WA CROP TECHNOLOGY CENTRE (ALBANY)

FAR AUSTRALIA

Industry Innovations
leading the way to a brighter grains industry

FIELD DAY

INCREASING PRODUCTIVITY & PROFITABILITY IN THE ALBANY PORT ZONE

Thursday 11th September 2025

Thanks to the following event sponsors:

FRANKLAND Rural

FARMGATE ADVISORY

AFGRI EQUIPMENT AUSTRALIA

SOWING THE SEED FOR A BRIGHTER FUTURE

Thanks to our host farmers: Gunwarrie team (Kellie Shields, Terry Scott & Don Pentz)

WA CROP TECHNOLOGY CENTRE (ALBANY)

Industry Innovations
leading the way to a brighter grains industry

VISITOR INFORMATION

We trust that you will enjoy your day with us at our WA Crop Technology Centre (Albany Port Zone) Field Day. Your health and safety are paramount, therefore whilst on the property we ask that you both read and follow this information notice.

HEALTH & SAFETY

- All visitors are requested to follow instructions from FAR Australia staff at all times.
- All visitors to the site are requested to stay within the public areas and not to cross into any roped off areas.
- All visitors are requested to report any hazards noted directly to a member of FAR Australia staff.

FARM BIOSECURITY

- Please be considerate of farm biosecurity. Please do not walk into farm crops without permission. Please consider whether footwear and/or clothing have previously been worn in crops suffering from soil borne or foliar diseases.

FIRST AID

- We have a number of First Aiders on site. Should you require any assistance, please ask a member of FAR Australia staff.

LITTER

- Litter bins are located around the site for your use; we ask that you dispose of all litter considerately.

VEHICLES

- Vehicles will not be permitted outside of the designated car parking areas. Please ensure that your vehicle is parked within the designated area(s).

SMOKING

- There is No Smoking permitted inside any farm shed, marquee or gazebo.

Thank you for your cooperation, enjoy your day.

INCREASING PRODUCTIVITY AND PROFITABILITY IN THE ALBANY PORT ZONE

FEATURING FAR Australia INDUSTRY INNOVATIONS

On behalf of myself and the FAR Australia team, I am delighted to welcome you to our 2025 WA Crop Technology Centre Field Day featuring Industry Innovations.

Industry Innovations (II) is a FAR Australia initiative which continues to engage with industry to provide innovative research solutions which are helping to create a more productive, profitable and sustainable future for the Australian grains industry. With our Crop Technology Centres (CTCs) operating nationally across the growing regions of Australia, we provide the perfect platform to showcase new industry innovations, whether it be new crops, cultivars, agrichemicals, fertilisers or Ag technologies. More information on our Industry Innovations initiatives is available in the booklet.

Today will provide you with a unique 'seeing is believing' opportunity to experience the latest innovations in cereal germplasm, agronomy, and agrichemical usage. You will witness first-hand the impact of innovative treatments and techniques on enhancing crop performance and profitability.

Event Highlights:

- Topics for all agroecological regions from the High Rainfall Zone (HRZ) to the Low Rainfall Zone (LRZ)
- An opportunity to engage with two of the country's foremost canola disease experts talking about blackleg and sclerotinia control in the context of our management strategies to date.
- With wheat and barley what closure of the yield gap do our fungicides offer in southern WA.
- Farming systems in the Albany Port Zone – what changes do we envisage for the future?
- Benchmarking agronomics and profitability in the Albany Port Zone – what can we take away from the first year of the GRDC Hyper Profitable Crop (HPC) results generated in 2024.
- Expert presentations: Hear from industry leaders, who will share insights into the latest research and trends shaping the Australian grains industry.
- Interactive discussions: Engage in group discussions on crucial topics regarding crop profitability.

To make the programme as diverse as possible, I would like to thank all our speakers who have helped to put today's programme together; in particular our keynote speakers Dr Steve Marcroft and Associate Professor Angela van de Wouw from Marcroft Grains Pathology and University of Melbourne, who are based in WA for the spring this season.

For the past few years we have been generously supported by our principal sponsor of today's event. Frankland Rural from Frankland River have been steadfast in being our event sponsor and the whole FAR Australia team would like to place on record our grateful thanks for this support.

We would also like to thank Farmgate Advisory and AFGRI Equipment Boyup Brook for their support in assisting with the costs of our keynote speakers today. Days such as these are not possible without the support of these industry organisations so, please engage with them during our refreshment periods.

Putting together a quality Crop Technology Centre takes a fair amount of planning so a very big thanks to our host farmers for 2025 Kelly Shields, Terry Scott and the team at Gunwarrie for their tremendous practical support given to the FAR Australia team.

Finally, I would like to thank the industry for investing in our research programme this season under our Industry Innovations portfolio.

Should you require any assistance today, please don't hesitate to contact a FAR Australia staff member. We hope you find the day informative, and as a result, take away something new which can be implemented in your own farming business.

Nick Poole Managing Director
FAR Australia

MORNING TIMETABLE

WA CROP TECHNOLOGY CENTRE FIELD DAY (ALBANY PORT ZONE)
THURSDAY 11th SEPTEMBER 2025

WA CROP TECHNOLOGY CENTRE (ALBANY)

FAR AUSTRALIA

In-field presentations	Station No.	10:15	10:30	11:00	11:30	12:00	12:30
Welcome and Introductions ***Nick Poole - Managing Director, FAR Australia*** ***Dr Ben Jones - Senior Research Manager*** *Outline of the programme for the day.*		**Gazebos**					**Gazebos**
Phil Honey, Stirling to Coast and Dr Ben Jones, FAR Australia ***Pushing potential profit? Benchmarking agronomic and economic outcomes in the Albany Port Zone*** *The first year results from the new GRDC Hyper Profitable Crops project are out. Ben and David look at the analysis of agronomic and profitability benchmarking in the Albany Port Zone.* GRDC	**1**		1	2			**Lunch and refreshments**
Nick Poole & Kate Trezise, FAR Australia ***Wheat versus barley versus oats - Phenology x sowing date interaction*** *– how profitable are these different ceral species at three different sowing dates and does sowing date affect their development profile?* GRDC	**2**			1	2		
Dr Steve Marcroft, Marcroft Consulting *Canola is a hugely important crop for the Albany Port Zone. Steve looks at the principal diseases of canola, examining our best approaches to control diseases such as blackleg (stem canker and Upper Canopy Infection) and Sclerotinia.* GRDC	**3**				1	2	
Kate Trezise, Deep Das, Sophie Paul & Nick Poole, FAR Australia *The WA team look at this year's* ***Germplasm Evaluation Network (GEN) for barley*** *- how resistant are our new barley lines against disease. How effective are our fungicides to control this disease, GEN provides the answers with plus and minus fungicide evaluation?* Industry Innovations	**4**		2			1	
In-field presentations	**Station No.**	**10.15**	**10:30**	**11:00**	**11:30**	**12:00**	**12:30**

For the presentations, we would be obliged if you could remain within your designated group number. Note we will only split into two groups if high numbers attend.	1
Thank you for your cooperation.	2

FAR Australia would like to thank the following sponsors for their support in running today's event.

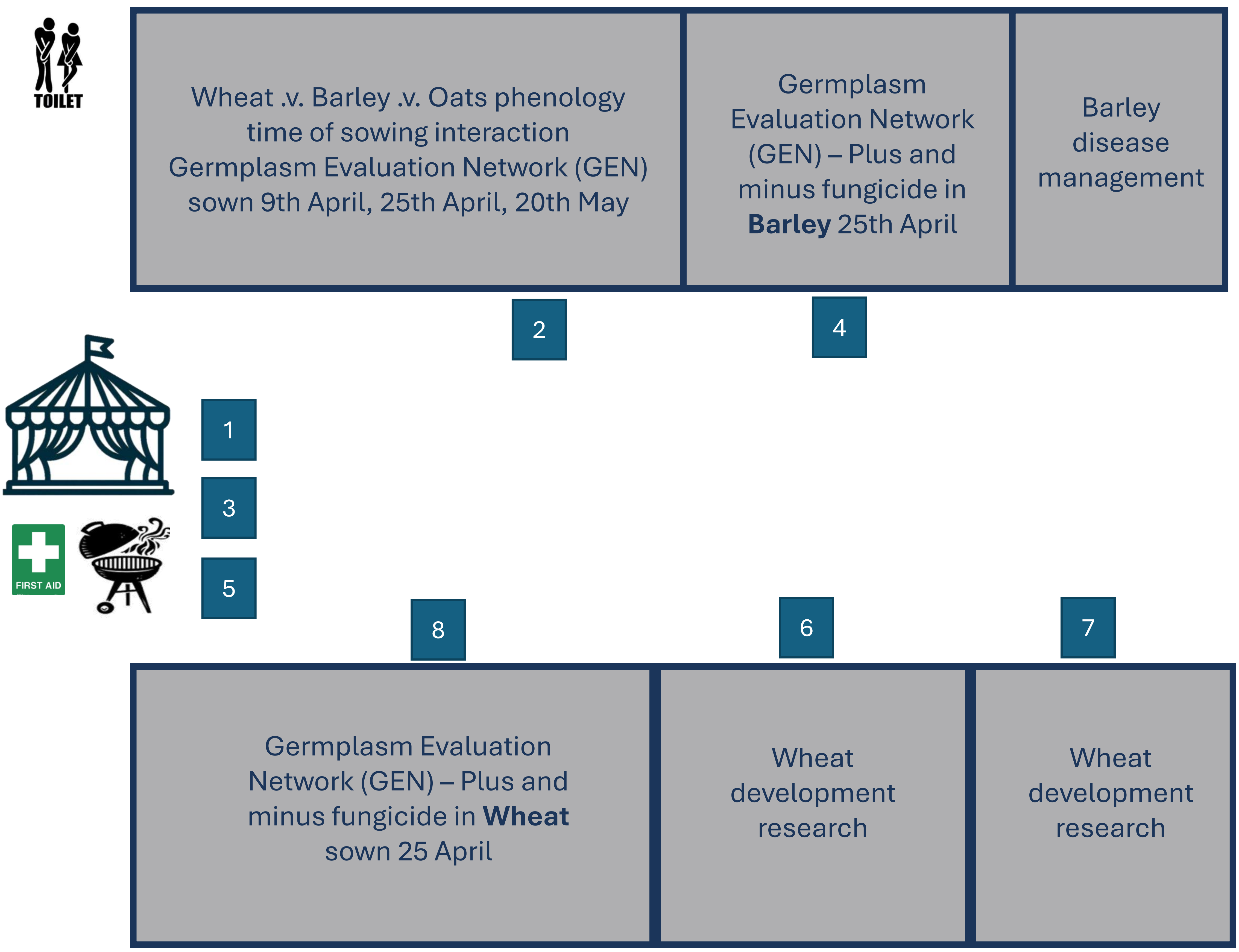
FRANKLAND Rural

FARMGATE ADVISORY

AFGRI EQUIPMENT AUSTRALIA

WA CROP TECHNOLOGY CENTRE (ALBANY)

FAR AUSTRALIA



Map is not to scale

Thanks to our host farmers: Gunwarrie (Kellie Shields, Terry Scott & Don Pentz)

FRANKLAND Rural

FARMGATE ADVISORY

AFGRI EQUIPMENT AUSTRALIA

SOWING THE SEED FOR A BRIGHTER FUTURE

Pushing potential profit?

Some benchmarks for wet and drier environments

Ben Jones and Rebecca Murray, FAR Australia

Introduction

In a world of water, where do you turn to check if your crop management is working to the profitable potential? The Hyper Profitable Crops project has some answers. Input use, agronomy, yield and quality were monitored on 95 paddocks across the high rainfall zones of southern Australia in 2024. Common input and grain pricing, together with weather data, were used to set some initial benchmarks. Crop performance relative to benchmarks can be used to indicate where management (or simply the season) might have led to a poor outcome, and what might be changed to improve future results. Twelve paddocks in the Albany port zone were part of the first season of the project.

