



AG GROW AGRONOMY AND RESEARCH

Research Program
2023

INDEPENDENT AGRONOMY ADVICE + CUTTING EDGE RESEARCH

2023 Research Sites & Projects

2023 TRIAL SITES

GRIFFITH RESEARCH FARM

"Ridge Top", Beelbangera

Trials include:

- Canola Variety Evaluation Trial (Conv/CL; RR & TT)
- Pacific Seeds Hyola®TD Innovation Systems Technology Trial
- GRDC NRMI - Nitrogen Trial
- Canola Establishment Project
- GRDC TOS Trial - Time of sowing x Germplasm
- GRDC TOS Trial - Early sown wheat management
- GRDC Lime Trial
- HBS Dryland Wheat & Barley Variety Trial
- CSIRO Sowing Depth x Genotype and Shoot and Root Vigour Trial
- LongReach Plant Breeders Dryland Wheat Trial
- LongReach Plant Breeders Acid Tolerant Trial
- Syngenta Cereal fungicide market support trial
- Bayer - Mateno® Complete: Herbicide crop matrix 2023
- AGT - CoAXium Barley Evaluation Trial
- Conquest - Precede and Mixtures for control of ARG

HILLSTON IRRIGATED SITE:

Co-operator - Graeme Horneman "Wilga Glenn"

Trials include:

- HBS Irrigated Wheat & Barley Variety Trial
- LongReach Plant Breeders Irrigated Wheat Trial
- FAR Powdery Mildew - Fungicide Product Trial
- FAR Powdery Mildew - Germplasm x Fungicide Strategy Trial

BARELLAN SITE:

Co-operator – Jeff Savage "Mayfield"

Pulse Agronomy Trials – Pulse Project including:

- Pulse Variety Trials - Species Screen & Species x Nitrogen;
- Crop Root Factor Trials

2023 TRIALS:

Canola Variety Evaluation Trial

Funded by Ag Grow Agronomy, Nuseed, Pioneer Seeds, Advanta Seeds, BASF and AGT

These trials aim to compare the performance of potential canola varieties with existing canola varieties commonly grown on dryland in Southern NSW. The trials consist of a Clearfield/Conventional trial, a Glyphosate trial and a Triazine Tolerant (TT) trial. Each trial will be managed according to their herbicide technology, where appropriate. These trials complement existing NVT trials and are a collaboration with seed companies Nuseed, Pioneer Seeds, Advanta Seeds, BASF and AGT.

Pacific Seeds Hyola® TD Innovation Systems Technology Trial

Collaborating with Pacific Seeds, funded by Pacific Seeds

These trials are set up to evaluate across herbicide technology yield comparisons as well as agronomic and performance assessments of current grown varieties vs new germplasm prior to commercial release. The trial is conducted using specific herbicide spray protocols to meet normal industry practice requirements so that each of the technologies can be compared fairly and reasonably. For more information refer to the link below.

<https://www.pacificseeds.com.au/wp-content/uploads/2022/05/Pacific-Seeds-2021-22-Hyola-Innovation-Systems-Technology-Results-Technote.pdf>



GRDC National Risk Management Initiative (NRMI) NSW - Action Research Group (ARG) Nitrogen Management Systems Trial - Zone 3

Collaborating with CWFS, FarmLink and CSU, this project is funded by GRDC.

The NRMI is a new initiative by GRDC that focuses on risk and reward, with research carried out in action research groups (ARG). In 2023 the project is looking at a nitrogen theme, comparing nitrogen-based demand and banking strategies to aid N decision making in SE NSW.

The aim of the trials is to compare the productivity (yield, protein), profitability (gross margin, risk) and sustainability (soil organic matter, carbon footprint, N losses) of different management systems over the long term (>5 years). They will also provide information on whether fertiliser N not used by crops in year of application carries over to subsequent seasons, what the consequences of excessive N fertiliser are for crop productivity, and the effect of different N fertiliser strategies on legume productivity and N fixation. The Griffith N Systems trial consists of 12 treatments in 2023 including:

