



*Office Use Only*

Project Code	H117
Project Type	Research

## FINAL REPORT 2021

Applicants must read the *SAGIT Project Funding Guidelines 2021* prior to completing this form. These guidelines can be downloaded from [www.sagit.com.au](http://www.sagit.com.au)

Final reports must be emailed to [admin@sagit.com.au](mailto:admin@sagit.com.au) as a Microsoft Word document in the format shown ***within 2 months*** after the completion of the Project Term.

<b>PROJECT CODE</b>	:	H117
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<b>PROJECT TITLE</b>	(10 words maximum)
Regional Internship in Applied Grains Research	

### PROJECT DURATION

*These dates **must** be the same as those stated in the Funding Agreement*

<b>Project Start date</b>	1 <sup>st</sup> March 2018
<b>Project End date</b>	28 <sup>th</sup> February 2021

### PROJECT SUPERVISOR CONTACT DETAILS

*The project supervisor is the person responsible for the overall project*

<b>Title:</b>	<b>First Name:</b>	<b>Surname:</b>
Dr	Sarah	Noack
<b>Organisation:</b>		
Hart Field-Site Group		

## PROJECT REPORT

*Provide clear description of the following:*

### **Executive Summary** (200 words maximum)

*A few paragraphs covering what was discovered, written in a manner that is easily understood and relevant to SA growers. A number of key dot points should be included which can be used in SAGIT communication programs*

It is increasingly becoming difficult to find skilled graduates interested in careers in applied grains research, development and extension (R, D & E). The annual regional internship offers graduates one-year training in applied grains R, D & E. This internship program is based in Clare region, with the Hart Field-Site Group (HFSG).

Regional interns gain skills in trial and experimental design, data collection and statistical analysis. There is also a strong emphasis on communication with growers and industry to identify issues in the region and share their own research findings. Project H117 has successfully trained three graduates in the basic skills associated with applied R, D & E ready for the next step in their career. Programs like this are important for the long-term succession of new graduates into the industry, leading to greater research capacity in SA.

### **Project Objectives**

*A concise statement of the aims of the project in outcome terms should be provided.*

- To encourage high quality agricultural science students to pursue careers in applied research through a regionally based internship program.
- To give students with an interest in applied R, D & E an overview of the fundamentals of applied R, D & E relevant to the grains industry.

### **Overall Performance**

*A concise statement indicating the extent to which the Project objectives were achieved, a list of personnel who participated in the Research Project including co-operators, and any difficulties encountered and the reasons for these difficulties.*

The regional internship program has achieved the following objectives outlined in the initial research proposal:

- Improving Ag graduates understanding of careers in applied grains R, D & E.
- Demonstrated there are career options available in regional areas and continued access to skill and career development opportunities.
- Provided a training / mentoring year before interns take the step from university into the next stage of their career.
- Assisted with the development of personal networks required for future employment opportunities.
- Improved graduates understanding of the diversity of jobs in research. That is, applied research positions can be based in the field and/or the laboratory and have differing emphasis on R, D & E.

Key personnel involved in the delivery of project H117 include:

- Sarah Noack, Ryan Wood and Sandy Kimber, Hart Field-Site Group
- Kathy Ophel-Keller, Marg Evans, Liz Farquharson, Ross Ballard, Sarah Day, Penny Roberts, Kenton Porker and Courtney Peirce, SARDI
- Malcolm Buckby and Allan Mayfield, SAGIT

### Key Performance Indicators (KPI)

Please indicate whether KPI's were achieved. The KPI's **must** be the same as those stated in the Application for Funding and a brief explanation provided as to how they were achieved or why they were not achieved.