Method

Paddocks in either wheat or barley were volunteered by farmer members of discussion groups run by each hub (hosted by Stirlings to Coast Farmers for Albany). Input data was recorded between harvest of the previous crop and harvest of the focus crop. The hub facilitator recorded inputs, took soil samples (soon after sowing in May), and visited paddocks regularly to track growth stage. Before harvest, quadrats of mature plants were harvested and processed to estimate total biomass, yield components, and also provide data for quality analysis. Weather data was taken from the nearest SILO grid cell location (https://www.longpaddock.qld.gov.au/silo/point-data/).

Water-limited potential yields were estimated according to 25 kg/ha/mm grain x (growing season rainfall + irrigation + 30 % of fallow rain – 60 mm evaporation). Growing season was estimated for each hub area as the weeks where average rainfall exceeded a third of evaporation (30 year, over 3 week contiguous periods). A water use cap of 480 mm was applied across all groups, but in future will be adapted to better reflect the growing season. Radiation/temperature limited yields were estimated according to relationships with the photothermal quotient (photosynthetically active radiation divided by average temperature in the four weeks before estimated flowering date).

An estimated gross margin was calculated using the whole paddock yield, with quality set by the sample grain and price according to publicly available grain prices in May 2025 (with adjustment for freight rates according to discussion group location). A common input price list was used across the project and adjusted where necessary to reflect changes in each hub area. Where inputs were applied across multiple years (e.g. lime, soil amelioration) the cost per year was estimated *pro rata*. Operation costs were estimated on a similar basis. Since releasing the 2024 season reports (and for this analysis), harvest cost has been updated to be in proportion to yield (assuming throughput effectively limits harvest rate for crop yields > 3 t/ha).

Benchmarks

The analysis breaks profit into several components:

Potential yield	whichever of water- and radiation/temperature-limited yield is lowest.

Pushing potential profit?

Some benchmarks for wet and drier environments

Ben Jones and Rebecca Murray, FAR Australia

Percent of potential	how much of potential yield was achieved
Price achieved/tonne	depending on quality, port price and estimated freight for each group
Cost	total of inputs, operation cost

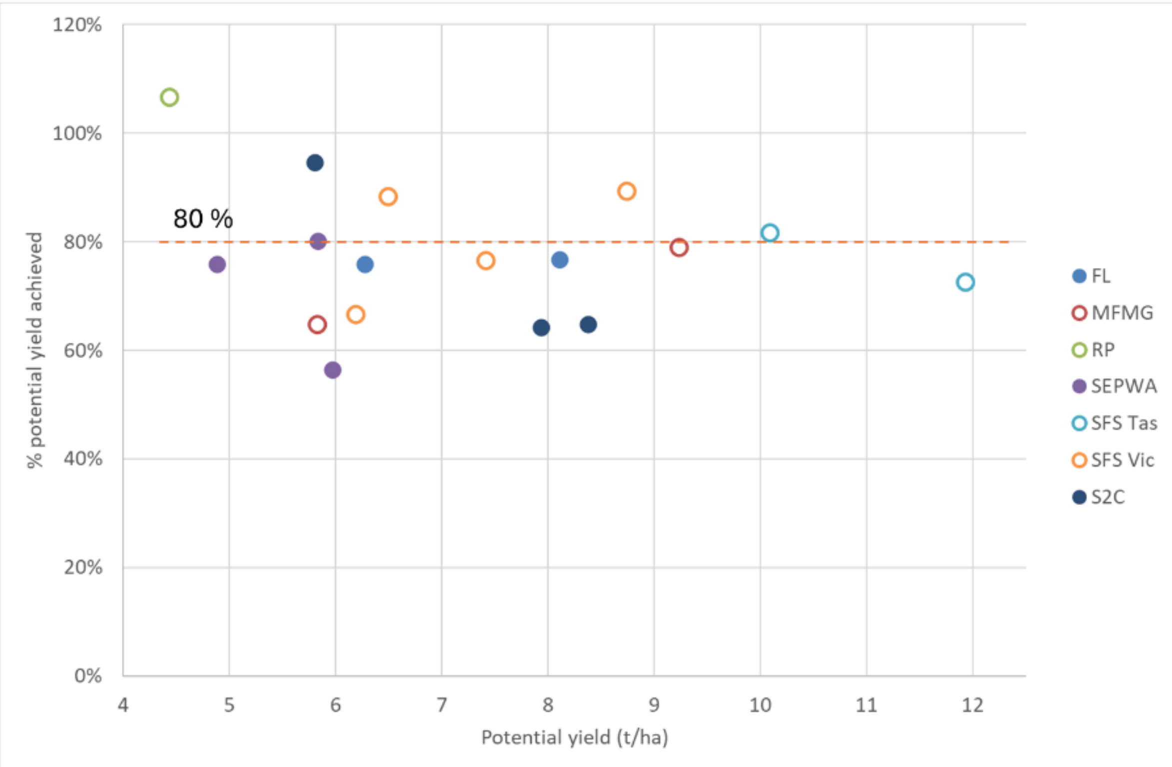
Profit and cost are both expressed in terms of potential yield, so that they are comparable across water- and radiation/temperature-limited paddocks.

Benchmarks were calculated for each paddock and averaged across discussion groups, to determine some initial benchmark levels against which all paddocks could be compared.

Results

Many discussion groups achieved an average percent potential yield of around 80% or higher (Figure 1). This seems like a reasonable benchmark for production. Higher percent potential yields were achieved in drier environments, and probably reflect under-estimation of stored water in soils with high plant available water. Some of the SFS Tas paddocks had yield limited by the water use cap, when the radiation/temperature potential yield would more correctly apply. These groups would have lower average percent potential achieved.

Differences in price achieved reflect port and freight differences (Figure 2), but also quality achieved. In some groups, more of the paddocks are sown to cultivars with maximum feed grades.



Pushing potential profit?

Some benchmarks for wet and drier environments

Ben Jones and Rebecca Murray, FAR Australia

Figure 1. Potential yield benchmark: average percent potential yield for each discussion group vs potential yield. Colours represent different hubs. The dashed line is a proposed potential yield benchmark of 80%.

**FL = FarmLink (NSW), MFMG = Mackillop Farm Management Group (SA), RP = Riverine Plains (NSW), SEPWA = South East Premium Wheat Association (WA), SFS = Southern Farming Systems (Victoria and Tasmania), S2C = Stirlings to Coast (WA)*

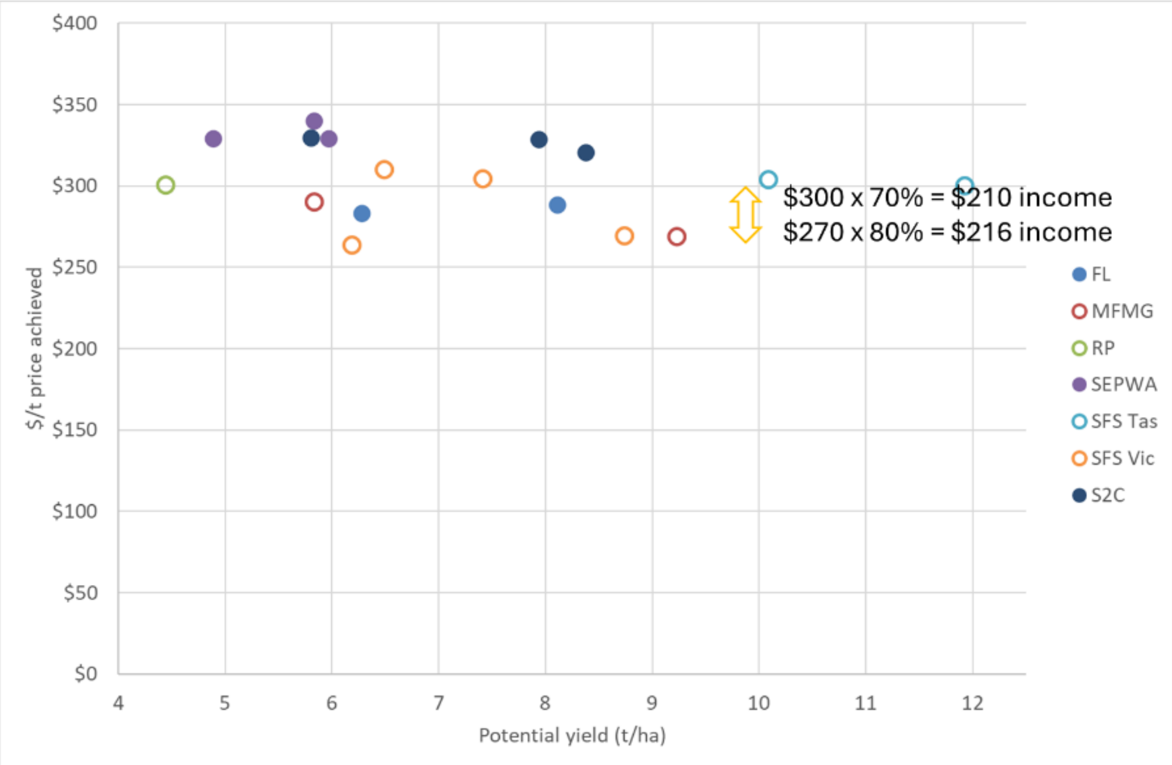


Figure 2. Price achieved benchmark: average grain price achieved in each discussion group vs potential yield. Colours represent different hubs.

Costs were quite consistent across the groups when expressed relative to potential yield, allowing for many of the groups not including fallow costs (Figure 3), and the highest SFS Tas group having a higher potential yield than indicated. Cost per tonne of potential yield was approximately $100/t above 8 t/ha, and an additional $10/t below it. These may be useful benchmarks.

Many of the groups achieved $130 profit per tonne potential yield (Figure 4) across the range of potential yields. This appears to be a useful upper benchmark. Medium and low benchmarks have been suggested at $100 and $60 profit per tonne potential yield.

Pushing potential profit?