1. Nil N Control
2. Grower Practice
3. Low Risk Seasonally Responsive - *assuming a decile 2-3 season finish*
4. Moderate Risk Seasonally Responsive - *assuming a decile 5 season finish*
5. High Risk Seasonally Responsive - *assuming a decile 7-8 season finish*
6. Seasonal Forecast Responsive
7. Financially Responsive - *apply as much N fertiliser as can be purchased with 8% of gross income from the previous season at current market value of urea*
8. Replacement – *apply N fertiliser equal to 2022 grain N offtake*
9. Replacement +30% - *apply N fertiliser equal to 2022 grain N offtake plus 30%*
10. Replacement -30% - *apply N fertiliser equal to 2022 grain N offtake minus 30%*
11. Manure – *of known N content.*
12. Enhanced fertilisers – *N fertiliser with coatings to reduce losses*



Canola Establishment Project

Collaborating with CSIRO, funded by Ag Grow Agronomy, CSIRO and GRDC

This 3-year project is investigating the establishment of canola in response to management factors. One of the key factors impacting on establishment Ag Grow Agronomy is exploring is press wheels. Modern seeders with trailing press wheels that use them as a depth gauge in canola can have an impact on establishment. We need to show ways we can use these seeders with success.

The objective of our trial is therefore to compare the effect of alternative press wheels and sowing depths on canola establishment.



Lime response on acid, low rainfall, sandy soils of southwestern NSW

Collaborating with Jason Condon (CSU), funded by CSU, Ag Grow Agronomy and GRDC

Discussions in Grower Network forums in the GRDC sub-region of Southwest NSW and particularly in the Griffith, Hillston and Lake Cargelligo regions have highlighted the need to understand reports of poor lime responses on acid sandy soils that typically have low organic matter. There is a need to validate the issue of acid soils that are anecdotally unresponsive to lime in western NSW so that crop yield gaps can be reduced.

In its 2nd year, this project aims to measure:

- efficacy of applied lime on grain yield & profitability
- differences between incorporation methods
- differences between incorporation depths
- impact on phosphorous uptake efficiency





Maximising the benefits of early sown wheat and barley in low rainfall and high temperature environments

Collaborating with FAR Australia, with funding from FAR Australia, Ag Grow Agronomy and GRDC.

In its second year, this project aims to test the performance of longer season wheat and barley types in cropping regions subject to lower rainfall and higher temperatures. It also aims to establish how newer germplasm and management techniques associated with earlier sowing can be used to improve productivity in these more hostile environments. With sites at Lowesdale NSW (managed by FAR Australia) and Griffith NSW (managed by Ag Grow Agronomy) a series of 2 trials will be conducted at each site in 2023.

The first trial is a Time of sowing (TOS) by Germplasm trial, evaluating various varieties of wheat and barley at 2 sowing times. It is measuring responses to yield and grain quality. The target sowing date for TOS 1 was between 10-15th April and for TOS 2 it was between 10-15th May.

The second trial is an early sown wheat management trial. It is set up to evaluate various management techniques, such as seeding rates and defoliation treatments, to maximise crop performance in terms of yield and grain quality.

Hart Bros Seeds Variety Dryland & Irrigated Trials

Collaborating with Hart Bros Seeds, funded by Ag Grow Agronomy and HBS

Two sites (dryland and irrigation) comparing the performance of potential wheat and barley varieties with existing varieties commonly grown in SNSW under local irrigated and dryland conditions. The trials are focussing on varietal suitability in terms of yield, grain quality, plant height, lodging, structure and acid soil tolerance. These trials complement existing NVT trials.





CSIRO Sowing Depth x Genotype and Shoot and Root Vigour Trial

Collaborating with CSIRO, funded by Ag Grow Agronomy and CSIRO

The sowing depth by genotype part of the trial compares the performance of long coleoptile wheat lines with short coleoptile wheat lines at two sowing depths (shallow 4cm and deep 10cm). The genotypes used are from four backgrounds (Mace, Magenta, Yitpi, Scout), with Scepter and Halberd as short and long coleoptile controls, respectively. This coleoptile length study is part of a national coordinated study for data in early vigour modelling. Growing wheats with a longer coleoptile allow you to plant wheat deeper in the soil into moisture from summer rain, allowing early sown crops to get up and out of the ground.

