



Office Use Only

Project Code	
Project Type	

FINAL REPORT 2023

Final reports must be submitted using the online application form at www.sagit.com.au with this Word document attached **within two months** after the completion of the Project Term.

PROJECT CODE	H120
PROJECT TITLE	
Regional internship in applied grains research	

PROJECT DURATION	<i>These dates must be the same as those stated in the Funding Agreement.</i>					
Project start date	1/03/2021					
Project end date	28/02/2023					
SAGIT Funding	Year 1		Year 2		Year 3	

PRINCIPAL INVESTIGATOR <i>(responsible for the overall project and reporting)</i>		
Title:	First Name:	Surname:
	Rebekah	Allen
Organisation:	Hart Field-Site Group	
Mailing address:	PO Box 939, Clare SA 5453	
Telephone:		Email:
Mobile:		

ADMINISTRATION CONTACT DETAILS <i>(responsible for all administrative matters relating to project)</i>		
Title:	First Name:	Surname:
	Sandy	Kimber
Organisation:	Hart Field-Site Group	
Mailing address:	PO Box 939, Clare SA 5453	
Telephone:		Email:
Mobile:		

PROJECT REPORT: Please provide a clear description for each 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 communications.

This Regional Internship in Applied Grains Research successfully delivered a two-year internship program, assisting the development of skills and knowledge building across broad areas of applied research and extension in the grains industry.

The internship program continues to succeed, providing a stepping-stone for early career researchers to be up-skilled, with almost all recent candidates continuing a career in grains research, and filling regional roles across areas of South Australia from the Upper and Mid-North, Yorke Peninsula and Eyre Peninsula.

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 graduates with a specific interest in applied R, D & E an overview of the fundamentals of applied R, D & E relevant to the grains industry.
- To advance the current regional internship program and maintain interest generated among the University of Adelaide BSc Ag students for the position.

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 H120 include:

- Rebekah Allen, Sandy Kimber; Hart Field-Site Group
- Sarah Noack; formally Hart Field-Site Group
- Kathy Ophel-Keller, Tim Sutton, Tara Garrard & team; SARDI
- Malcolm Buckby, Allan Mayfield (formerly), Jenny Davidson; SAGIT

KEY PERFORMANCE INDICATORS (KPI)

*Please indicate whether KPIs were achieved. The KPIs **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.*

KPI	Achieved	If not achieved, please state reason.
Advisory committee formed with representatives from HFSG, SARDI and	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

SAGIT. Detailed internship program developed and internship advertised.		
Regional intern to commence employment.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
One-year performance review with the intern and advisory committee. Detailed plan for the next 12 months developed.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Six and 18-month performance reviews were also conducted to ensure appropriate support and guidance.
Evaluation of the internship. Includes exit survey conducted by the intern and advisory committee reviewing the program.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Final project report submitted	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

TECHNICAL INFORMATION (Not to exceed **three** pages)

Provide sufficient data and short clear statements of outcomes.

Hart, in conjunction with SARDI and SAGIT have been successful in delivering one regional internship program as part of project H120 for Declan Anderson (2021 – 2022). Below we have provided a summary of the activities our intern was involved in.

2021 Activities;

Declan's main focus project in 2021 was working with Tara Garrard; SARDI cereal pathology on Septoria tritici blotch (STB) in wheat. This included two main trials at Hart, investigating variety resistance, fungicide timing and yield loss. A third complimentary research component included an experiment at Waite, utilising the research lab and 'birdcage'. This trial investigated various infection timings of STB in wheat across a number of varieties with a range of genetic resistance ratings. Laboratory tasks included preparing and applying disease inoculum (Figure 1 & 2).

