



The SAGIT Snapshot

SA grain growers
funding research
solutions

2021

The South Australian Grain Industry Trust ...

SA grain growers funding research solutions

SAGIT has longevity

The South Australian Grain Industry Trust Fund (SAGIT) was established in 1991 to administer the voluntary research levy contributed by SA grain growers.

YOUR support keeps SAGIT going

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 invests in a range of areas

Research and development investment of more than \$1.8 million a year is supported in a range of areas crucial to advancing the SA grain industry, including grain growing, farming systems, soil management, harvesting, storage, processing and marketing and for dissemination of technical information to growers.

SAGIT is directed by 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.

SAGIT is accountable to growers

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!

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Investment Index

✓ = new investments starting in 2021-22 totalling \$2.46 million

Code	Organisation	Supervisor	Project title	New?	Pg
AEG121	Australian Export Grains Innovation Centre	Ross Kingwell	Boosting profitability and efficiency of SA's trade in containerised grain	✓	8
AGX319	AgXtra	Richard Porter	Promoting secondary and tertiary student engagement in crop production		8
AS219	Agronomy Solutions	Sean Mason	Optimising P nutrition in pulses to maximise N fixation and yield		8
ELD121	Elders Rural Services	Michael Brougham	Acid soils, ripping and lentil production improvement	✓	9
EP120	AIR EP	Andrew Ware	Eyre Peninsula internship in applied grains research		9
GGG121	Global Grain Genetics	Michael Materne	Lentil varieties for low rainfall and sandy soil environments	✓	9
H121	Hart Field-Site Group	Rebekah Allen	Variety selection and weed management options for genetically modified canola	✓	12
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MPF221	Murray Plains Farmers	Deanna Lush	Pasture legume choices, establishment and persistence for the Murray Plains	✓	14
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PA121	Precision Agriculture	Will Langdon	A practical approach to sub-surface acidity in the Mid North	✓	14
PIR121	PIRSA	Brian Hughes	Developing criteria for soil and plant aluminium and manganese toxicity in South Australia	✓	15
RS121	Rural Solutions SA	Michael Wurst	2022 Farm Gross Margin Guide for SA	✓	15

Code	Organisation	Supervisor	Project title	New?	Pg
S/UA121	SARDI / University of Adelaide	Amanda Cook	Improving management of Group A resistant barley grass in current farming systems	✓	15
S/UA221	SARDI / University of Adelaide	Katherine Linsell	Grower crop root health workshops	✓	18
S/UA421	SARDI / University of Adelaide	Blake Gontar	Measuring and managing yield loss caused by Phoma root in lentil and faba bean	✓	18
S/UA721	SARDI / University of Adelaide	Kathy Ophel-Keller	Extension support for SA Drought Hub Internship Program	✓	18
S/UA821	SARDI / University of Adelaide	Rhiannon Schilling	Investigating aluminium speciation in wheat roots in alkaline soil	✓	19
S/UA921	SARDI / University of Adelaide	Rhiannon Schilling	Evaluating super high oleic acid safflower in sodic and saline soils	✓	19
S/UA1021	SARDI / University of Adelaide	Brendan Kupke	Characterising the optimal flowering period for the Murray Plains	✓	19
S/UA1420	SARDI / University of Adelaide	Maarten van Helden	Revealing invertebrate species and conditions causing seedling damage in field settings		20
S121	SARDI	Amanda Cook	Eyre Peninsula Farming Systems Summary 2021-2023	✓	20
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S319	SARDI	Courtney Peirce	Improving productivity of oats		21
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SAN121	SANTFA	Greg Butler	The implications of green hydrogen for SA grain growers	✓	21
SAN120	SANTFA	Greg Butler	SANTFA Conference 2021-2023		24
SAN220	SANTFA	Greg Butler	Pre-emptive flame retardant as a new tool for SA grain growers		24
TC121	Trengove Consulting	Sam Trengove	Improving crop safety and broadleaf weed control with herbicides in lentil	✓	24
TC221	Trengove Consulting	Sam Trengove	Improved management of variable phosphorus requirement and strategies for highly responsive soils	✓	25
TC120	Trengove Consulting	Sam Trengove	Management of fungicide resistant wheat powdery mildew		25
TEI121	Thomas Elders Institute	Adam Hancock	Faba bean nutrient omission trial	✓	25
UA221	University of Adelaide	Judith Rathjen	Understanding and managing fertiliser toxicity in pulses in SA	✓	26

