.

AIR EP Executive Officer Naomi Scholz said the program affords new agriculture graduates valuable experience, while contributing to local research and attracting skilled people into local careers.

“Our interns have the opportunity to learn as much as possible about being a grains researcher, to experience different farming systems, and to develop their networks,” she said.

“Internships are a great way of connecting young graduates with the industry and furthering their research and development skills.

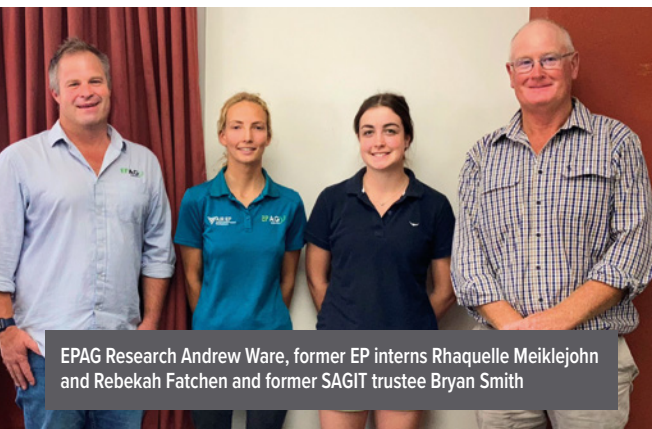
“They’re learning about ongoing research by working alongside our research teams in on-ground trials. They’re also meeting farmers and advisors to discuss local issues and how those can be addressed through RD&E.”

EPAG Research’s Andrew Ware said the ability to foster and develop applied grains RD&E capacity on Eyre Peninsula remains a high priority.

“Each intern has worked on real, meaningful field research projects contributing valuable knowledge for local growers, working alongside professionals and local growers to build skills and contacts,” he said.

All three EP interns have successfully moved on to local grains research careers.

Intern from 2021, Rhaquelle Meiklejohn, now works full-time with EPAG Research as a Research Officer, 2022 intern Rebekah Fatchen is working with AIR EP as a Project



EPAG Research Andrew Ware, former EP interns Rhaquelle Meiklejohn and Rebekah Fatchen and former SAGIT trustee Bryan Smith



AIR EP Chair Bill Long, former EP intern Elijah Luo and SARDI's Amanda Cook

Officer, and 2023 intern Elijah Luo has secured a Research Officer role with SARDI's Minnipa Agricultural Centre.

Hart Field-Site Group has been running its intern program successfully since 2015.

The organisation's first two-year intern, who worked across 2021 and 2022, was Declan Anderson. Soon after completing his internship, Declan joined Trengove Consulting in a research role.

He said the internship helped him secure the position.

"Having that hands-on experience in planning, managing and reporting on projects really helped," he said.

Kaidy Morgan, whose internship at Hart was funded by the SA Drought Hub with in-kind support from SAGIT, has now been appointed as Technical Officer with Hart, enabling her to continue working in the industry.

Hart Scientific Officer Rebekah Allen said the internships offered a unique experience.

"Working with Declan and our other interns has highlighted the importance of programs like this to show graduates the diversity of careers in applied grains RD&E and provide opportunities for them to build their research capabilities," she said.

"We believe this program, kindly supported by SAGIT and more recently the SA Drought Hub, provides excellent outcomes for the grains industry and more importantly, within regional locations of SA."

SAGIT-supported internships will run through 2024, with Alex Busch based with EPAG Research, and Myfanwy 'Miffy' Purslow to undertake the internship with Hart. Hart has also received funding in the 2024 allocation to continue into 2025-26.

EP120 Eyre Peninsula internship in applied grains research

AEP1422 Eyre Peninsula internship in applied grains research 2023

AEP3423 Eyre Peninsula internship in applied grains research 2024

H120 Regional internship in applied grains research

HAR0423 Regional internship in applied grains research

HAR5524 Regional internship in applied grains research

UAD3223: Screening for genetic components of head-retention in barley



University of
Adelaide



\$149,174



1/7/2023 – 30/6/2025

Barley head-loss is an ongoing issue that leads to reduced yield based on environmental factors and cultivar sensitivity. Although management options exist, improved genetic solutions are needed to limit the seasonal and site variability. In this project, researchers will extend current knowledge of head-loss management and peduncle structure to consider new cultivars and candidate genes that might influence head retention.



Matthew Tucker, 08 8313 9241, matthew.tucker@adelaide.edu.au

UAD4423: Delivery of beneficial organisms through seed coating to improve grain yield



University
of Adelaide



\$197,149



1/7/2023 – 30/6/2025

This is a pilot project focused on seed quality improvement and enhanced grain production in wheat, barley, chickpea and canola as major diverse crops in SA. This will be achieved by generating new formulas for seed coating that enhance the delivery of Trichoderma, mycorrhizal fungi and other beneficial microbes, nutrients and other effective additives.



Matthew Denton, 0417 026 227, matthew.denton@adelaide.edu.au

UAD2522: Revegetation for enhanced biocontrol of pest conical snails



University
of Adelaide



\$239,917



1/7/2022 – 30/6/2025

This study investigates the impact of native revegetation on suppressing conical snail populations on the Yorke Peninsula. The establishment of revegetation strips adjacent to grain cropping paddocks and near silos can enhance the survival of a beneficial parasitoid fly by providing essential floral food resources and refugia, boosting parasitism rates and suppression of pest conical snails. This project is a co-investment, with GRDC providing 50% of the total funding (above).



Kym Perry, 0421 788 357, kym.perry@adelaide.edu.au



UNF1724: Strategies for mitigating frost damage in the Upper North region



Upper North
Farming Systems



\$230,370



1/7/2024 – 30/6/2027



Frost events have been a significant concern in the Upper North region, resulting in substantial crop losses and economic impacts in previous years. The Upper North is susceptible to frost damage at various stages in the growing season, leading to decreased yields. Therefore, a holistic approach applying proven research outcomes over numerous years will be trialled in local validation trials and extended through this project. This project is a co-investment, with GRDC providing 50% of the total funding (above).



Jade Rose, 0448 866 865, jade@unfs.com.au

UNF2822: Canola profitability as a break crop in the Upper North?



Upper North
Farming Systems



\$101,180



1/7/2022 – 30/6/2025

This project aims to explore if new canola technology allows it to be a more reliable and viable break crop option in the Upper North agricultural zone. The project will assess the profitability of different canola agronomy packages in local validation trials (GM vs open pollinated TT) against wheat over a three-year period.



Jade Rose, 0448 866 865, jade@unfs.com.au

USA3323: Pesticide effects on soil microbial functions in contrasting SA soils



University of
South Australia



\$245,855



1/7/2023 – 30/6/2025






The aim of this project is to understand how soil properties influence the effects of pesticides on soil health. The project team will assess six targeted pesticides in 10 contrasting South Australian broadacre cropping soils. This knowledge will deliver South Australian farmers essential information for identifying the best pesticide-soil combinations to maintain healthy soil microbial communities. This project is a co-investment, with GRDC providing 50% of the total funding (above).



Casey Doolette, 08 8302 6233, casey.doolette@unisa.edu.au



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