<b>KPI</b>	<b>Achieved (Y/N)</b>	<b>If not achieved, please state reason.</b>
Advisory committee formed with representatives from HFSG, SARDI and SAGIT. Detailed internship program developed and internship advertised.	Yes, each year	
Regional intern to commence employment.	Yes, each year	
Mid-year meeting and reporting between the intern and the advisory committee	Yes, each year an internal review within Hart and SAGIT trustee visit	
Evaluation of the internship	Yes, annually each intern completed an evaluation. In 2019 Hart reviewed the full program structure	

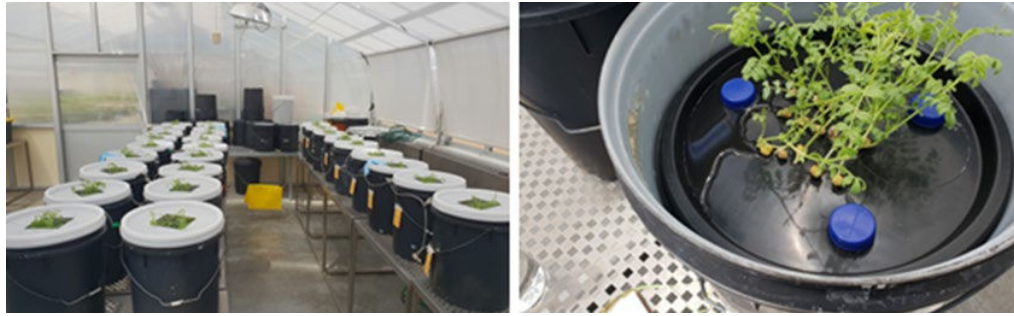
### Technical Information (Not to exceed **three** pages)

Provide sufficient data and short clear statements of outcomes.

The HFSG in conjunction with SARDI and SAGIT have been successful in delivering three regional internships as part of project H117. Below we have provided a summary of the activities each intern was involved in.

#### *2018 intern – Emma Pearse*

- Emma was a BSc Natural Resource Management graduate with First Class Honours from the University of Western Australia.
- The advisory committee identified Ross Ballard and Liz Farquharson for the SARDI, Waite component. Emma's focus project investigated acid tolerance in chickpea nodulation (photos below). The aim was to investigate how well chickpea rhizobia nodulate chickpea roots at low pH levels (pH 4.2 to 5.4).



- A second research area for Emma assessed grower paddocks to understand how well they were achieving their intended plant establishment. This was combined with field trials which compared plant establishment and uniformity in a tyne air seeder and a disc precision planter. This project was working with Sarah Noack, HFSG, Dr Glenn McDonald, UofA and had links with both GRDC and Stefan Schmitt's SAGIT project (NSS117).

#### *2019 intern – Jade Rose*

- Prior to commencing the intership Jade had already spent a significant amount of time at SARDI, Waite during her honours. Given one of the intern's main goals was to interact with growers and understand more about cropping in general the committee decided to pair her with Sarah Day, SARDI Clare.
- The intern become involved in one of Sarah's southern pulse agronomy projects evaluating semi-leafless and conventional field pea varieties to manipulate canopy structure for improved disease control.
- The intern also worked on a second smaller grower-based project with Sarah Noack, HFSG. This involved the intern working with five local growers to soil sample, implement fertiliser test strips and obtain yield map data.



#### *2020 intern – Brianna Guidera*

- Brianna was a BSc Ag graduate from the University of Adelaide.
- The interns main focus project was working with Courtney Peirce, SARDI on export oaten hay production. This included a large trial at Hart looking at variety selection, seeding date and nitrogen management. A second complimentary research component included a pot experiment at Waite. This glasshouse trial assessed the use of gibberellic acid to improve panicle emergence from oat stems. Poor panicle emergence can lead to delayed cutting

dates or longer curing time exposing hay to the elements and reducing hay quality.



- The advisory committee identified the intern had a strong interest in soils. The intern worked on grower-based project soil and plant testing project with Sarah Noack and Rebekah Allen, HFSG. This involved the intern working with five local growers to soil sample, implement fertiliser test strips and obtain yield map data.

Through their individual research activities, the interns had experience in a broad range of applied research skills including:

- Background research and development of a trial protocols
- Identification of suitable paddocks for field trial and/or case studies
- Trial design and setup (paddock, field trial, laboratory or glasshouse)
- Crop / trial management (e.g. seeding, spray and harvest operations)
- Soil sampling and plant assessments
- Data entry and statistical analysis
- Working with growers, advisers and researchers to achieve research outcomes.