Code	Organisation	Supervisor	Project title	New?	Pg
UA721	University of Adelaide	Matthew Tucker	Revealing the basis for head loss in barley	✓	26
UA420	University of Adelaide	Scott Boden	Enhancing grain production and quality traits for bread wheat		26
UA618	University of Adelaide	Haydn Kuchel	A genetic, environmental and functional investigation of late maturity alpha-amylase (LMA) and its implications for wheat breeding		27
UA720	University of Adelaide	Iain Searle	Development of a dual-purpose common vetch variety for arid South Australia		27
UNF119	Upper North Farming Systems	Ruth Sommerville	Upper North barley time of sowing; frost / heat stress effects		27
USA118	University of South Australia	Enzo Lombi	Comparative effects of agricultural pesticides on SA soil microbial functions		28
USA121	University of South Australia	Enzo Lombi	Developing a DGT methodology to assess bioavailability of herbicide residues	✓	28

Grower group events

Code	Organisation	Supervisor	Project title	New?	Pg
AEP121G	AIR EP	Naomi Scholz	Lower Eyre Peninsula Ag Expo 2021	✓	29
AEP221G	AIR EP	Naomi Scholz	Maximising performance of post-emergent herbicides workshops on upper Eyre Peninsula	✓	29
SPA119G	Society of Precision Agriculture Australia	Frank Demden	Supporting premier PA events: Precision Ag expos and symposia		29

SAGIT INVESTMENTS

Research Projects

✓ indicates new project starting in 2021-22

AEG121: Boosting profitability and efficiency of SA's trade in containerised grain



Australian Export
Grains Innovation
Centre



\$58,000



1/7/2021 – 30/6/2022



Issues and opportunities for enhancing the containerised grain trade in South Australia are to be reviewed, and the study findings and recommendations will be communicated. SA case studies, including YouTube video interviews, will be developed. A 'how to' manual is to be produced for SA farmers outlining the steps, hazards and opportunities in the containerised grain trade.



Ross Kingwell, (08) 6168 9920, ross.kingwell@aegic.org.au

AGX319: Promoting secondary and tertiary student engagement in crop production



AgXtra



\$77,310



1/7/2019 – 30/6/2022

A wheat production competition involving high school students from Urrbrae, Balaklava, Kapunda and Rostrevor at a field site between Gawler and Freeling. Each school team develops a cropping plan which is tested in a replicated field trial. Awards are based on crop yield and gross margin. The Grains Research and Development Corporation (GRDC) will fund the awards, which is attendance at GRDC Updates.



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

AS219: Optimising P nutrition in pulses to maximise N fixation and yield



Agronomy Solutions



\$238,421







1/7/2019 – 30/6/2022

Comparing rates of phosphorus (P) on lentils, chickpeas and beans on nodulation and nitrogen (N) fixation in year one, and on responses of canola and wheat in years two and three at two sites. Also testing forms of P, including mono ammonium phosphate (MAP), triple superphosphate (TSP) and phosphoric acid, on lentil production at one site over two years.




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




ELD121: Acid soils, ripping and lentil production improvement

 Elders Rural Services
  \$39,880
  1/3/2021 – 1/3/2022
 


Acidic soils have a detrimental effect on lentil establishment, weed control, biomass production, grain yield and nitrogen fixation. The benefits of different ripping depths and different ripping machines on lentil grain yield in red clay soils will be demonstrated at three sites in the Mid North, and financial responses will be analysed.

 Michael Brougham, 0427 727 466, michael.brougham@elders.com.au





EP120: Eyre Peninsula internship in applied grains research

 EPAG Research
(on behalf of EPARF,
now AIR EP)
  \$235,600
  1/7/2020 – 30/6/2022


To fund two interns to be based on the Eyre Peninsula. One intern per year, starting February 2021. Interns will be supervised by Andrew Ware with two weeks at Minnipa Ag Centre and two weeks with independent agronomists. Interns will also conduct a project of field trials and aerial imagery linked with the National Landcare Program AIR EP project. The 2021 EP intern is Rhaquelle Meiklejohn.

 Andrew Ware, 0427 884 272, andrew@epagresearch.com.au

GGG121: Lentil varieties for low rainfall and sandy soil environments

 Global Grain
Genetics Pty Ltd
  \$158,094
  1/5/2021 – 31/5/2024
 

Lentil germplasm developed in SAGIT project GGG118 is to be evaluated at multiple low rainfall sites and a contrasting higher rainfall site to understand traits that confer adaptation to sandy soils, and to identify lines for variety release. Lentil germplasm is screened to identify lines with specific adaptation to mallee duplex soils and deep sandy soils. Outcomes will identify traits for lentil adaptation to sandy soils and agronomy required to increase yield and yield stability.