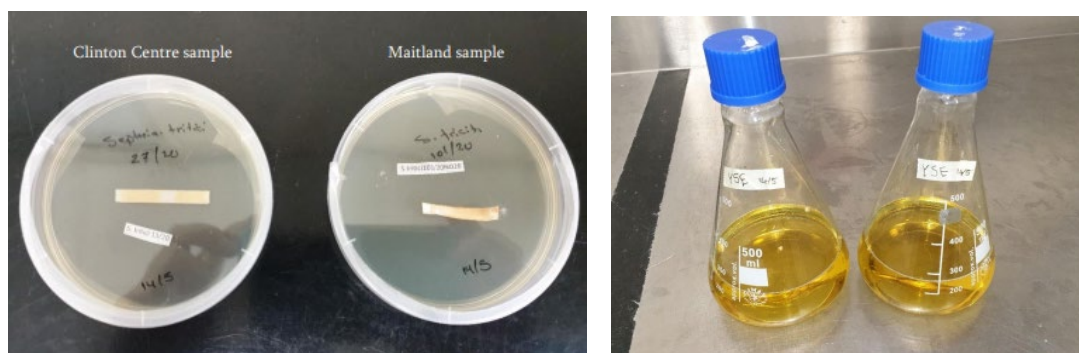


Figure 1 & 2 (L-R). Preparation of Septoria isolates on agar plate to collect fresh spores and Septoria broth to make a concentrated solution of the Septoria spores. More information can be found: [Wheat in the birdcage Issue 2.pdf \(hartfieldsite.org.au\)](http://hartfieldsite.org.au/Wheat_in_the_birdcage_Issue_2.pdf)

Due to Declan's interest across cereal disease and his willingness to see this project through to another season, he continued to work with Tara and the cereal pathology group at SARDI in 2022 more broadly across the Septoria tritici project. We very much appreciate the generosity from Tara to support Declan across two years, exposing him to fundamental components of cereal disease research, also assisting him to build connections and knowledge supporting his career post Hart.

Declan had a particular interest in crop agronomy and worked on a field-based project 'increasing vetch biomass production' with Hart's research & extension manager Rebekah Allen. This involved the intern working with local growers, advisors and researchers (Stuart Nagel) to implement a trial design. Declan managed this project from 2021 – 2022.

Through these projects Declan gained experience in:

- Background research into STB; variety selection, variety disease ratings, disease spread, current management practices and yield implications.

- Understanding of levy collection and the process of administering research projects through SAGIT, GRDC and AgriFutures.
- Trial design and setup for replicated small plot research
- Evaluation of STB trials in contrasting environments (Waite and Hart).
- Developing understanding on trial design and set up in the 'bird cage' and controlled environment chambers.
- Plant sampling (field and lab) – experience conducting plant counts, leaf area infection, biomass cuts, hydraulic soil coring, flowering scores and growth staging, grain sampling and threshing, feed test analysis.
- Developed applied research knowledge (e.g., understanding of seeding, spraying, inoculation and harvest operations)
- Statistical analysis

Declan was also involved across various Hart trials to gain further skills in trial setup (seed packing, site selection and pegging), conducting sampling (e.g., weed counts) data collection, entry and basic statistical analysis.

Other activities in 2021;

Through the Hart membership we made reference to the project in the Chairman's report for the annual Hart field day guide in 2021, and announced Declan as the successful candidate in our Hart e-news (distribution over 1400) with a media release (published on the Hart website). As mentioned above, Declan's newsletters 'Wheat in the birdcage' are also frequently shared with Hart members via social media (Facebook, Twitter), Harts e-news and are also accessible through the Hart website. All of these media are primarily accessed by farmers and the broader industry.

Declan also had many opportunities to network with growers and industry by attending various external workshops and events;

- GRDC Soil acidity and liming workshop; Andrew Harding & Brian Hughes
- Ag Excellence Alliance Functioning soils and resilient plants; Christine Jones
- SARDI Grains Disease Diagnosis workshop (webinar); SARDI Pathology team
- GRDC/ ICAN Fallow herbicide workshop; Mark Congreve
- GRDC/ ICAN Optimising post-emergent herbicides workshop; Mark Congreve
- Hart's BEEN FARMING LONG? Workshops

2021 Activities;

In 2022, he took on a number of new projects including long coleoptile wheat, pre-emergent herbicides and developed and implemented a farm-scale demonstration for a case study on pulse inoculation, after direct issues were raised by local growers. Through this project, he worked with a local Blyth grower who hosted this site and assisted with management (Figure 3).