Some benchmarks for wet and drier environments

Ben Jones and Rebecca Murray, FAR Australia

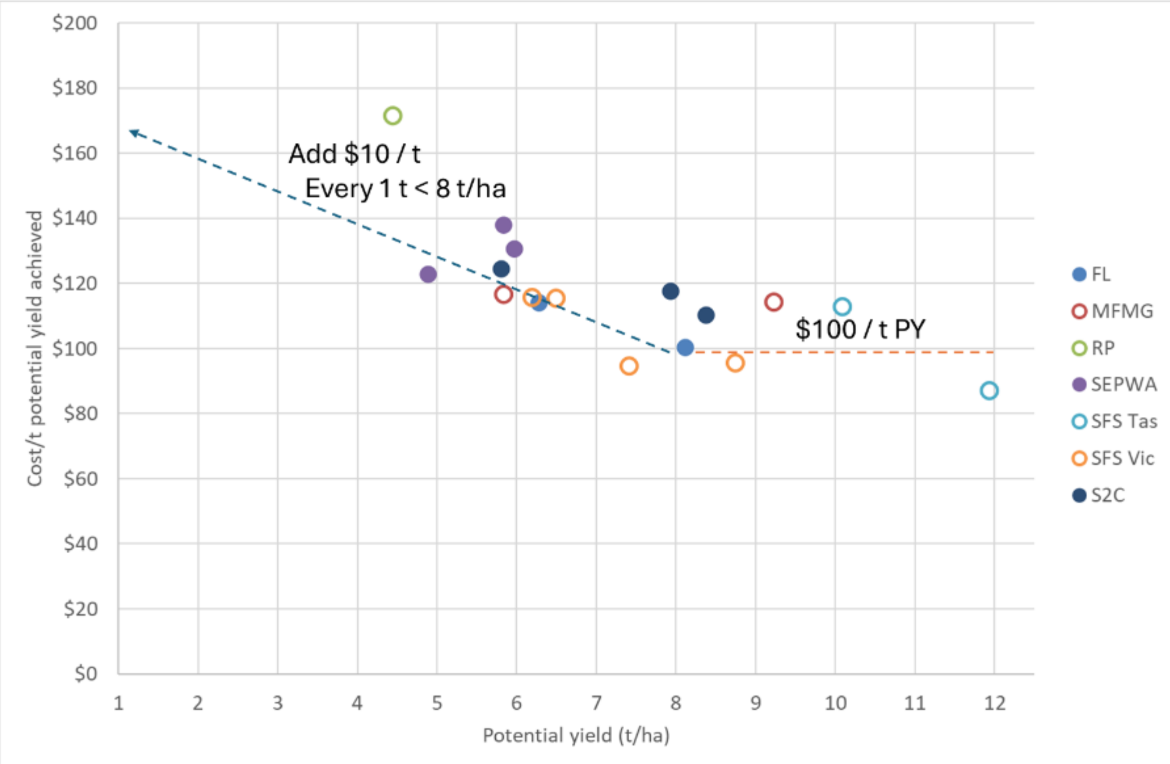
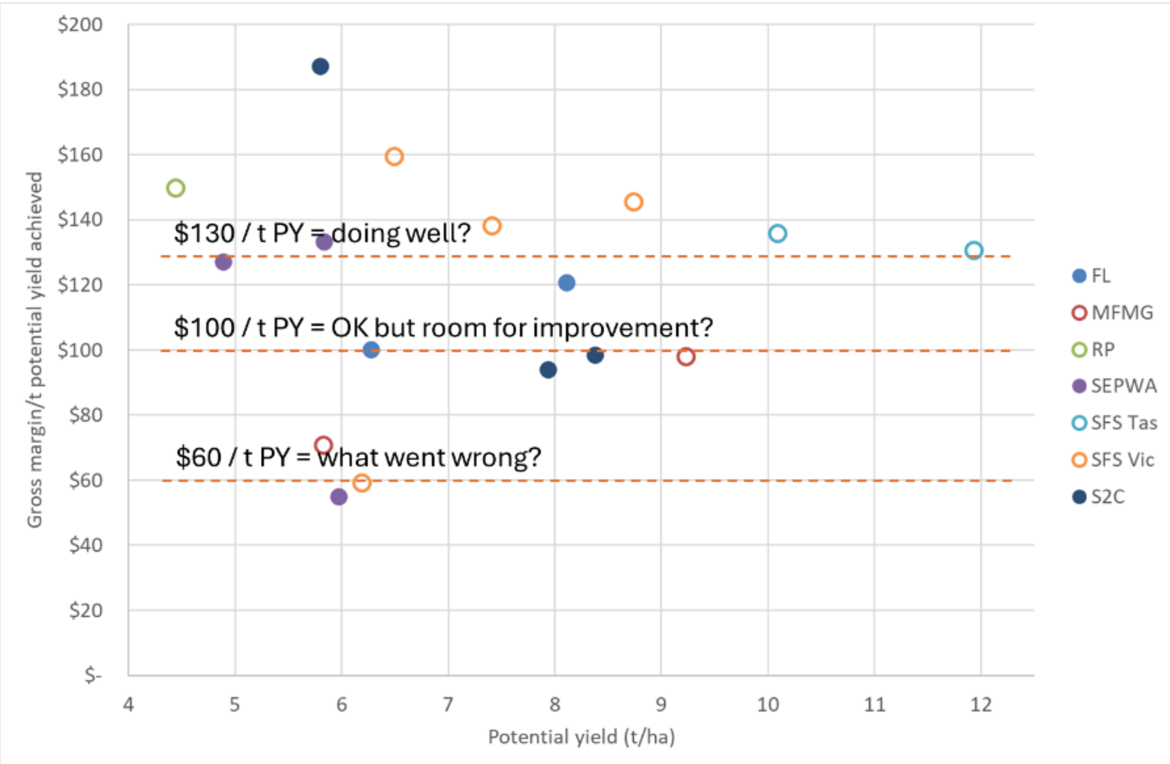


Figure 3. Cost benchmark: average cost per tonne potential yield in each discussion group vs potential yield. Colours represent different hubs. In hubs with open circles, costs were not measured before sowing. The dashed line is a proposed cost benchmark of $100/t potential yield, increasing $10/t for each t/ha below 8 t/ha.



Pushing potential profit?

Some benchmarks for wet and drier environments

Ben Jones and Rebecca Murray, FAR Australia

Figure 4. Profit benchmark: average profit per tonne potential yield in each discussion group vs potential yield. Colours represent different hubs. Dashed lines indicate proposed benchmarks.

Discussion/Conclusion

Application

The benchmarks are currently most readily applied by farmers who had a paddock in the project in 2024 and can calculate and compare their own benchmarks from the reports. Anyone who can estimate potential yield should be able to calculate what they should be achieving, and begin to target production, price or cost for further investigation if their profit benchmark appears low.

For example, if potential yield is around the 80% benchmark, the cause of a poor profit result rests either with price achieved, or cost.

The cost benchmark should also have application in-season, as a guideline on how much would be reasonable to spend (or try to save) if the potential yield is likely to be different from planned. For example, at a potential yield of 6 t/ha, a cost benchmark of $120/ha/t potential yield should lead to a total $720/ha spend. If rain leads to a potential yield of 9 t/ha, the cost benchmark of $100/ha/t potential yield suggests a total $900/ha spend, or no more than $180/ha more (including harvesting the additional yield).

The practical challenge in this application is how early any change in potential yield is known, vs. how much has been spent. In 2024 in the SEPWA and Stirlings to Coast paddocks, there was little that could be varied within 12 weeks of harvest (Figure 5). About $20/ha/t potential yield is spent between 20 and 12 weeks before harvest. In other areas (not shown) the spend is spread out over a longer period, and potentially easier to adjust to the season.

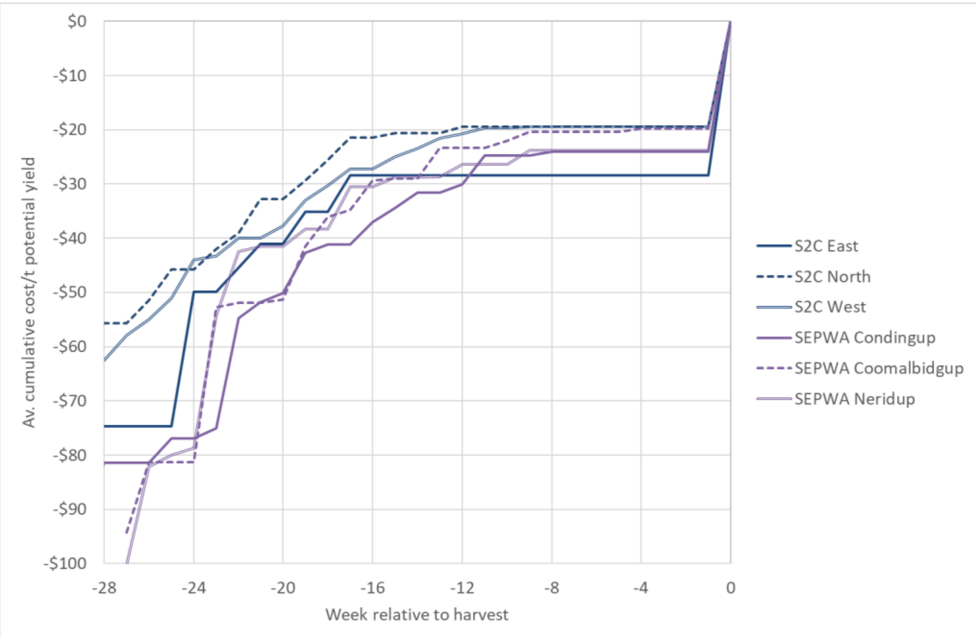


Figure 5. Cost remaining to be spent vs weeks before harvest, average for Stirlings to Coast (S2C) and South East Premium Wheat Association (SEPWA) discussion group paddocks in 2024.

Future

Much effort this season has gone into establishing the system for transferring data from Agworld and calculating this first round of benchmarks. The benchmarks, and the questions growers and advisers are asking, will in turn help to further refine the reports for the 2025 season paddocks.

There are some obvious refinements; for example, the profit benchmark should be related to potential price achieved. Assuming that costs will only vary slowly, the profit benchmark should be the main thing to change from year to year (with price).

Acknowledgements

The Hyper Profitable Crops project is funded by GRDC (FAR2403-002SAX).

Thank you to all the growers who contributed data, and to the many hub facilitators involved in setting up paddocks, collecting and editing data and reviewing reports. Thank you also to Paul Feely (Federation University CeRDI), the people of the Agworld Helpdesk, and to members of the FAR Team involved in the project: Darcy Warren, Tom Price, Max Bloomfield, Aaron Vague and Nick Poole.

Early sown wheat or barley after canola?

Nick Poole, Deep Das & Kate Trezise – FAR Australia

Background

This project was built upon findings from the GRDC investment "Optimising High Rainfall Zone Cropping for Profit" (DAW1903-008RMX), which aimed to explore the productivity and profitability of cereal crops (wheat and barley) in an ameliorated soil system. Over three years (2020-2022), winter wheat cultivars produced more dry matter than spring wheats like Scepter, but their harvest indices were lower, meaning less biomass was converted into grain. Slightly slower-developing spring wheat cultivars like RockStar and Denison outyielded both winter wheat cultivars (Illabo and Mowhawk) and the faster-developing Scepter when sown in mid-April. Winter wheat offers an advantage with its more stable flowering period, potentially enabling earlier sowing in response to early breaks. However, in all year's barley outyielded wheat. This NGN investment explored if the conclusions from DAW1903-008RMX would still apply when sowing was moved two to three weeks earlier than mid-April.

Results

Sown: TOS 1- 2 April 2024 (irrigated 15mm at sowing) TOS 2- 29 April 2024
Harvested: 29 November 2024
R**otation position:** 2023 Canola
Soil type: Forest gravel
FAR code: FAR WAE W24-03

Key Points

- *The Frankland River research site is typically characterised with higher growing season rainfall (2024 372mm v 278mm (Gibson) GSR April - Oct) and lower average temperatures during grain fill than the EPZ (3.3^{0}C lower average maximum temperature in October 2024*).
- *However, the summer and autumn were equally dry in southwest WA with the first sowing date 2 April established with 15mm of irrigation and the autumn break (25-30mm) not occurring until 9 May.*
- *On average there was no difference in yield between the first (2 April) and second (29 April) sowing dates (p=0.211), a possible indication of the poor conditions for emergence following the first sowing and lower overall plant counts relative to the later sowing.*
- *The winter wheat Mowhawk yielded over 5t/ha sown 2 April and was higher yielding than the spring wheats tested, although the yield differences were not significant.*
- *The late April sowing showed no yield advantage to Mowhawk over longer season spring wheats such as Denison, but both types were superior to Scepter in these two sowing windows.*
- *On average the spring barley Neo CL was over 1.2t/ha higher yielding than the highest yielding wheat, although the advantage over Mowhawk was 1t/ha early April sown and 0.8t/ha better than Denison late April sown.*
- *Because of the yield differences and bin grades achieved Neo CL was more profitable than winter or spring wheat germplasm sown in either early or late April.*
- *Unlike the Gibson and Scaddan sites the longer season spring types, such as Denison, did not develop as quickly at Frankland River with flowering dates nearer the optimum but still earlier than Mowhawk which was nearer the regarded optimum of late September/early October.*

Early sown wheat or barley after canola?