 Larn McMurray, 0466 113 848, lmcmurray@globalgraingenetics.com
 Michael Materne, 0413 977 940, mmaterne@globalgraingenetics.com



New understandings on the phenology drivers of durum

South Australian durum growers have been provided with the most up-to-date information on crop development, enhancing their ability to optimise flowering time and avoid significant yield losses from temperature stress.

Findings from a SAGIT-funded project led by the Department of Primary Industries and Regions' research division, the South Australian Research and Development Institute (SARDI), have formed a foundation of understanding for current application and future research consideration.

The project was established to provide information on the phenology drivers of durum, enabling SA growers to better match durum varieties to their environment to achieve maximum yield stability. This project was the main focus of SARDI intern Melissa McCallum's SAGIT-funded internship year.

The project – involving field trials at Loxton and Tarlee, a phenology trial with eight sowing dates at the Waite campus, as well as experiments in controlled environment cabinets at the Australian Plant Phenomics Facility's Plant Accelerator® – also aimed to correct and update flowering models to accurately describe optimum sowing and flowering dates for durum in SA, and to validate the suitability of durum for early sowing.



SARDI's Melissa McCallum (left) and Courtney Peirce worked on the project that found that the main drivers of flowering in durum are photoperiod and temperature, with current durum varieties and breeding lines having limited variation in these controls and time to flower compared to bread wheat varieties.

From the project it was found that the main drivers of flowering in durum are photoperiod and temperature, with current durum varieties and breeding lines having limited variation in these controls and time to flower compared to bread wheat varieties.

As such, there is currently no durum variety suited to early sowing (pre-ANZAC Day in SA) with the optimum sowing window in early-mid May.

SARDI senior research officer Courtney Peirce says the research demonstrated that optimum flowering period for commercial durum varieties will be similar to either Scepter or Trojan bread wheats for a given environment.

However, the relative yield of durum is likely to be lower than bread wheat for a given flowering date.

“Durum varieties are more sensitive to environmental (frost and heat) and biotic factors (crown rot) than bread wheat, with yield and sterility negatively correlated in all environments in our study,” Dr Peirce says.

“Since these factors will cause greater yield penalties in durum than bread wheat, it is of greater importance that durum growers sow on time and have their durum crops flower at an optimum time, particularly in frosty or heat prone environments.”

S518: Drivers of flowering time in durum

H121: Variety selection and weed management options for genetically modified canola



Hart Field-Site
Group



\$61,708



1/7/2021 – 30/6/2024



GM canola varieties are to be demonstrated at the Hart Field Site for the Mid North region and herbicide regimes for best annual ryegrass control are to be determined.



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

H120: Regional internship in applied grains research



Hart Field-Site
Group



\$198,568



1/7/2020 – 30/6/2023

To fund a two-year internship, starting March 2021. The intern will also undertake a 4-6 week placement with SARDI on a project relevant to Hart research. The 2021-2022 Hart regional intern is Declan Anderson.



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

H119: Long-term cropping systems trial



Hart Field-Site
Group



\$37,950



1/7/2019 – 30/6/2022

The long-term cropping systems trial at Hart will be continued. Assessments in this three-year phase will include soil physical properties as well as grain production.



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

LEA120: Taking South Australian canola profitability to the next level



EPAG Research
(on behalf of LEADA
– now AIR EP)



\$130,400



1/7/2020 – 30/6/2023

To maximise water use efficiency of canola, this project will have two-year rotation trials of canola after wheat or pulses at two sites (Wanilla and Yeelanna) on the lower Eyre Peninsula. The project will also test timings and higher rates of nutrients (P, S & N), and an economic analysis of the findings.



Andrew Ware, 0427 884 272, andrew@epagresearch.com.au

MFM120: MacKillop Farm Management Group Annual Trial Results



MacKillop Farm
Management Group



\$18,000



1/7/2020 – 30/6/2023

To fund compilation of MacKillop Farm Management Group Annual Trials Results book for trials undertaken in 2020, 2021 and 2022. The book will be available in March the following year.