### **Interns beyond the program**

On completion of her internship **Emma Pearce** was successful in securing a two-year contract with DPIRD as a development officer. The role was based in Esperance, WA and had a strong focus on working with researchers, industry, and growers in the region. One of her main projects was to assess and extend information about profitable legume rotation options in the local area. Emma has recently completed (March 2021) this contract and has relocated back to her family farm in Miling, WA.

**Jade Rose** is currently completing her PhD in the Soils Groups at Adelaide University. Her project is investigating 'Controls & constraints – nutrient & nitrogen benefit of above & below ground residues of pulse species in the southern Australian cropping system'. Outside of this we also encouraged her to join the Crop Science Committee to maintain her links with consultants and growers. She has taken on part time work for Upper North Farming Systems as Research Co-Ordinator (1 day / week).

From the beginning **Brianna Guidera** had a strong interest in soil science and was looking for a role in this area or considering honours after the internship. She was recently successful in securing a position as a Consultant in Sustainable Agriculture, Rural Solutions. This position is regionally based in Port Lincoln and has a soil focus works alongside Brett Masters.

### **Building interest and momentum among Ag graduates**

In the earlier years of the program, it was a challenging to get UofA BSc Ag students to apply for the internship. They were one of the main target groups for the regional program and a revision to the timing of applications was made in 2019. By bringing the open call for applications forward (August) we immediately saw a larger number of BSc Ag students apply.

In addition to this the HFSG has also invested time in joining a number of the Ag Student Association activities. For example, their Growing the Future Forum and Careers Night. We have continued to work with UofA to ensure the third years visit Hart during the year and are familiar with our operations. Last year due COVID this was unable to happen. As a result, Brianna and Sandy attended one of the student's practical lessons at Roseworthy to talk about the program. These activities have built a strong following around the internship and in both 2019 and 2020 we have a large number of high-quality BSc Ag students apply.

### **Conclusions Reached &/or Discoveries Made** (Not to exceed one page)

*Please provide concise statement of any conclusions reached &/or discoveries made.*

Working with the interns has highlighted the importance of programs like this to show graduates the diversity of careers in applied grains R, D & E. During their graduate degree they are exposed to a range of researchers within the University however, in SA we have a range of options which interns are just not aware of until shown.

On completion of their 12 months the interns have shown they have experience and confidence in the following areas (see Appendix 1 for full exit surveys):

- Conduct trial planning and design
- Conduct trial sampling and measurements in-season
- Statistical analysis of trial data
- Written and oral communication with growers, researchers and advisers

The extension and networking opportunities have been a highlight for both interns. In particular seeing their research from start to finish and sharing relevant findings with growers.

### **Intellectual Property**

*Please provide concise statement of any intellectual property generated and potential for commercialisation.*

No intellectual property was generated in this project.

### **Application / Communication of Results**

*A concise statement describing activities undertaken to communicate the results of the project to the grains industry. This should include:*

- *Main findings of the project in a dot point form suitable for use in communications to farmers;*
- *A statement of potential industry impact*
- *Publications and extension articles delivered as part of the project; and,*
- *Suggested path to market for the results including barriers to adoption.*

*Note that SAGIT may directly extend information from Final reports to growers. If applicable, attach a list of published material.*

The HFSG have involved all interns in our program of events. This has included introducing speakers, presenting and facilitating question time at four main events. Both Emma and Jade co-presented on the Hart Field Day alongside another researcher in their field. Unfortunately, we did not host a main field day in 2020 however, Brianna co-presented at Hart's 'Managing Varieties' mini field day. Also, as a final conclusion to the internship both Jade and Brianna presented key findings from their research projects at Hart's Getting the Crop in seminar.

Each intern was strongly encouraged to develop their own extension project during the year. For example, Jade produced a series of video blogs about her experience at Hart. The aim was to increase our members understanding of how trials are conducted - from seed packing, assessment through to harvest. These activities were designed to challenge interns to think about how to communicate with the Hart membership, promote the intern program and employ new methods / formats of communication (that is, beyond the HFSGs usual offering). Each intern's extension project was widely publicised through social media and the HFSG e-news.

The interns have also had many opportunities to network with growers, advisers and researchers which has raised the profile of the program. Some of these have included GRDC updates (Adelaide and local), Ag Ex Alliance Forum, Minnipa and UNFS field days, Crop Protection Forum and industry lead technical updates. Their presence and participation at these events improved their knowledge but also demonstrated to industry the desire for graduates to work in applied R, D & E.