Nick Poole, Deep Das & Kate Trezise – FAR Australia

- *Scepter as found in previous studies was not suited to April sowing as it develops too quickly.*
- *Higher rainfall at this site resulted in foliar disease being a bigger issue, particularly in Planet barley where fungicide resistant net form net blotch was not properly controlled by a two-spray fungicide programme.*
- *Final harvest dry matters (DM) from the highest yielding wheats and barleys were approximately 10t/ha but harvest indices and head numbers were higher in the barley.*
- *Frost does not appear to have been a feature in the results of this trial.*

Table 1. Influence of time of sowing (TOS) and variety on grain yield (t/ha), harvested 29 November.

Variety	TOS 1		TOS 2		Mean	
	Yield (t/ha)		Yield (t/ha)		Yield (t/ha)	
Illabo*	4.72		.		**.**	
Mowhawk	5.11	-	4.44	-	**4.77**	**b**
Denison	4.40	-	5.01	-	**4.71**	**b**
RGT Waugh**	5.04	-	4.42	-	**4.73**	**b**
Scepter	2.86	-	4.06	-	**3.46**	**c**
RockStar	4.14	-	4.86	-	**4.50**	**b**
Neo CL (spring barley)	6.11	-	5.81	-	**5.96**	**a**
RGT Planet (spring barley)	5.64	-	5.25	-	**5.21**	**b**
Mean	**4.69**	**-**	**4.69**	-		
LSD Variety p = 0.05	0.71		**P value**		<0.001	
LSD TOS p = 0.05	ns		**P value**		0.211	
LSD Variety x TOS. p = 0.05	ns		**P value**		0.099	

**Illabo data excluded from statistical analysis, **RGT Waugh yield derived from quadrant harvest cut (1m x 4) and so comparisons with other varieties should be treated with caution.*

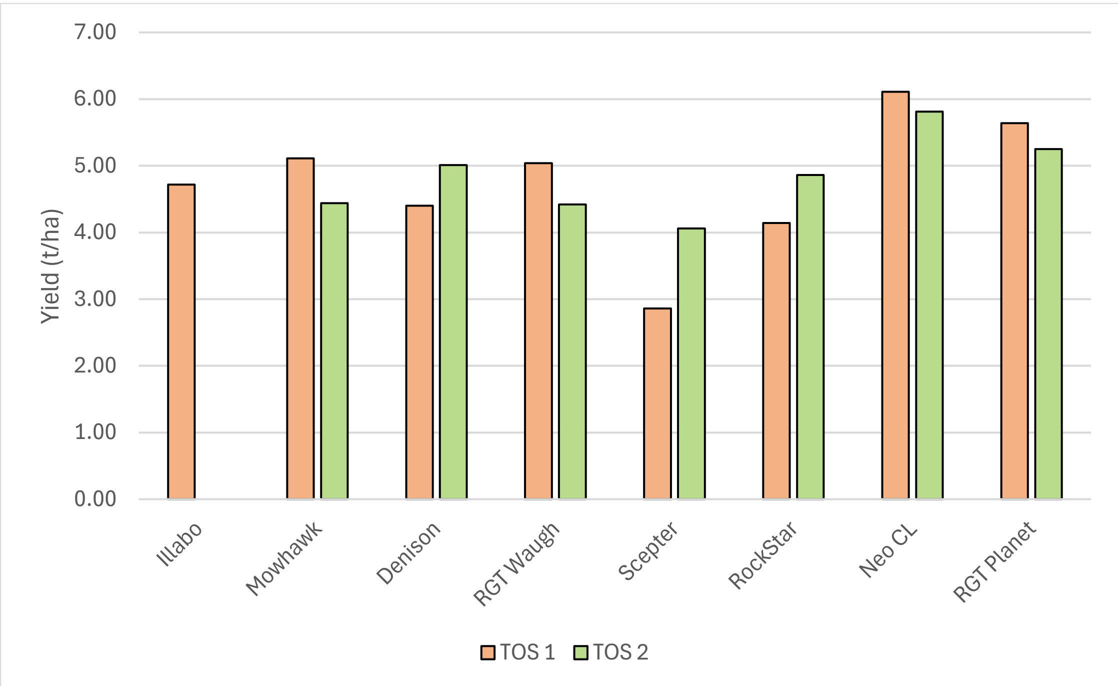


Figure 1. Influence of Time of sowing (TOS) and variety on yield (t/ha), harvested 29 November.

Early sown wheat or barley after canola?

Nick Poole, Deep Das & Kate Trezise – FAR Australia

This research work has been extended in a new 2 year cereal phenology project (FAR2504-002SAX) that has three sowing dates and introduces winter barley and oats to the comparison.

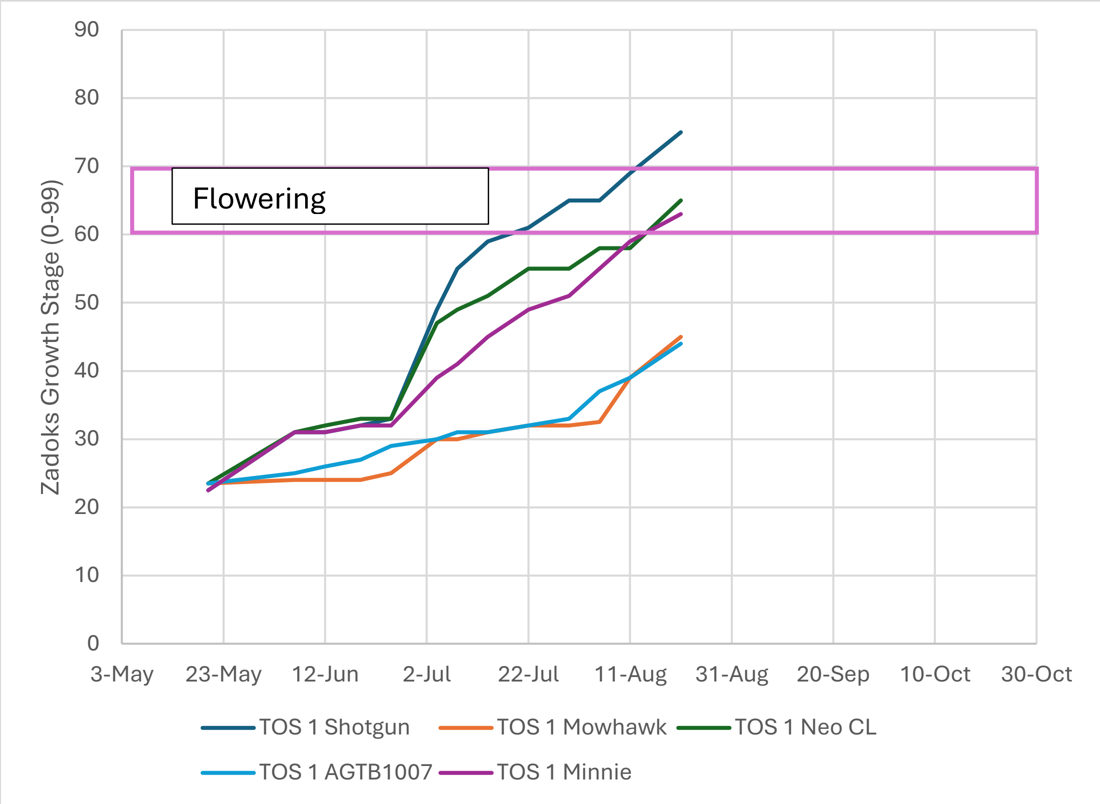


Figure 2. Influence of variety and cereal species on phenology when sown on April 9. Shotgun (spring wheat), Mowhawk (winter wheat), Neo CL (spring barley), AGTB1007 (winter barley) and Minnie (spring milled oat) – Frankland River 2025.

REFERENCES

GRDC final report for *Optimising High Rainfall Zone Cropping for Profit in the Western and Southern Regions 2020-22 (DAW1903-008RMX).*

GRDC Final Report NGN - *Winter wheat investigation on the Southcoast of WA 2024* (*FAR2403-001SAX).*

NGN - Cereal crop phenology investigation FAR2504-002SAX

ACKNOWLEDGEMENTS

FAR Australia and its staff gratefully acknowledges the funding support of the Grains Research Development Corporation in funding this one-year research and extension project. In addition, FAR Australia would like to thank the four host farmers for their unwavering support to a project carried out in an extremely difficult season when irrigation was needed for the first sowing date at all four research sites. We would like to thank the following host farmers.

Gibson – Jordan Whiting and Cam Wholing
Scaddan – Gavin, Elaine & Brad Egan
Frankland River – Kellie Shields, Terry Scott and the Gunwarrie team
South Stirling – Scott, Alaina & Henry Smith

Fungicide strategies for crown canker and UCI of blackleg

Steve Marcroft and Angela Van de Wouw – Marcroft Consulting & University of Melbourne

When considering disease control in the higher rainfall zones in spring 2025 in WA you need to be aware of blackleg, sclerotinia and alternaria. It is almost certain that all of these diseases will be present in 2025. At this time of the year the only control option is fungicides but remember that fungicides always control disease, but disease does not always cause yield loss. Given the fungicide resistance issues that are now occurring in WA (DMI resistance) and in SA (DMI and SDHI resistance) it is imperative to not use fungicides when the risk of yield loss is low – we want to keep the fungicides for when we really need them.

Is my crop at high risk?

Blackleg:

Blackleg crown canker may cause yield losses; you can determine if it did cause yield loss by cutting plants at the crown immediately after swathing or once seed colour change begins to occur. If plants have more than 30% crown discolouration, then yield loss is likely. However, in the spring there is nothing that you can do to reduce crown canker. Consider management options for your 2026 crop - see the 2025 blackleg management guide and BlacklegCM App.

Blackleg Upper Canopy Infection (UCI) is the same disease and same process as blackleg crown canker but instead of the fungus infecting leaves and growing into the crown, causing a crown canker, UCI blackleg infects the flowers and grows into the branches and upper stem causing blackened pith in the upper parts of the plant. UCI blackleg occurs when the plants commence flowering in early to late winter, this is due to two reasons. Firstly, blackleg being a fungus requires wet conditions for the spores to be released from canola stubble but also prolonged plant wetness for the spores to germinate on the plant, grow and cause an infection. Hence, cool wet conditions associated with late winter are more conducive to disease rather than warmer drying conditions of spring. Secondly, UCI blackleg also requires enough time before harvest to infect the plant, grow into the vascular tissue and cause significant necrosis. Infections that occur closer to harvest do not have enough time to cause yield loss.

UCI in 2025 is definitely a potential issue if your crops commenced flowering in July and most likely an issue if they commenced flowering in the first half of August. Later flowering can still cause UCI, but these crops are a low risk of yield loss.

If my crops flowered before August 15, should I apply a fungicide?

1. Disease pressure

   In addition to date to 1st flower, disease pressure is also critical. Distance to last year's canola stubble (less than 500m is greater risk), rotation length i.e., is the crop sown into 2-year-old stubble and a wet spring, all increase the risk of yield loss. Disease pressure can be determined by looking for leaf lesions on the younger leaves, lesions take approximately 14-21 days to develop so lots of new lesions at 1st flower will indicate that the conditions of the previous month have been conducive for disease. If these conditions continue during the early bloom period than it is likely that blackleg UCI could be an issue.