Meg Bell, 0433 499 630, ceo@mackillopgroup.com.au

MHR121: Frost Learning Centre for farmers, advisers and researchers



Mid North High
Rainfall Zone Group



\$152,300



1/4/2021 – 30/6/2023



Frost research is conducted on (1) physiological traits that result in a slight increase in frost tolerance, (2) frost avoidance strategies such as variety, time of sowing, mixes and intercropping, plant growth regulators, delayed maturity interventions, (3) mitigation of frost damage through dual purpose wheat and barley for yield, hay or grazing and (4) rapid and remote sensing of frost damage. The centre, being established with SAGIT funding, aims to be a template for establishing frost learning centres elsewhere.



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

MPF221: Pasture legume choices, establishment and persistence for the Murray Plains



Murray Plains
Farmers



\$29,760



1/5/2021 – 31/12/2022



Appropriate pasture species are to be identified for the low rainfall Murray Plains environment, which has highly variable soil types. Ten pasture species will be sown into a trial site and dry matter cuts and seed banks will be measured. Sowing rate is measured in three species, and N fixation as well as soil borne diseases are measured via soil tests the following autumn.



Deanna Lush, 0419 783 436, deanna.lush@agcommunicators.com.au

MSF219: Deep ripping to enhance production on Mallee sandy soils



Mallee Sustainable
Farming



\$169,050



1/7/2019 – 30/6/2022

MSF will work with five farmers to implement deep ripping demonstrations with the aim to refine the on-farm adaptation of deep ripping and develop best practice methodologies for deep ripping on sandy soils. In addition, the project will deliver awareness-raising activities through core MSF activities such as workshops, field days, social media and e-updates.



Tanja Morgan, 0429 395 918, tanja.morgan@msfp.org.au

PA121: A practical approach to sub-surface acidity in the Mid North



Precision Agriculture



\$91,315



1/7/2021 – 15/12/2022



The variability in subsoil acidity in cropping paddocks of the Mid North is quantified by a range of means including correlation to topsoil pH maps, and other soil data layers such as electrical conductivity, radiometrics and elevation. This will provide cheaper identification compared to conventional approaches and provide growers with practical tools and guidance for amelioration, including Variable Rate Application of lime that matches soil requirements.



Will Langdon, 0427 514 109, will.langdon@precisionagriculture.com.au

PIR121: Developing criteria for soil and plant aluminium and manganese toxicity in South Australia



PIRSA



\$76,660



1/7/2021 – 28/2/2023



Critical soil and plant aluminium and manganese toxicity levels will be developed for South Australian conditions, including soil types, crops and local soil testing methods.



Brian Hughes, 0429 691 468, brian.hughes@sa.gov.au

RS121: 2022 Farm Gross Margin Guide for SA



Rural Solutions SA



\$31,600



1/7/2021 – 30/6/2022



Production of the 2022 Farm Gross Margin Guide for SA. This includes comparisons of cropping and livestock enterprises for low, medium and high rainfall regions and a template to calculate gross margins specific to particular enterprises. Electronic copies, including an Excel spreadsheet, and hard copies are available through Rural Solutions SA, SAGIT, PIRSA and GRDC.



Michael Wurst, 0418 803 685, michael.wurst@sa.gov.au

S/UA121: Improving management of Group A resistant barley grass in current farming systems



SARDI / University of Adelaide



\$224,861



1/6/2021 – 30/6/2024




Control of resistant barley grass is to be investigated on upper Eyre Peninsula through (1) impact of new herbicides and management options in cereals and break crops, (2) understanding the seed dormancy and germination patterns of barley grass in that region, and (3) identifying soil constraints that impact on herbicide efficacy by monitoring five farmer paddocks per season.



Amanda Cook, 0427 270 154, amanda.cook@sa.gov.au



SARDI research scientist Liz Farquharson (second from right) says the guidelines around best inoculation practice for dry sowing legumes in inoculation responsive soils will enhance grower confidence when dry sowing legumes.



For good nodulation to occur under any scenario, sufficient rhizobia need to be alive on or near the seed at germination to multiply around the root, infect the plant and form nodules.

Research delivers better inoculation guidelines for dry sown pulses.

South Australian grain growers have been provided with sound guidelines around best inoculation practice for dry sowing legumes in inoculation responsive soils thanks to a project funded by SAGIT.

The three-year project led by the Department of Primary Industries and Regions' (PIRSA) research division, the South Australian Research and Development Institute (SARDI), has delivered new knowledge to support growers in their efforts to optimise inoculation in dry-sown legumes. Dry sowing is where pulses are sown into soils with insufficient moisture present for seed germination. Under these conditions, the survival of rhizobia on seed may be insufficient for adequate nodulation at seed germination.