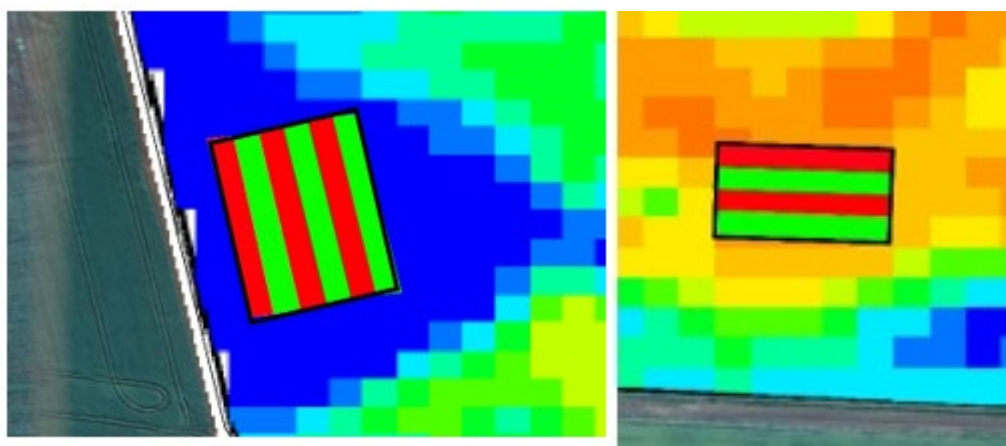


Figure 3. Example of Declan's farm-scale inoculation demonstration site locations on varying soil pH, across two paddocks near Blyth. Information from this trial will be shared prior to 2024 growing season.

During this time, Declan also managed a small cereal crown rot trial at Hart, where he was able to use his knowledge from 2021 (with assistance from the Waite team) to make his own inoculum which was applied to this trial. In addition to this, he participated in a number of training workshops with Marg Evans learning how to manage root/crown disease trials and build skills across disease ID, sampling, assessing and processing samples. Some of this was through 'SAGIT Capacity Building - examining cereal roots and stem bases.

Declan also spent a small amount of industry time with Trengove consulting, to further engage in soils projects across the Mid-North and YP regions, a very strong interest of his.

Other activities in 2022;

Declan's podcast series 'Four decades of farming' to date, has received a total of 375 listens (an average of 93 listens per podcast). Stream Hart Field-Site Group music | Listen to songs, albums, playlists for free on SoundCloud

Opportunities Declan had to network at various external workshops and events included;

- Hart's BEEN FARMING LONG? Workshops
- Ag Excellence Alliance Forum
- Adelaide University Agricultural Students Association (AUASA) 'Growing the Future' dinner
- Improving climate risky decision making; Peter Hayman, Barry Mudge & Darren Ray
- Drought science to practice forum; webinar
- Frost Learning Centre workshop; MNHRZ
- Presenting at the annual SAGIT updates

CONCLUSIONS REACHED &/OR DISCOVERIES MADE (Not to exceed one page)

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

Working with Declan and previous interns has highlighted the importance of programs like this to show graduates the diversity of careers in applied grains R, D & E and provide them opportunities to build research capabilities within the industry.

On completion of the internship, Declan has shown experience and confidence in the following areas:

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

Declan was particularly excited to see many projects from start to finish across the two-year internship and sharing relevant findings with growers.

In March 2023, Declan joined Sam and his team at Trengove Consulting in Bute, SA in a research role. He is particularly enjoying the hands-on components of trial maintenance, spray applications and working more heavily on the seeding equipment, continuing to work across a variety of disease and soil projects conducting trial design, set-up and in-crop assessments. He is fitting into the team exceptionally well and Hart staff are very excited to see him thriving in his new local role.