2. Cultivar resistance

   All cultivars are classified for UCI blackleg ratings. Our current GRDC project is measuring yield losses on WA farms (we will have 75 paddocks monitored in WA over current 5-year project). Our current best educated guess is;

- cultivars rated R-UCI will not get disease (unless a resistance breakdown has occurred on your farm).
- MS-UCI rated cultivars can get up to 30% yield loss in a worst-case scenario
- MRMS-UCI rated 20% worst case yield loss and MR 10% worst case yield loss.

Scenario 1

Crop germinated early, commenced flowering in late July, sown adjacent to 2024 canola stubble and into 2023 canola stubble, has lots of leaf lesions and the cultivar is a MR UCI rating.

= apply a 10-30% bloom fungicide application, could easily get a 10% yield return. In this scenario if your cultivar was UCI rating R or has no leaf lesions then there is no risk of yield loss.

Scenario 2

Crop germinated early, commenced flowering in late July, sown 500m from 2024 canola stubble in a 4 year rotation, has a few leaf lesions and the cultivar is a MR UCI rating.

= In this situation yield loss is a lot less likely. If it has been continuously wet during the commencement to the 1st flower growth stage, then yield loss is potentially around 5% but if it was dry during early flowering then a yield return from fungicide application is unlikely. In this scenario if your cultivar was UCI rating MRMS or MS then a yield return from a fungicide application is higher.

Scenario 3

Crop germinated on time, commenced flowering on 7th August, sown adjacent to 2024 canola stubble into 2023 canola stubble, has lots of leaf lesions and the cultivar is a MR UCI rating.

= In this scenario yield loss potential is most likely less than 10% but will be driven by rainfall during flowering. If flowering commenced after 15th August then return from fungicide application is unlikely.

What is the cultivar blackleg rating on my farm?

Blackleg populations overcome genetic cultivar resistance and blackleg populations are different in different regions and on individual farms. Simply put, blackleg populations will evolve in response to the resistance of the cultivar you have been growing om your farm. If you sow a new cultivar its blackleg rating will likely be as advertised in the blackleg management guide. If you have sown the same cultivar for more than 3 years, then the rating of your cultivar may be reduced i.e., if it was a MR when 1st grown it may now behave as a MRMS (3 years later) on your farm. This blackleg evolution however is highly driven by disease pressure; regions that grow 2 crops of canola over 3 years and with high rainfall will result in blackleg populations evolving quickly. Moderate rainfall regions with less intensive canola tend to maintain their genetic resistance ratings.

The best way to determine loss of resistance is to monitor the amount of crown canker and UCI at the end of year. You can check the current blackleg management guide for the latest WA regional resistance group knowledge, if the resistance group is coloured green, it should be effective in your region. However, you can check the status on your farm by looking for leaf lesions. If the major gene resistance is effective (has not been overcome) there will be few if any blackleg leaf lesions (plants are immune).

If you do not have effective major gene resistance in your cultivar (most cultivars), simply use the blackleg rating. To confirm that your cultivar has not eroded in resistance it is highly advised to cut the plant crown (see the blackleg management guide for details). If blackleg levels are low then continue current practices, if blackleg is increasing over time it is suggested to change cultivars.

The status of canola resistance groups in WA (2024 data). Cultivars with effective major gene resistance groups are immune to blackleg.

WA	A	B	C	D	F	H	S
Beverley	Red	Red	Red	Green	Green	Green	Green
Cascade	Red	Red	Red	Yellow	Yellow	Green	Yellow
Grass Patch	Red	Red	Red	Yellow	Yellow	Green	Yellow
Kendenup	Red	Red	Red	Red	Yellow	Green	Red
Kojonup	Red	Red	Red	Green	Green	Green	Green
Stirlings South	Red	Red	Yellow	Red	Red	Yellow	Red
Wagin	Red	Red	Red	Red	Red	Green	Red
Williams	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow

Green = effective Yellow = partially effective Red = ineffective
* In 2024 low winter rainfall resulted in some sites having low blackleg severity. In these sites 2023 seasonal data was utilised.

Upper Canopy Infection levels can also be determined at plant maturity (commencement of seed colour change) by observing darkened branches and darkened pith (see the blackleg management guide for photos of crown canker and UCI).

The GRDC/DPIRD Apps BlacklegCM and UCI BlacklegCM are very useful aids to determine if fungicide application is like to provide an economic return. It is not preferable to have completely clean crops, low level of disease will not cause yield loss and will reduce the likelihood of fungicide resistance occurring – the aim it is increase yield not to grow the cleanest crop.

<u>Sclerotinia</u>

Sclerotinia is a complex disease. That is, it is almost impossible to predict how much yield loss will occur. Sclerotinia across a region will be more severe in years with wet springs, tight canola rotations, rotations with double broadleaf crops and early flowering. Many crops in southern WA will fit this description in 2025. However, individual crops within the same region and seemingly identical conditions will get very different levels of disease severity. Within the same region some crops should be sprayed with a fungicide, and some should not - but it may be impossible to determine at the time of fungicide application.

Consequently, the best determination is for the grower to know the history of individual paddocks. If yearly scouting identifies paddocks that have a past history of sclerotinia and the same paddock has the high risk indicators as described above, a fungicide should be applied. It is more likely that you will have paddocks that have never had sclerotinia issues. The ScerotiniaM App is an excellent spray decision tool.

Fungicide strategies for crown canker and UCI of blackleg

Steve Marcroft and Angela Van de Wouw – Marcroft Consulting & University of Melbourne

Alternaria

Alternaria is a superficial disease of canola, simply causing lesions and can occur on all plant parts. When alternaria causes lesions on pods these lesions can cause the pods to prematurely shatter. The shattering will cause yield losses, we have measured up to 20% yield loss in the worst-case scenarios.

Alternaria occurs as a result of sustained rainfall during the podding growth stage. Alternaria lesions are incredibly diverse from distinct round lesions to entire pods turning black, to many pinpoint lesions and all combinations. Unfortunately, there are no management practices to control alternaria.

Fungicide resistance considerations

With the continual use of fungicides comes the increased risk of resistance to fungicides. In recent years there has been an increasing reliance on fungicides to control blackleg disease, with some growers using fungicides as an insurance policy rather than when needed.

We have been screening for fungicide resistance towards the commercial fungicides each year since 2018. Resistance to Group 3 fungicides was first detected in 2015 and has been increasing since, with high levels of resistance to Jockey, Prosaro and Proviso found in every state in 2023 and 2024. The resistance to the DMI (Group 3) fungicides is an incomplete resistance whereby the isolates have an increased tolerance to the fungicide. This means that the fungicides do still have some efficacy towards these resistant isolates, but not the same level of control as the susceptible isolates. Despite this high level of resistance, we have yet to hear of any Group 3 fungicide field failure. This may be because the Group 3 fungicides are still providing some level of control or that high use of the Group 7 fungicides is hiding the loss of efficacy.

For the first time, resistance to Group 7 fungicides has been detected in blackleg disease. In 2024, several populations collected from the Eyre Peninsular showed high levels of disease on Saltro- and iLeVo-treated plants, suggesting the presence of resistance. Isolates were collected from these stubbles and the presence of highly resistant isolates was confirmed. *In vitro* tests showed the isolates have Resistance Factors (RFs) of 42–270 towards pydiflumetofen and 18–109 towards fluopyram. When inoculated onto seedlings, these isolates caused the same level of disease on Saltro and iLeVo treatments as the untreated, meaning the fungicides were rendered completely ineffective. All the populations where Group 7 resistance has been confirmed are located on the Eyre Peninsula (EP) of South Australia. Out of the 41 populations from the EP, two had high resistance, three moderate, nine low and the remaining 27 had no resistance. Resistance was not detected in any other regions. Fifty populations from the EP were also screened in 2022 and no Group 7 resistance was detected in that year, indicating that this resistance has evolved very recently. Current experiments are underway to determine whether these resistant isolates are leading to field failure on farm.

In 2025, 260 populations are being screened representing all the major canola growing regions, including 50 populations from the Esperance, WA region. Preliminary results suggest that no resistance is present in any other region except the Eyre Peninsular. Preliminary analysis of on-farm fungicide practices suggests that early foliar applications (2-8 leaf) are a driving factor in the evolution of fungicide resistance.

Fungicide strategies for crown canker and UCI of blackleg

Steve Marcroft and Angela Van de Wouw – Marcroft Consulting & University of Melbourne

Recommendations for the management of fungicide resistance

- Do not use fungicides as an insurance!
- In locations where resistance has been detected, avoid SDHI chemistries where possible.
- Avoid 2-8 leaf early foliar applications where possible.
- Plants can tolerate up to 30% infection before yield loss. Remember that fungicides always control disease but don't always provide yield returns.
- Where possible, use other management strategies to minimise disease pressure, such as selecting cultivars with high blackleg rating or isolation of 500m from last year's stubble. Refer to blackleg management guide/BlacklegCM app for further information.
- Select adequate genetic resistance for your regions to reduce reliance on fungicides for controlling blackleg disease.
- If fungicides are required, minimise the number of applications. For example, if sowing early, avoid using a 4–6 leaf foliar spray for crown canker. If sowing late, may require 4–8 leaf foliar spray for crown canker but could avoid 30% bloom for upper canopy infection.
- If putting on multiple applications in a season, rotate chemical groups as well as specific actives, where possible.
- If applying fungicides for Sclerotinia, be aware that these sprays will also put selection pressure on the blackleg pathogen, even if you aren't targeting to control blackleg.
- Monitor crops to ensure fungicides are working efficiently. Potentially leave unsprayed strips for comparison. Report any potential field failures to Alec McCallum or Dr Angela Van de Wouw (apvdw2@unimelb.edu.au).
- see also: CropLife resistance management strategies https://www.croplife.org.au/resources/programs/resistance-management/canola-blackleg/

Frankland Rural

Agricultural Supplies | Agronomy | Animal Health

OPENING HOURS:
Mon-Fri: 7:30am - 5:00pm
Sat: 9am - 12pm

3 Trent Street, Frankland River
WA 6396
P: (08) 9855 2288
M: 0477 552288
E: admin@franklandrural.com.au

OUR TEAM

Tim Trezise - Agronomist & Director: 0429 311 795
Chloe Casson - Manager & Director: 0416 540 759
Andrew Smith - Agronomist: 0438 263 910
Bronwen Coole - Chief Finance Officer
Chloe Worth: Sales & Administration: 0477 552 288
Gareth Dowling - Logistics & Warehouse Manager
Elizabeth Smith - Finance Officer

Helping you to be the most profitable and sustainable farming business

FRANKLAND Rural

CRT

GERMPLASM evaluation network

your trusted research partner for germplasm evaluation

FAR AUSTRALIA

CALLING ALL BREEDERS!
Would you like to expose your latest germplasm in GEN 2026?

Developing higher yielding crops through germplasm advances

Expanded Programme for 2025!