Not only have the interns been active members of the Hart team, but also in the wider community. Through involvement in local sporting teams the general public has

become aware of the intern/program and the idea of targeting early career graduates into regional areas. Overwhelmingly there has been huge support for each intern within the local community.

## **POSSIBLE FUTURE WORK**

*Provide possible future directions for the research arising from the project including potential for further work and partnerships.*

In 2019 the HFSG completed a review of their strategic plan and the future of the internship program. The HFSG were aware of the projects success in the long-term succession of graduates into the research industry. After seeking support from SARDI the HFSG submitted an application to run the internship over 24-months. The current 12-month format has proven successful however, we have not been able to see the interns implement their learnings from year one. It also provides the interns with more stability in the short-term and develops their long-term interest in applied grains R, D & E further. The HFSG recognised the ongoing value of this program to our industry and committed to jointly fund the intern's salary, on-costs and organisational overheads (i.e. 50/50 split between SAGIT/HFSG).

In 2020 the HFSG, SARDI and SAGIT established project H120 'Regional internship in applied grains research'. The HFSG are currently hosting our sixth intern Declan Anderson for two years. Declan completed this BSc Agriculture in 2020 with a range of work experience from Frontier Farming and SARDI, Waite during his degree. With the support of SARDI Declan is working with Tara Garrard in cereal pathology and assisting with general Hart's general research program.

### **APPENDIX 1:**

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#### **2018 Regional Internship Exit Survey**

Please complete the following questions and email to [admin@hartfieldsite.org.au](mailto:admin@hartfieldsite.org.au) by Tuesday 28<sup>th</sup> of February.

Name: \_\_\_ Emma Pearse \_\_\_\_\_

Date: \_\_\_\_\_ 15/02/2019 \_\_\_\_\_



1) The internship was designed to give graduates experience in grains R, D & E. Using the scales below please indicate the amount of time you spent working on and your level of confidence in completing the following tasks:

- Conduct trial planning and design

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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- Conduct trial sampling and measurement in-season

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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- Statistical analysis of trial data

1 Limited time	2	3 Some time	4	5 A lot of time
-------------------	---	----------------	---	--------------------

1 Not confident	2	3 Fairly confident	4	5 Very Confident
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- Written and oral communication with growers, researcher and advisers

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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2) What do you see as your biggest achievement during your internship?

My biggest achievement was getting to know more researchers, growers etc and understanding more of the important issues they face in the area and broader South Australia.

3) Has the internship given you a better understanding of career paths in the grains R, D & E sector?

Yes – absolutely!

If so, how has this assisted with your long-term career interests in the grains industry?

It has opened my eyes to more paths and shown me more of what each involves. This helps me narrow down my career interests. For example, I am more attracted to research roles in direct / close contact with growers.

4) Overall, did the internship meet your expectations?

I didn't know what exactly to expect, but yes and went beyond.

If no, what was missing from the program?

I don't think there is much more that can be fit into the year. But, maybe more understanding of the hands-on trials site management by SARDI and Hart volunteers.

5) What could the Hart Field-Site Group do to improve the experience of future interns?

Not much needs to be improved. Depending on what the person (intern) was after maybe more insight into writing project proposals? How to plan and design trials in terms of treatments, replication etc. In saying this it does all eventually come together in the end. It is just a little overwhelming at the beginning and a little unsure what was happening.

## 2019 Regional Internship Exit Survey

Please complete the following questions and email to [admin@hartfieldsite.org.au](mailto:admin@hartfieldsite.org.au) by March 3, 2020.

Name: Jade Rose, 2019 Regional Intern

Date: 05/03/2020

1) The internship was designed to give graduates experience in grains R, D & E. Using the scales below please indicate the amount of time you spent working on and your level of confidence in completing the following tasks:

- Conduct trial planning and design

1 Limited time	2	3 Some time	4	5 A lot of time
-------------------	---	----------------	---	--------------------

1 Not confident	2	3 Fairly confident	4	5 Very Confident
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- Conduct trial sampling and measurement in-season

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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- Statistical analysis of trial data

1 Limited time	2	3 Some time	4	5 A lot of time
-------------------	---	----------------	---	--------------------

1 Not confident	2	3 Fairly confident	4	5 Very Confident
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- Written and oral communication with growers, researcher and advisers

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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2) What do you see as your biggest achievement during your internship?