The shoot and root vigour experiment is looking at the impact of different wheat seed protein concentrations (low vs high protein – 8 to 14%) on early wheat growth, in particular effect on shoot and root growth. This seed protein study is part of a multi-site experiment aimed at assessing the importance of seed nitrogen on early seedling growth.

LongReach Plant Breeders Dryland & Irrigated Wheat Trials

Collaborating with LongReach Plant Breeders, funded by LongReach

These trials compare the performance of wheat lines for yield, grain quality, agronomic attributes and disease reaction for all major production environments in Australia. This information will be used to make selection decisions for progression through the breeding program and commercial release.

In addition, this season we are also hosting a trial focussing on acid tolerant wheat varieties on an acid site at Beelbangera.





Syngenta - Cereal fungicide market support trial

Collaborating with Syngenta, funded by Syngenta

The objectives of this trial are to demonstrate:

1. The grain yield differences in key cereal crops when applying residual fungicides.
2. The ability of cereal fungicides to control key leaf diseases in wheat and barley.
3. Compare Syngenta cereal products to other commercial cereal fungicides.

Bayer - Mateno® Complete: Herbicide crop matrix 2023

Collaborating with Bayer, funded by Bayer

The purpose of this trial is to demonstrate the efficacy and safety of Mateno® Complete across various crop types.

AGT CoAXium Barley Evaluation Trial

Collaborating with AGT, funded by AGT

The purpose of this trial is to demonstrate the effectiveness and safety of Aggressor Herbicide in CoAXium barley.

Conquest - Preceed and Mixtures for control of ARG

Collaborating with Conquest, funded by Conquest

The purpose of this trial is to showcase Preceed Flow in the NSW market as well as better understand the Mateno Complete interaction.



Pulse Agronomy Trials - Development and extension to close the economic yield gap and maximise farming systems benefits from grain legume production in New South Wales

Collaborating with Brill Ag, Grain Orana Alliance and Frontier Farming systems, with funding from GRDC.

The project aims to get a better understanding of the adaptability of pulse species to the local environments and how to improve production and close the yield gap of the best adapted pulses. The project is now in its 3rd year.

The project includes 2 major validation (hub) sites at Ganmain and Parkes, delivering a series of fully replicated trial designs to measure the yield gap, and 5 on farm demonstration (spoke) trial sites. Our site at Barellan is one of the 5 spoke sites for the project, along with sites at Gol Gol, Canowindra, Caragabal and Buraja focussing on on-farm paddock scale strip trials, and/or small demonstration plot trials driven by local grower D&E priorities

The focus of the Barellan site in 2023 is to:

1. Evaluate the relative performance of major pulse crops (faba beans, field peas, lentils, lupins, vetch) in a variable rainfall environment.
2. Compare the effectiveness of nitrogen fixation in pulses grown in soils with a high base N level and determine if any pulse species is better than others at maintaining N fixed when sown into high nitrogen paddocks in a variable rainfall environment.
3. Determine if the crop root factors used (1.5 for beans, lentils, lupins, vetch and field peas and 2 for chickpeas) when calculating total nitrogen fixation is applicable in our variable rainfall environment.





Strategies for Wheat Powdery Mildew Control in Southern New South Wales

Collaborating with FAR Australia, with funding from FAR Australia, Ag Grow Agronomy and GRDC.

Wheat powdery mildew (WPM) can cause up to 25% yield loss in Australia with commonly grown varieties possessing poor resistance, ranging from susceptible to very susceptible (SVS). In the Northern region WPM is particularly problematic in the western lower rainfall areas of NSW in years of higher-than-average rainfall and irrigated paddocks, though is found throughout the wheat growing regions of NSW.

This project aims to expand the validation and extension of WPM management strategies to areas in the Northern region impacted by WPM. With sites at Lowesdale NSW (managed by FAR Australia) and Griffith NSW (managed by Ag Grow Agronomy) a series of 2 trials will be conducted at each site in 2023.

The first trial is a fungicide product trial aiming to demonstrate and validate cost effective fungicide resistance management strategies for wheat powdery mildew.

The second trial is a germplasm by fungicide strategy trial, which is aimed at validating the effectiveness of varietal resistance, application timings and efficacy of pre and post emergent fungicides.



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