Now including milling oats plus and minus fungicide

An Industry Innovations (II) 2025 initiative

Industry Innovations

leading the way to a brighter grains industry

SOWING THE SEED FOR A BRIGHTER FUTURE

MORNING TIMETABLE

WA CROP TECHNOLOGY CENTRE FIELD DAY (ALBANY PORT ZONE)
THURSDAY 11th SEPTEMBER 2025

WA CROP TECHNOLOGY CENTRE (ALBANY)

FAR AUSTRALIA

In-field presentations	Station No.	10:15	10:30	11:00	11:30	12:00	12:30
Welcome and Introductions ***Nick Poole - Managing Director, FAR Australia*** ***Dr Ben Jones - Senior Research Manager*** *Outline of the programme for the day.*		**Gazebos**					**Gazebos**
Phil Honey, Stirling to Coast and Dr Ben Jones, FAR Australia ***Pushing potential profit? Benchmarking agronomic and economic outcomes in the Albany Port Zone*** *The first year results from the new GRDC Hyper Profitable Crops project are out. Ben and David look at the analysis of agronomic and profitability benchmarking in the Albany Port Zone.*	**1**		1	2			**Lunch and refreshments**
Nick Poole & Kate Trezise, FAR Australia ***Wheat versus barley versus oats - Phenology x sowing date interaction*** *– how profitable are these different ceral species at three different sowing dates and does sowing date affect their development profile?*	**2**			1	2		
Dr Steve Marcroft, Marcroft Consulting *Canola is a hugely important crop for the Albany Port Zone. Steve looks at the principal diseases of canola, examining our best approaches to control diseases such as blackleg (stem canker and Upper Canopy Infection) and Sclerotinia.*	**3**				1	2	
Kate Trezise, Deep Das, Sophie Paul & Nick Poole, FAR Australia *The WA team look at this year's* ***Germplasm Evaluation Network (GEN) for barley*** *- how resistant are our new barley lines against disease. How effective are our fungicides to control this disease, GEN provides the answers with plus and minus fungicide evaluation?*	**4**		2			1	
In-field presentations	**Station No.**	**10.15**	**10:30**	**11:00**	**11:30**	**12:00**	**12:30**

For the presentations, we would be obliged if you could remain within your designated group number. Note we will only split into two groups if high numbers attend.	1
Thank you for your cooperation.	2

FAR Australia would like to thank the following sponsors for their support in running today's event.

FRANKLAND Rural

FARMGATE ADVISORY

AFGRI EQUIPMENT AUSTRALIA

AFTERNOON TIMETABLE

WA CROP TECHNOLOGY CENTRE (ALBANY)

FAR AUSTRALIA

WA CROP TECHNOLOGY CENTRE FIELD DAY (ALBANY PORT ZONE)
THURSDAY 11th SEPTEMBER 2025

In-field presentations	Station No.	1:30	2:00	2:30	3:00	3:30
						Gazebos
Associate Professor Angela van de Wouw, University of Melbourne *Impact of SDHI fungicide resistance in the blackleg pathogen - what does it mean for our approach to canola disease control in the future?* GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION	**5**	1	2			**Closing address and refreshments**
Nick Poole, FAR Australia ***Closing the yield gap - reflection on FAR Australia research results from the Albany Port Zone Crop Technology Centre (2020 - 2024)*** *Nick looks at some of the key FAR Australia results obtained over the last five years working in the Albany Port Zone.*	**6**		1	2		
Dr Ben Jones, FAR Australia ***A spring in winter wheat clothing: spring yields with winter wheat flexibility in dry years.*** *Ben looks at the first year results from a project being run in the LRZ.* GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION	**7**			1	2	
Kate Trezise, Deep Das, Sophie Paul & Nick Poole, FAR Australia *The WA team look at this year's* ***Germplasm Evaluation Network (GEN) for wheat*** *- which wheats need full fungicide packages?* Industry Innovations	**8**	2			1	
In-field presentations		**1:30**	**2:00**	**2:30**	**3:00**	**3:30**

For the presentations, we would be obliged if you could remain within your designated group number. Note we will only split into two groups if high numbers attend.	1
Thank you for your cooperation.	2

FAR Australia would like to thank the following sponsors for their support in running today's event.

FRANKLAND Rural

FARMGATE ADVISORY

AFGRI EQUIPMENT AUSTRALIA

2023 and 2024 Frankland River Barley GEN Trials

i) 2023

Sown: 17 May
Harvested: 20 November
Soil Type: Forest Gravel loam
Previous Crop: Canola

Cultivar: Various
FAR Code: FAR WAA II B23-18-02
GSR (Apr-Oct): 613mm

Key Points:

- *Sown in mid-May the highest yield was approximately 0.35t/ha lower than the highest barley yields recorded from the neighbouring 29 April sowing date (see April sown barley yield results).*
- *The highest yields in the trial were recorded with Firefoxx (5.88t/ha) and Neo (5.73 t/ha) which were significantly higher yielding than all other varieties except Rosalind.*
- *Apart from RGT Planet (0.43t/ha) and RP19034 (0.95t/ha), which both suffered from net form of net blotch, grain yield responses to fungicide application (GS31 & GS49) were small.*
- *Laureate and IGB21130 were later developing varieties (early head emergence when other varieties were at full head emergence) and appeared to be impacted to greater extent by the drier conditions during October.*
- *Poorer yields were in general associated with longer season phenology, lower test weights, higher screenings and lower retentions.*
- *There was a significant interaction between the influence of fungicide and variety on grain screenings with varieties such RP 19034 and RGT Planet showing large improvements in screening % when fungicides were applied, compared to other varieties such as Firefoxx.*
- *Overall, with the exception of NFNB in RGT Planet and RP 19034 disease levels were very low.*

Table 1. Influence of fungicide on the grain yield (t/ha) of barley cultivars plus and minus fungicide – May 17 sown.

	Management Level					
	Untreated		**Full protection**		**Mean**	
Cultivar	**Yield t/ha**		**Yield t/ha**		**Yield t/ha**	
RGT Planet (s)	4.39	-	4.72	-	4.55	cd
Rosalind (s)	5.51	-	5.69	-	5.60	ab
Laureate (s)	4.31	-	4.46	-	4.39	d
Firefoxx (s)	5.81	-	5.95	-	5.88	a
IGB21130 (s)	4.48	-	4.85	-	4.66	cd
Neo (IGB22102T) (s)	5.75	-	5.72	-	5.73	ab
Minotaur (s)	5.43	-	5.52	-	5.48	b
Asteroid (s)	4.46	-	4.55	-	4.50	cd
RP 19034 (s)	4.35	-	5.30	-	4.83	c
RP 19013 (s)	4.62	-	5.03	-	4.82	c
Mean	**4.91**		**5.18**		**5.04**	
LSD Cultivar p = 0.05	0.40			**P val**	<0.001	
LSD Fungicide Man. p = 0.05	N.S.			**P val**	0.128	
LSD Cultivar x Man. p = 0.05	N.S.			**P val**	0.470	

2023 and 2024 Frankland River Barley GEN Trials

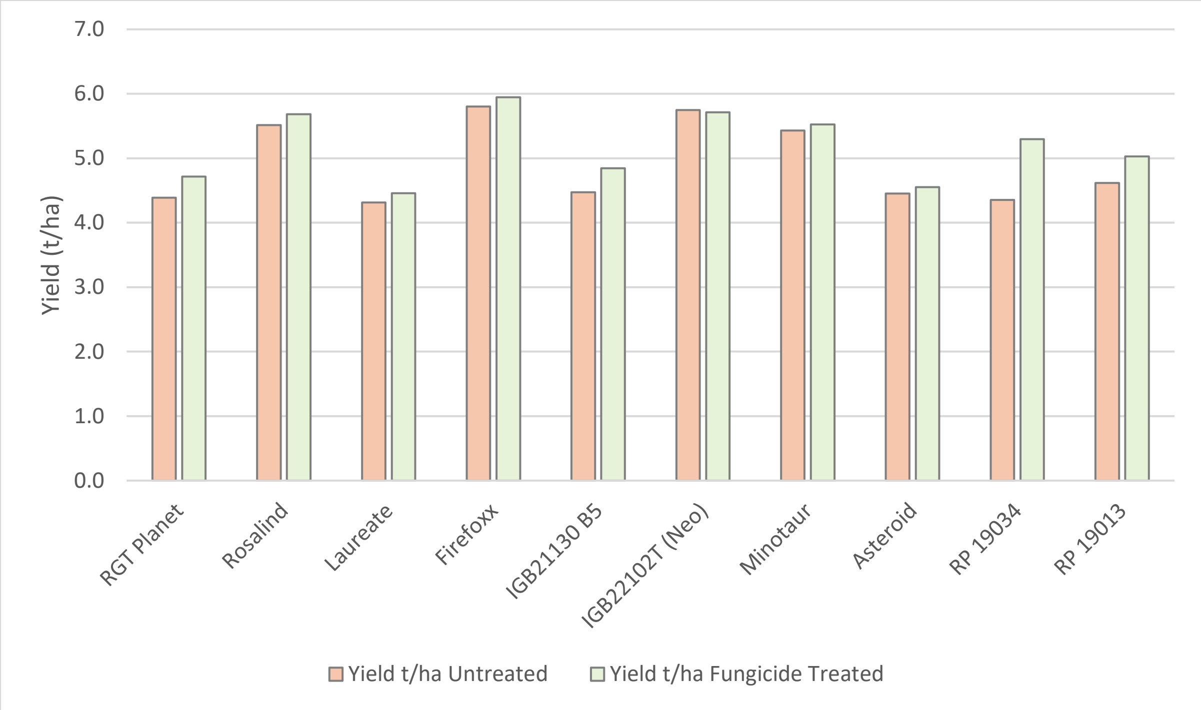


Figure 1. Influence of fungicide on the grain yield (t/ha) of barley cultivars plus and minus fungicide – May 17 sown.

ii) 2024

Sown: 28 April 2024
Harvested: 29 November 2024
Previous Crop: 2023 Canola
FAR Code: FAR WAA II B24-27-02
GSR (Apr-Nov): 372mm
Soil Type: Forest gravels

Key Points

- *A drier season at the start and finish resulted in 372mm growing season rainfall (GSR) and grain yields that ranged from 4.93 – 6.10t/ha.*
- *These yields were approximately 0.9t/ha higher than the wheat GEN trial sown at the same time, although trials were in close proximity they were not statistically comparable.*
- *There was a statistically significant yield response to fungicide application indicating that fungicides in general improved yields of barley varieties in an environment with high net form net blotch (NFNB) pressure.*
- *Small phenology differences seemed less related to yield outcomes since slower varieties such as IGB21130 and Rosalind a faster variety were statistically similar.*
- *The highest yielding varieties Minotaur and IGB21130 yielded almost 6t/ha but were not statistically different to a raft of other varieties that yielded the same, Neo CL, Rosalind, IGB22117 and KWS 18/3518 (tested previously as FAR SB5).*
- *All six of these high yielding varieties had the lowest level of NFNB infection with 5% or less canopy infection.*
- *Varieties had a significant effect on test weights, screenings, retentions and proteins with Neo CL producing the lowest grain protein.*
- *There were no varieties that achieved malt as per CBH 2024/25 receival requirements due to low test weights and generally high proteins.*

2023 and 2024 Frankland River Barley GEN Trials

- *The lowest screenings and highest retentions were produced by KWS Willis and Minotaur.*

There were significant differences in yield and quality due to variety (p=<0.001), but fungicide effects, whilst generally positive, were smaller and not statistically significant (p=0.008) (Tables 1 – 3 & Figure 1).

Table 1. Influence of fungicide on the grain yield (t/ha) of barley varieties plus and minus fungicide – April 28 sown.