SARDI research scientist Liz Farquharson says the guidelines will enhance grower confidence when dry sowing legumes – a practice which allows growers to better manage time demands at sowing, ensuring successful early establishment of crops and reduced yield losses in dry springs.

The project, *Optimising legume inoculation for dry sowing* (S716), evaluated a range of inoculant formulations, application strategies and sowing times in order to provide industry with recommendations that optimise nodulation and nitrogen fixation for a range of pulse crops, when dry sown.

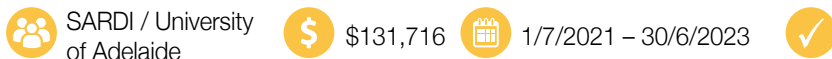
“This research has demonstrated that when good nodulation is achieved for dry sown crops, early sown crops can outperform later sown crops in terms of both nitrogen fixation and yield, provided weed and disease management are in check,” Dr Farquharson says.

This project added value to the Grains Research and Development Corporation (GRDC) investment, ‘Optimising nitrogen fixation of grain legumes – southern region’, by addressing the knowledge gap which existed regarding the effectiveness and best practices for dry sowing legumes in SA.

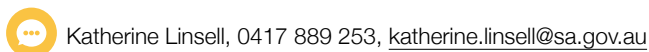
For good nodulation to occur under any scenario, sufficient rhizobia need to be alive on or near the seed at germination to multiply around the root, infect the plant and form nodules. Where dry sowing pulses on inoculation-responsive paddocks with low or no suitable rhizobia present in the soil, the project found that:

- Standard inoculation practices (peat slurry applied to seed at recommended rate) are unlikely to deliver satisfactory nodulation following dry sowing especially where there are extended dry conditions (more than seven days) and/or additional stresses to rhizobia survival on seed and soil colonisation, such as soil acidity (e.g. for group E/F crops that is $\text{pH}_{\text{ca}} < 5.5$)
- Increasing application rates of peat inoculant on seed increases the likelihood that sufficient rhizobia will survive on the seed until plant germination occurs and increases nodulation potential. Doubling the recommended inoculant rate (peat on seed) consistently improved nodulation in four trials. Even so, doubling the rate of peat inoculant still fell short, where additional stresses to rhizobia occurred, e.g. seed chemical dressings, soil acidity for pulses other than lupin and extended dry conditions (more than seven days).

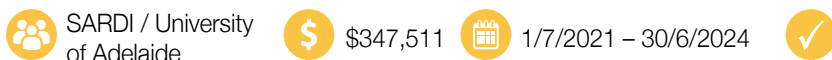
S/UA221: Grower crop root health workshops



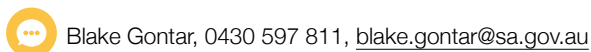
Nine grower crop root health workshops are to be held across South Australia over two years, led by two teams of SARDI pathologists. DNA testing of crop samples will be offered if chosen by the participant and at the cost of the participant. Workshops are to be organised and facilitated by AgCommunicators. Post workshop online consultation will be delivered to discuss DNA results.



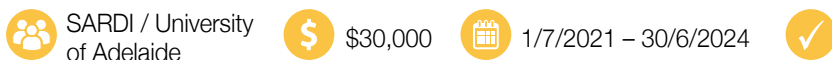
S/UA421: Measuring and managing yield loss caused by Phoma root in lentil and faba bean



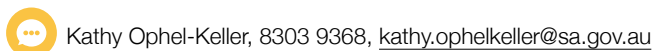
The effect of Phoma root rot on yield in lentil and faba bean is to be measured in a series of field trials which are inoculated with varying rates of the pathogen. Trials are subjected to various levels of soil water via supplementary irrigation to investigate the role of soil water in the root rot disease. A range of chemical options are tested for disease control.



S/UA721: Extension Support for SA Drought Hub Internship Program



This project links to the Federal Government Future Drought Fund which has a South Australian Hub, to demonstrate and increase grower adoption of innovative drought resilience tools, technologies and practices. The SA Drought Hub extension intern will run a series of workshops to extend the outcomes of previous SAGIT investments aligned to the Hub.



S/UA821: Investigating aluminium speciation in wheat roots in alkaline soil



SARDI / University of Adelaide



\$35,350



1/4/2021 – 31/3/2022



The form of aluminium in an alkaline soil profile and the form and spatial distribution of aluminium in wheat roots in a pH range is to be determined using the Canadian Light Synchrotron. Outcomes will assist in developing crop varieties with tolerance to aluminium.