INTELLECTUAL PROPERTY

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

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.

As part of the internship program, the intern is required to participate across a number of Hart extension and communication events or media releases.

Communication activities in 2021;

- Involved in all Hart events, from preparation to contacting/ introducing speakers and facilitation of question time.
- Developed a newsletter ‘Wheat in the birdcage’ (pictured below). Four updates were completed and shared with Hart members via social media (Facebook, Twitter) and Harts e-news.
- Prepared a joint article with Stuart Nagel, SARDI for the Hart Field Day Guide (article can be accessed for free online) and jointly presented on the ‘vetch varieties and agronomy’ session.
- Assisted with various group tours at Hart and spoke to many trials providing an update on project outcomes including:
 - GRDC Group Visit
 - Third year University of Adelaide students (Gurjeet Gill, Glenn McDonald)
- Writing up all data from experiments he managed at Hart and assisted with other general Hart articles.
- Presenting at Hart’s ‘Getting the Crop In’ seminar on March 9, 2022 on trial findings



Communication activities in 2022;

- Involved across all Hart events, from preparation to contacting/ introducing speakers and facilitation of question time.
- Developed a podcast series ‘Four decades of farming’ to promote Hart’s 40th year of research & extension (pictured below). Four podcasts were completed and shared with Hart members via social media (Facebook, Twitter) and Harts e-news. They are available to listen to for free via the Hart website or sound cloud app.
- Presented at Hart’s Winter Walk event on July 19, 2022
- Presented at the SAGIT Updates in September, 2022
- Prepared an article for the Hart Field Day Guide and presented his research findings from two years of the vetch project. The session was titled: Vetch varieties and agronomy.

- Assisted with various group tours at Hart and spoke to many trials providing an update on project outcomes including:
 - Lucerne Australia
 - Third year University of Adelaide students (Gurjeet Gill, Glenn McDonald)
- Writing up all data from experiments he managed at Hart and assisted with other general Hart articles.
- Writing a case study on pulse inoculation to be released by Hart early – mid 2023.
- Presenting results at Hart's 'Getting the Crop In' seminar on March 8, 2022 on trial findings for Septoria tritici blotch and long coleoptile wheats.



In March 2023, Declan also presented at Hart's annual GTCI Seminar showcasing his final research outcomes across; Epidemiology of septoria tritici blotch in medium rainfall zones, benefits of coleoptile wheat and also barley varieties.

POSSIBLE FUTURE WORK

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

The Hart Field-Site Group currently have a new Intern, Kaidy Morgan, who was appointed on February 27, 2023. This project was funded by the SA Drought Hub, with in-kind leveraged from SAGIT funding from the 2022 internship program.

Hart is excited to announce that Kaidy Morgan will be staying on as Technical Officer at Hart for the next two years. This is the first time Hart have been able to offer an intern a longer-term role beyond our 12-month program and we are very excited about this opportunity for both Kaidy and Hart.

SAGIT and the SA Drought Hub (through co-investment) will also support the 2024 Regional Intern with interviews arranged for September 5, 2023.

We also endeavor to continue this program further into 2025. We currently have strong interest by University of Adelaide Agricultural science students in their second year of studies (2022 intake had approx. ~170 students who will be graduating in 2024). We believe this program, kindly supported by SAGIT and more recently, the SA Drought Hub, provides excellent outcomes to support the grains industry and more importantly, within regional locations of SA.

Building interest and momentum among Ag graduates

The Hart team remain invested in supporting a number of the Ag Student Association activities:

- Attending and supporting the AUASA Growing the Future dinner and Careers Night.
- We continue to work with UofA lecturers to ensure the third year students visit Hart during the year and are familiar with our operations.
- In August 2023, Kaidy Morgan (Hart's current intern) presented at the UofA Waite campus 'Lunch and Learn' information session as an early career researcher, sharing her journey so far. Other keynote speakers included; Andy Barr and Kenton Porker

These activities continue to build interest and awareness of roles in applied grains research.