	Yield (t/ha)						
	Variety	**Untreated**		**Plus fungicide**		**Mean**	
1.	RGT Planet *(s)*	4.93	-	5.31	-	**5.12**	c
2.	Neo CL *(s)*	5.64	-	6.03	-	**5.84**	ab
3.	Minotaur *(s)*	5.97	-	5.88	-	**5.92**	a
4.	Rosalind *(s)*	5.65	-	5.88	-	**5.76**	ab
5.	IGB22117 *(s)*	5.55	-	5.89	-	**5.72**	ab
6.	IGB21130 *(s)*	5.73	-	6.10	-	**5.92**	a
7.	KWS Thalis (FAR SB2) *(s)*	5.20	-	5.57	-	**5.38**	c
8.	KWS Willis (FAR SB1) *(s)*	5.60	-	5.64	-	**5.62**	bc
9.	KWS 18/3518 (FAR SB5) *(s)*	5.46	-	5.96	-	**5.71**	ab
10.	RGT Asteroid *(s)*	5.37	-	5.46	-	**5.41**	c
11.	RGT Orbiter *(s)*	5.06	-	5.67	-	**5.36**	cd
	Mean	**5.47**	**b**	**5.76**	**a**	**5.30**	
	LSD Variety p = 0.05	0.26		**P value**		<0.001	
	LSD Fungicide Management p = 0.05	ns		**P value**		0.008	
	LSD Variety x Man. p = 0.05	ns		**P value**		0.271	

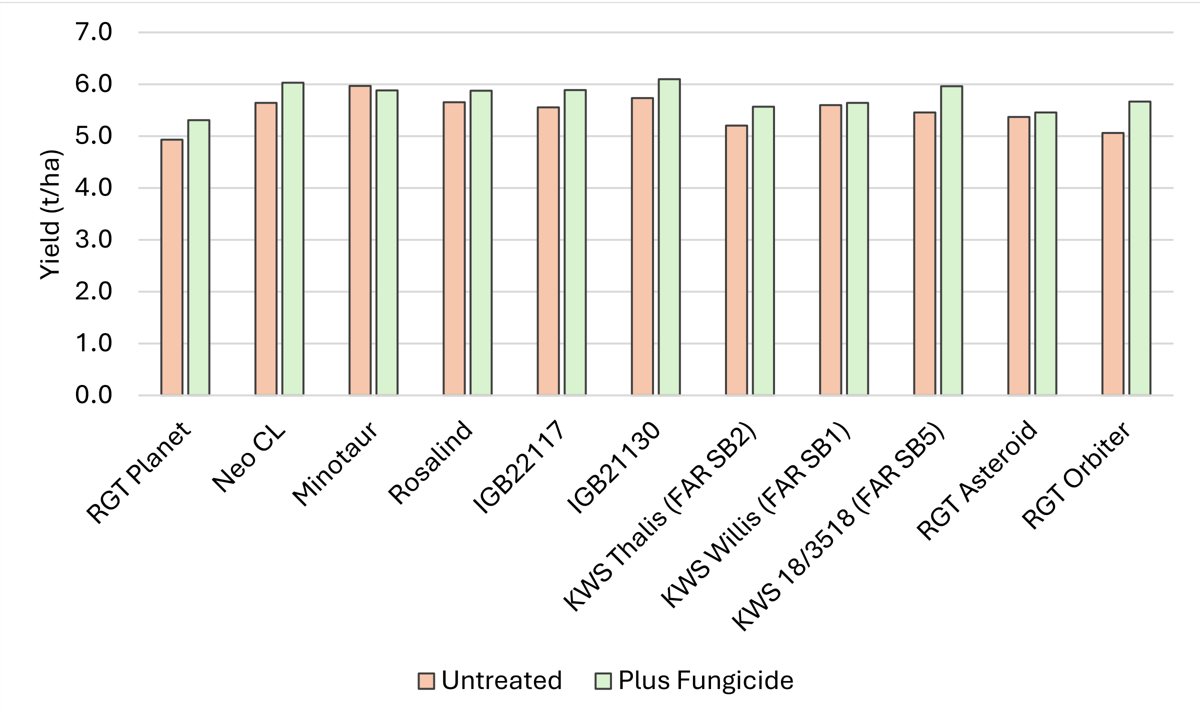


Figure 1. Influence of fungicide and variety on yield (t/ha). (P Value= 0.271, LSD= 0.37)
IGB21130 – is now called Ember, IGB22117 – is now called Soldier CL

GERMPLASM EVALUATION NETWORK (GEN) - BACKGROUND

Hagley, TAS

Wallendbeen, NSW

Esperance, WA

FAR Australia has been working with breeders to bring new products to the Australian Grains industry since its inception in 2012. It is a trusted development partner for many breeders, assisting with bringing in new germplasm to the marketplace, whilst ensuring the correct management to fulfil the genetic yield potential.

Industry Collaborations

FAR Australia is once again partnering with industry to independently showcase ***germplasm*** performance in a series of high productivity ***evaluation*** trials across the country as part of its Industry Innovations (II) initiative.

To develop independent research results on profitable germplasm developments in wheat, barley, milling oats and canola, using specific research strategies designed by FAR Australia for the High and Medium Rainfall Zones of Australia.

Should you wish to invest into FAR Australia's Germplasm Evaluation Network, please contact Darcy Warren 0455 022 044 darcy.warren@faraustralia.com.au

This independent initiative delivers a coordinated and independent network of high productivity trials in wheat, barley and canola. The trials will be managed 'plus and minus' fungicide with control varieties provided by FAR Australia.

BIOLOGICAL BENCHMARKING- FIRST IN ITS FIELD

This initiative allows biological products to be evaluated under identical field conditions to synthetic standards, accelerating industry understanding and adoption of effective biological solutions.

Biological Benchmarking, developed by FAR Australia, is a brand-new initiative launching in 2025 to independently evaluate biological crop protection and productivity-enhancing products under Australian conditions. As interest in sustainable farming practices grows, so too does the demand for reliable data on the performance of these products. This initiative aims to provide side-by-side comparisons of new biological options against conventional synthetic controls to support confident decision-making by growers and advisers.

It is:

- **independent**
- **scientifically robust and replicated**
- **aligned with real-world agronomic practice**
- **focused on productivity, sustainability, and profitability**

- **With FAR Australia funded control treatments**

Collaborating Industry Stakeholders

This program is designed for biological product developers, distributors, agronomists, private consultants, and farming groups seeking to better understand the performance and positioning of biological products and demonstrate them to the wider industry.

With increased availability and global interest in biological inputs—from microbial inoculants to plant defense stimulants and biopesticides—there is a growing need for rigorous testing. The Biological Benchmarking series will provide that platform, offering clarity and confidence in a rapidly evolving product space.

Industry Innovations
leading the way to a brighter grains industry

BIOLOGICAL BENCHMARKING
an independent biological evaluation network

WA CROP TECHNOLOGY CENTRE (ALBANY)

AFTERNOON TIMETABLE

WA CROP TECHNOLOGY CENTRE FIELD DAY (ALBANY PORT ZONE)
THURSDAY 11th SEPTEMBER 2025

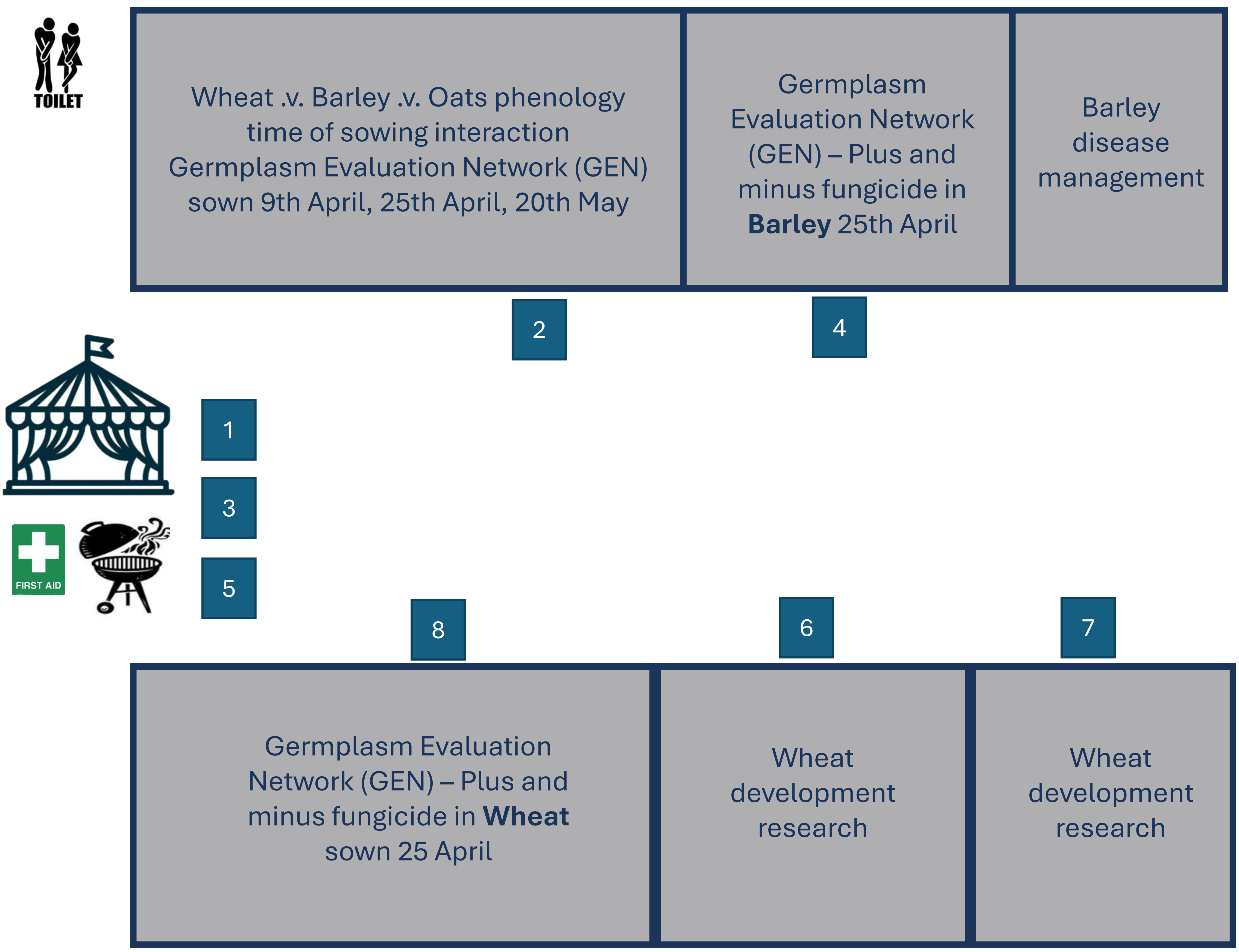
In-field presentations	Station No.	1:30	2:00	2:30	3:00	3:30
						Gazebos
Associate Professor Angela van de Wouw, University of Melbourne *Impact of SDHI fungicide resistance in the blackleg pathogen - what does it mean for our approach to canola disease control in the future?*	5	1	2			Closing address and refreshments
Nick Poole, FAR Australia ***Closing the yield gap - reflection on FAR Australia research results from the Albany Port Zone Crop Technology Centre (2020 - 2024)*** *Nick looks at some of the key FAR Australia results obtained over the last five years working in the Albany Port Zone.*	6		1	2		
Dr Ben Jones, FAR Australia ***A spring in winter wheat clothing: spring yields with winter wheat flexibility in dry years.*** *Ben looks at the first year results from a project being run in the LRZ.*	7			1	2	
Kate Trezise, Deep Das, Sophie Paul & Nick Poole, FAR Australia *The WA team look at this year's* ***Germplasm Evaluation Network (GEN) for wheat*** *- which wheats need full fungicide packages?*	8	2			1	
In-field presentations		**1:30**	**2:00**	**2:30**	**3:00**	**3:30**

For the presentations, we would be obliged if you could remain within your designated group number. Note we will only split into two groups if high numbers attend.	1
Thank you for your cooperation.	2

FAR Australia would like to thank the following sponsors for their support in running today's event.

WA CROP TECHNOLOGY CENTRE (ALBANY)

FAR AUSTRALIA



Map is not to scale

Thanks to our host farmers: Gunwarrie (Kellie Shields, Terry Scott & Don Pentz)

FRANKLAND Rural

FARMGATE ADVISORY

AFGRI EQUIPMENT AUSTRALIA

SOWING THE SEED FOR A BRIGHTER FUTURE

Closing the yield gap - reflection on FAR Australia research results from the Albany Port Zone.