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

S/UA921: Evaluating super high oleic acid safflower in sodic and saline soils



SARDI / University of Adelaide



\$76,546



1/4/2021 – 31/3/2022



Safflower varieties, including the super high oleic (SHO) lines, are to be evaluated in a field trial in saline soils in the Coomandook region. The level of tolerance to sodic soils in these lines is to be compared to canola in a pot trial in The Plant Accelerator® at the Waite Campus.



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

S/UA1021: Characterising the optimal flowering period for the Murray Plains



SARDI / University of Adelaide



\$112,840



1/4/2021 – 30/6/2023



The Optimum Flowering Period (OFP) for wheat and barley varieties, with different maturity windows, is to be characterised for the Murray Plains region. APSIM modelling will initially determine the OFP using long-term climate data and designated soil types. The model is tested with seasonal weather data and a time of sowing field trial at Palmer, for two years, incorporating wheat and barley varieties with different maturity windows.



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

S/UA1420: Revealing invertebrate species and conditions causing seedling damage in field settings



SARDI / University of Adelaide



\$157,938



1/7/2020 – 30/6/2022

To monitor behaviour of millipedes, earwigs and slaters in crops at three locations and for two years using cameras. Population numbers and developmental stages will be assessed by sieving soil samples and the migratory movement assessed using traps.



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

S121: Eyre Peninsula Farming Systems Summary 2021-2023



SARDI



\$30,000



1/7/2021 – 30/6/2024



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 the upper Eyre Peninsula farming systems.



Amanda Cook, 0427 270 154, amanda.cook@sa.gov.au

S220: SA Crop Variety Sowing Guide



SARDI



\$108,838



1/7/2020 – 30/6/2023

SAGIT funds SARDI staff to compile the SA Crop Variety Sowing Guide and Grains Research and Development Corporation (GRDC) funds the layout, printing and distribution costs. It is mailed to all SA grain growers, advisers and agribusinesses on the GRDC's GroundCover mailing list.



Phil Davies, 0427 012 130, phil.davies@sa.gov.au

S319: Improving productivity of oats



SARDI



\$243,709



1/7/2019 – 30/6/2022

This project will assess earlier sowing, sowing rates and nitrogen timings on grain yield and quality of nine milling oat varieties at two sites, Geranium and Tarlee, over three years. It will also assess hay yield and quality where grain has been frosted.

Courtney Peirce, 0419 817 325, courtney.peirce@sa.gov.au

S419: Improving the early management of dry sown cereal crops



SARDI



\$261,791



1/7/2019 – 30/6/2022

This project will assess the impact of fertiliser treatments, soil residual herbicides and seed dressings on establishment, growth and grain yield of wheat sown dry in early to mid-April at three sites with contrasting soil types, Minnipa, Warrambo, and Poochera, over two years, 2020 and 2021. Some treatments will also be conducted on barley. In addition, glasshouse experiments will be conducted with controlled soil moisture contents on nitrogen rates for these three soil types to determine wheat establishment and early growth.

Amanda Cook, 0427 270 154, amanda.cook@sa.gov.au

SAN121: The implications of green hydrogen for SA grain growers



SA No-Till Farmers Association



\$41,000



1/7/2021 – 30/6/2023



A series of e-documents is to be published to update grain growers on the techno-economics of participating in the green hydrogen transformation. The publications will explain green hydrogen technology and the opportunities for South Australian grain growers for on-farm production of green hydrogen and nitrogen fertiliser using straw. Information will be freely accessible on the SANTFA website.

Greg Butler, 0427 424 278, greg@santfa.com.au



Mallee Sustainable Farming's Tanja Morgan with Michael Moodie, of Frontier Farming Systems.

Led by Mallee Sustainable Farming, the project found that the greatest determinant of increased frost risk in cereals was in fact early sowing.

Early sowing the greatest determinant of increased frost risk in Mallee

With frost being a major constraint to profitable grain production in the Mallee, growers in that region welcome any frost-related research insights that may assist in risk management and mitigation.

To that end, new knowledge generated out of a three-year SAGIT-funded project aimed at determining if Clearfield® crop varieties are more susceptible to frost damage with and without imidazolinone herbicide application is expected to help inform growers' cropping practices and programs.

Led by Mallee Sustainable Farming (MSF), the project found that the greatest determinant of increased frost risk in cereals was in fact early sowing.

Lead researcher Michael Moodie, of Frontier Farming Systems, says that based on the project's investigation into time of sowing, there was a clear link to increased frost damage in cereals with the first time of sowing in mid-April.