- Improving my oral communication
- Changing my perspective on useful research
- Managing a whole trial by myself

3) Has the internship given you a better understanding of career paths in the grains R, D & E sector?

- Yes

If so, how has this assisted with your long-term career interests in the grains industry?

- Still very interested to stay in the grains industry and specifically research, hence why I am undertaking a PhD so I can strive to become a leader in the field (pun intended).

4) Overall, did the internship meet your expectations?

Yes, was fantastic. Really really enjoyed it and learnt SO much.

If no, what was missing from the program?

5) What could the Hart Field-Site Group do to improve the experience of future interns?

I like the idea of a two year internship so that interns can see out projects they have been working on.

## 2020 Regional Internship Exit Survey

Please complete the following questions and email to [admin@hartfieldsite.org.au](mailto:admin@hartfieldsite.org.au) by February 26, 2021.

Name: Brianna Guidera

Date: 26/02/2021

1) The internship was designed to give graduates experience in grains R, D & E. Using the scales below please indicate the amount of time you spent working on and your level of confidence in completing the following tasks:

- Conduct trial planning and design

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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I feel as though not just during trial planning but throughout the year I learned a lot about trial planning and designs through spending time working on trials and asking (a lot of!) questions to Bek. I think my experience with Hart has greatly improved my understanding of trial planning and design. Compared to 12 months ago at the beginning of the internship I am much more confident in my abilities to design and plan trials. This is something I still hope to improve through my career.

- Conduct trial sampling and measurement in-season

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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I spent much of the year completing assessments/sampling/measurements and this is something I think I did well at improving on in terms of my ability to work independently. I had great support from Bek which was an important factor. I feel very confident in my ability to complete trial assessments and importantly, to understand and seek clarification on protocols.

- Statistical analysis of trial data

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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I was really happy with the amount of time spent working on statistical analysis of data. Hart gave me several opportunities to improve my skills and understanding of statistics through conducting analysis on trial data, to completing an online Genstat course. I am much more confident with statistics and my ability to interpret them than I was 12 months ago. I think the year also gave me a fantastic foundational knowledge base and skill set I can improve through my career.

- Written and oral communication with growers, researcher and advisers

1 Limited time	2	3 Some time	4	5 A lot of time
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1 Not confident	2	3 Fairly confident	4	5 Very Confident
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I highlighted 4 instead of 5 purely because this aspect was difficult due to COVID-19. Hart did a brilliant job of providing me with opportunities to improve my written and oral communication with growers and to expand my networks with growers, researchers and advisers despite the circumstances. I feel very fortunate because this was an aspect of the job I thoroughly enjoyed.

- 2) What do you see as your biggest achievement during your internship?

I became much more confident in my abilities as a young researcher. I feel capable of doing a good job in whatever role I go into within R D & E. If you compare my six month review to my 12 month review I think that speaks for itself. This is something I am proud of.

- 3) Has the internship given you a better understanding of career paths in the grains R, D & E sector?

Yes. There are so many more pathways in RD & E than I realised when I started. In particular I was surprised by the amount of work to be done in extension. This was not something I thought was interesting during my university course but it is something I am now passionate about because of my time with Hart.

If so, how has this assisted with your long-term career interests in the grains industry?

When I started the internship, I wanted to know if a career in research was really for me. In terms of long-term career interests, I now know this is something I absolutely want to be involved in. I am passionate about field research and applying this research to the 'real world' which is something Hart puts a lot of emphasis on. I am also now passionate about extension of research.

- 4) Overall, did the internship meet your expectations?

Yes, and exceeded my expectations.

If no, what was missing from the program?

- 5) What could the Hart Field-Site Group do to improve the experience of future interns?

Nothing major comes to mind. My only comment is that the two year experience will be a massive advantage and great opportunity for future interns. I would have loved to see how much I could have used my new skills within the group in a second year.