"Therefore, it appears frost damage risk is increased if wheat is sown prior to May in the Loxton region," Mr Moodie says.

Project outcomes also indicated that frost damage is likely more closely linked to the timing of the frost event occurring at a susceptible growth stage, and while varietal pairs of Clearfield® and conventional varieties were compared for frost damage there was likely a few days difference in flowering time and susceptibility amongst the pairs.

The research demonstrated that while some Clearfield® varieties in some years had more frost damage, this was not widespread and consistent across all Clearfield® varieties.

On average, there was no indication that varieties with the Clearfield® trait or the application of imidazolinone herbicide were more susceptible to frost damage.

The project was instigated based on perceptions of higher incidence of frost with the use of Clearfield® varieties, which are popular with growers as they provide opportunities for in-crop weed control.

The varieties are often sown earlier or as a dry sowing option, or on lighter soil types where brome grass is typically a problem and where frost damage can also be worse.

Numerous extension activities coordinated by MSF program manager Tanja Morgan, who also managed the project, have relayed the insights to Mallee growers at field days and Mallee Research Updates.

MSF218: Investigating frost susceptibility in Clearfield varieties treated with imidazolinone herbicide

SAN120: SANTFA Conference 2021-2023



SA No-Till Farmers Association



\$22,500



1/7/2020 – 30/6/2023

For part funding of speakers from outside of South Australia at SANTFA conferences for the next three years (2021 to 2023).



Greg Butler, 0427 424 278, greg@santfa.com.au

SAN220: Pre-emptive flame retardant as a new tool for SA grain growers



SA No-Till Farmers Association



\$16,000



1/7/2020 – 30/6/2022

To test fire retardant product “Fortify” in a field trial at Balaklava. Treatments include application rates and timings.



Greg Butler, 0427 424 278, greg@santfa.com.au

TC121: Improving crop safety and broadleaf weed control with herbicides in lentil



Trengove Consulting



\$82,752



1/4/2021 – 30/6/2023



Newly registered Group G herbicides are to be evaluated for lentil crop safety alone and in combination with other chemistries, in sandy soils. The effects of herbicide treatments on weed efficacy on sand and clay loam soils are to be measured in lentil field trials. This project builds on previous SAGIT projects TC116 and TC119.




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

TC221: Improved management of variable phosphorus requirement and strategies for highly responsive soils

 Trengove Consulting  \$207,822  1/4/2021 – 30/6/2024 


Phosphorus (P) response prediction based on spatial data in variable soils is to be validated in a series of field trials, encompassing different soil types. Best practice for long term management of high P response sites is to be determined.

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



TC120: Management of fungicide resistant wheat powdery mildew

 Trengove Consulting  \$88,025  1/7/2020 – 30/6/2022


Field trials at five sites over two years are to test fungicides, application methods and timings on control of wheat powdery mildew with some resistance to DMI fungicides. Fifty samples from wheat crops will be collected for resistance testing (to be undertaken by the Centre for Crop and Disease Management, Murdoch University).

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

TEI121: Faba bean nutrient omission trial

 Thomas Elder Institute  \$79,572  1/4/2021 – 30/4/2022 

Nutrient and fertiliser responses in faba beans are to be explored and quantified in faba bean omission trials in the South East. Twelve different nutrients are to be investigated to understand results of tissue tests and fertiliser requirements.

 Adam Hancock, 0427 475 254, adam.hancock@elders.com.au

UA221: Understanding and managing fertiliser toxicity in pulses in SA



University
of Adelaide



\$96,706



1/7/2021 – 30/6/2023



The role of fertiliser toxicity in poor pulse performance is to be investigated in a series of pot experiments to (1) determine the impact of fertilisers on emergence of common pulse crops, (2) investigate the effect of fertilisers on nodulation of inoculated seed, (3) evaluate toxic effect of fertilisers in different soil types, and (4) investigate effect of fertiliser placement on emergence, nodulation, and nitrogen fixation.



Judith Rathjen, 8313 1430, judith.rathjen@adelaide.edu.au

UA721: Revealing the basis for head loss in barley



University
of Adelaide



\$69,901



1/7/2021 – 30/6/2022



The effects of different timings of plant growth regulators applications on peduncle composition and head loss in barley are to be studied in two field trials. The ability of the Field Explorer to score head numbers in a field trial is to be assessed as a potential high throughput screening method. This project builds on UA619.



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

UA420: Enhancing grain production and quality traits for bread wheat



University
of Adelaide



\$174,021



1/7/2020 – 30/6/2023

Speed breeding to back cross F3-4 of wheat lines from AGT, Intergrain and LongReach Plant Breeders with lines with potential to increase grain yields. These lines will be assessed for nitrogen use efficiency in glasshouse and field trials at Roseworthy, Mallala and Bordertown.



Scott Boden, 0413 801 112, scott.boden@adelaide.edu.au

UA618: A genetic, environmental and functional investigation of late maturity alpha-amylase (LMA) and its implications for wheat breeding



University
of Adelaide



\$198,000



5/3/2018 – 3/9/2021

PhD supplementary scholarship to improve screening methods for LMA and identify molecular markers in wheat. LMA can cause a low falling number reading on non-sprouted wheat even though there is no reduction in starch quality and so needs to be screened out of breeding material.



Haydn Kuchel, 0428 817 402, haydn.kuchel@agtbreeding.com.au

UA720: Development of a dual-purpose common vetch variety for arid South Australia



University
of Adelaide



\$230,648



1/7/2020 – 30/6/2023

Aims to produce a vetch line with zero toxin and green seed coat so it can be used safely in monogastric diets and is readily identifiable. Application for an Australian Research Council grant using the SAGIT grant as co-funding has been successful.



Iain Searle, 0416 662 895, iain.searle@adelaide.edu.au

UNF119: Upper North barley time of sowing: frost/heat stress effects



Upper North
Farming Systems



\$88,825



1/7/2019 - 30/6/2022

Similar to previous project, UNF116 with wheat, the growth and yield of five barley varieties will be evaluated over three times of sowing (early April, mid-May and mid-June) and three years in a field trial near Booleroo Centre.



Ruth Sommerville, 0401 042 223, unfs@outlook.com

USA118: Comparative effects of agricultural pesticides on SA soil microbial functions



University of
South Australia



\$208,759



1/8/2018 – 31/8/2021

To assess the impact of 20 pesticides (insecticides, herbicides and fungicides) separately on microbial community structure and diversity in three soil types (calcareous or sodic) in laboratory tests. Will also assess the effects of repeated applications on soil microbes. In 2020 and 2021, will test five pesticides in field trials at Hart.



Enzo Lombi, 8302 6267, enzo.lombi@unisa.edu.au

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

USA121: Developing a DGT methodology to assess bioavailability of herbicide residues



University of
South Australia



\$213,806



1/9/2021 – 31/8/2024



A robust testing system for imidazolinone residues is to be developed using Diffusive Gradient in Thin-Films (DGT) technology. This tool will provide information on bio-availability of herbicide residues independent of soil type characteristics. The DGT tool will be validated in spiked soils, in a range of soil types and two water regimes. The DGT tool for glyphosate residue is also to be assessed.



Enzo Lombi, 8302 6267, enzo.lombi@unisa.edu.au

SAGIT Investments

Grower group funding

AEP121G: Lower Eyre Peninsula Ag Expo 2021



AIR EP



\$3,000



2/3/2021



Speaker travel expenses and venue hire expenses for Lower Eyre Peninsula Ag Expo 2021.



Naomi Scholz, 0428 540 670, eo@airep.com.au

AEP221G: Maximising performance of post-emergent herbicides workshops on upper Eyre Peninsula



AIR EP



\$3,000



1/7/2021 – 30/6/2022



Speaker travel expenses and venue hire expenses for post-emergent herbicides workshops on upper Eyre Peninsula in 2021.



Naomi Scholz, 0428 540 670, eo@airep.com.au

SPA119G: Supporting premier PA events: Precision Ag expos and symposia



Society of Precision Agriculture Australia



\$15,000



1/7/2019 – 30/6/2022

To support SPAA expos and symposia for the next three years. SA expos: 2020 – northern Mallee; 2021 – YP; 2022 – TBA. National symposia – 2021 TBA, 2022 – SA.



Frank Demden, 0488 917 871, frankdemden@gmail.com

Key project dates

Key Date	Description
November 2021	Call for applications for next round of funding.
4 February 2022	Project Applications due
4 March 2022	Progress Reports (continuing projects) due.
March 2022	Applications assessed by SAGIT. Applicants notified of results of application by the end of March.
1 July 2022	First payment*. Successful applicants must submit invoice 14 days prior to payment date.
August 2021	Trustee visits to projects commence
27 August 2021	Final reports and financial statements (Form A) due.
September 2021	Spring review - trustee visits to projects. Final reports reviewed.
November 2022	Call for applications for next round of funding.
1 January 2023	Second payment. Successful 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.*





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