Nick Poole – FAR Australia

Background

FAR Australia have worked in southern WA through GRDC investments on and off for the last 20 years (2005 – 2012 principally canopy and disease management) and then under the HRZ projects Hyper Yielding Crops (FAR2004-002SAX) Optimising High Rainfall Zone Cropping for Profit" (DAW1903-008RMX) which ran from 2019 – 2023. The following results are taken from observations in these trials and FAR's own Germplasm Evaluation Network (GEN) trials looking at the implications for profitability.

Key Points

- *The current absence of stripe rust Puccinia striiformis and Septoria tritici blotch (STB) Zymoseptoria tritici in WA milling wheat crops results in significantly lower returns from fungicide application in the Albany Port Zone compared to the eastern states.*
- *The maximum yield response in Scepter to a two-spray fungicide programme incorporating SDHI fungicide over three years has been 0.11t/ha (2021 – 0.17t/ha, 2022 – 0.17t/ha and 2024 no response).*
- *In seasons with higher yield potential increased inputs, particularly nutrition has been the key to cost effective yield increases in wheat.*
- *An additional 25 or 90kg N/ha on top of a standard N dose provided profitable increases in productivity in 2021 and 2022 based on yield increases of 0.71 and 0.66t/ha (urea at $600/t & grain price at $375/t) and associated protein lifts (mean of seven cultivars).*
- *In contrast to wheat, fungicide application in barley is a key ingredient of agronomy, particularly in the MRZ and HRZ regions.*
- *The maximum yield response in RGT Planet to a two-spray fungicide programme incorporating SDHI fungicide over the last two drier years has been 0.47t/ha 2023 and 0.38t/ha, remembering that with fungicide resistance in the net blotch pathogen fungicides are only partially effective.*
- *Winter wheat germplasm has been more productive at Frankland River than in Esperance with short season winter wheats such as Mowhawk competing more profitably with spring wheats sown in the mid-late April window.*
- *One noticeable difference between our Frankland and Esperance centres is temperatures experienced during grain fill that may explain the difference, although it should be noted that long season spring wheats still perform strongly at Frankland River.*
- *Winter wheat cultivars do extend the ability to sow early (early – mid April) on large acreages, and when combined with an early break, and more readily offer grazing opportunities as well as grain yield.*

Results

Closing the yield gap - reflection on FAR Australia research results from the Albany Port Zone.

Nick Poole – FAR Australia

Foliar fungicide application in **wheat** in the eastern states is a major driver of closing the yield gap, even in drier years such as 2023 and 2024. However, in FAR Australia research results in the WA HRZ it has been difficult to demonstrate the same effect on yield and profit.

The following 2024 graphs illustrate this difference with reference to FAR Australia's Germplasm Evaluation Network (GEN) where cereal varieties are tested with and without a comprehensive fungicide programme.

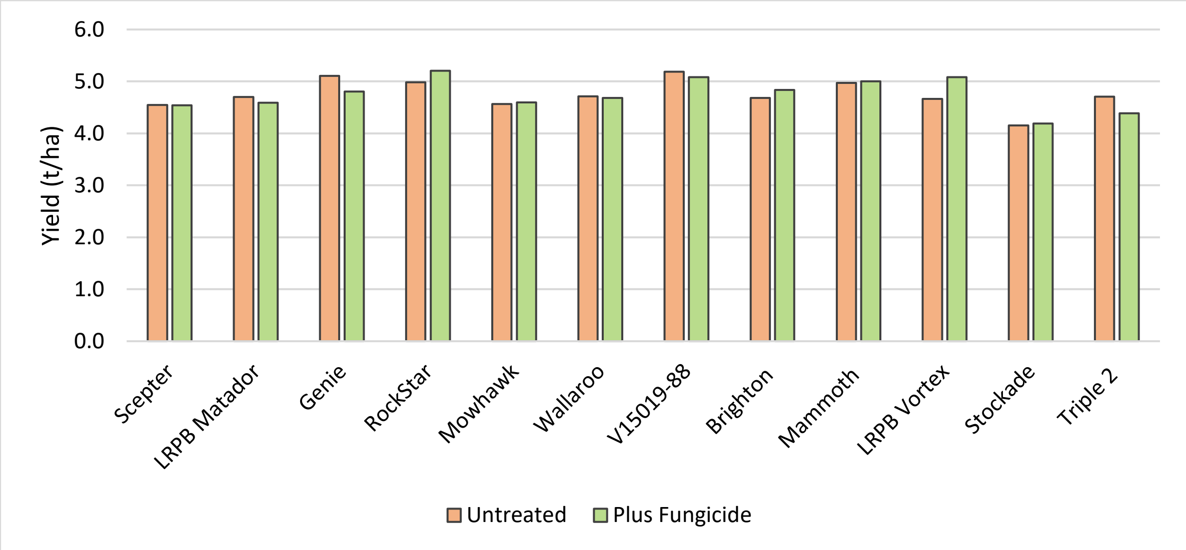


Figure 1. Influence of variety and fungicide application (based on two foliar sprays) on grain yield (t/ha) at **Frankland River CTC** – sown 28 April **2024** (t/ha). **GSR 372mm**

Key point: *The only significant yield results were amongst varieties. There was no significant response to fungicide application. In Scepter the yields of treated and untreated were almost identical.*

In contrast in the same season with less rainfall and roughly similar yields the following results were obtained in southern Victoria at Gnarwarre.

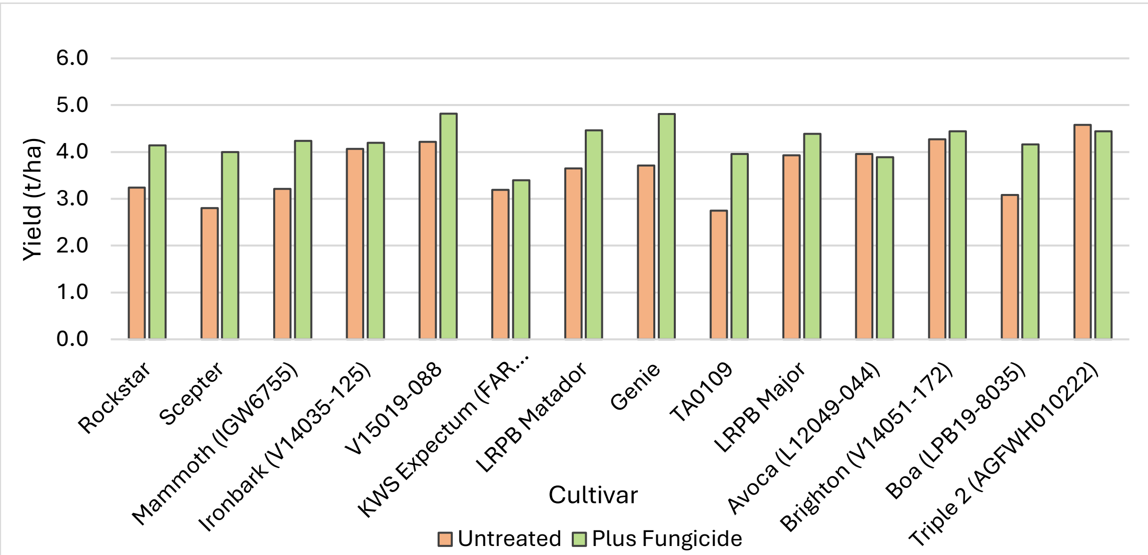


Figure 2. Influence of variety and fungicide application (based on three foliar sprays) on grain yield (t/ha) at **Gnarwarre, Victoria CTC** – sown 20 May **2024**. **GSR 255mm**

Closing the yield gap - reflection on FAR Australia research results from the Albany Port Zone.

Nick Poole – FAR Australia

Key point: *The fungicide response averaged between minus 0.07t/ha – 1.2t/ha. Genie gave over a tonne response to fungicide compared to 0.08t/ha in Esperance, 0.28t/ha in Scaddan and minus 0.31t/ha in Frankland River. In Scepter the yields of fungicide treated crops were 1.2t/ha greater than untreated.*

So why the difference and was it just 2024?

The difference is simply the absence of two diseases in the west that are regularly robbing yield in the eastern states, stripe rust *Puccinia striiformis* and Septoria tritici blotch (STB) *Zymoseptoria tritici* Much of the milling wheat germplasm (e.g. Scepter) grown in the eastern states is susceptible to these two diseases. This difference between east and west is not a one off it's been recorded in previous FAR Australia Frankland River trials. In 2023 GEN trials the average yield response over 14 wheat varieties to a three spray fungicide programme was 0.17t/ha, with no significant difference between treated and untreated. In Scepter in 2023 the yield gain from three fungicide sprays was 0.14t/ha. The following trial looked at the yield response to fungicide recorded in **cv Catapult** in the Esperance port zone in the 2021 season under different levels of soil amelioration.

Table 1. Disease management treatments in wheat (mL/ha).

	GS31 Fungicide	**GS39 Fungicide**	**GS59 Head wash**
Untreated			
Standard Disease Management	Prosaro – 300 mL	Tilt – 500 mL	---
High Input – GS39 onwards	Aviator Xpro – 416 mL	Tilt – 500 mL	---
High Input – GS31	Aviator Xpro – 416 mL	Radial – 840 mL	Prosaro – 300 mL

Deep ripping gave a 0.76t/ha yield improvement on non-ameliorated ground, with spade seeding increasing yield by a further 0.7t/ha over tine DBS when it was superimposed on freshly deep ripped soil.

Table 2. Influence of soil amelioration/establishment and disease management strategy on grain yield (t/ha). **– Esperance, WA CTC 2021** (Sand plain soil type)

			Fungicide Strategy							
	Untreated		Standard 2F		High input 2F		High input 3F		**Mean**	
Establishment	t/ha		t/ha		t/ha		t/ha			
2019 Ripped, Tine DBS	3.62	-	3.50	-	3.66	-	3.64	-	**3.60**	**c**
2019 + 2021 Rip, Tine DBS	4.49	-	3.95	-	4.58	-	4.42	-	**4.36**	**b**
2019 + 2021 Rip, Spade Seeder	4.78	-	4.94	-	5.27	-	5.25	-	**5.06**	**a**
Mean	**4.29 bc**		**4.13 c**		**4.50 a**		**4.43 ab**			

In other trials on the Esperance Centre in 2021 and 2022 Scepter gave an identical maximum response to fungicide in a multiple treatment two spray trials of 0.17t/ha which was not statistically different from the untreated control. Note there was no CTC research centre in 2023.

Key point:

Closing the yield gap - reflection on FAR Australia research results from the Albany Port Zone.

Nick Poole – FAR Australia

*The maximum fungicide response to a two-spray programme (incorporating SDHI chemistry) in Scepter in the WA HRZ region (both Albany and Esperance) has varied between 0 - 0.17t/ha in five trials 2021 - 2024 (an average yield gain of 0.10t/ha). If we assumed the non-significant yield gains over these three years were **real** then with wheat at $380/t and the two-spray programme cost $25/ha with $15/ha for application you would not break even taking 0.10t/ha as the yield gain.*

Barley

In contrast to wheat, fungicide application in barley is a key ingredient of agronomy, particularly in the MRZ and HRZ regions. The following graph shows the response to two spray fungicide strategy at the **Esperance CTC** 2021 – 2024 (Figure 3). Whilst we don't yet have three years of GEN data at Frankland River, return on investment with fungicide application in barley is generally higher than wheat with an average yield response of 0.29t/ha in 2024 (range minus 0.09t/ha to 0.61t/ha), although it should be noted that responses in RGT Planet have not been as great as those observed in Esperance,

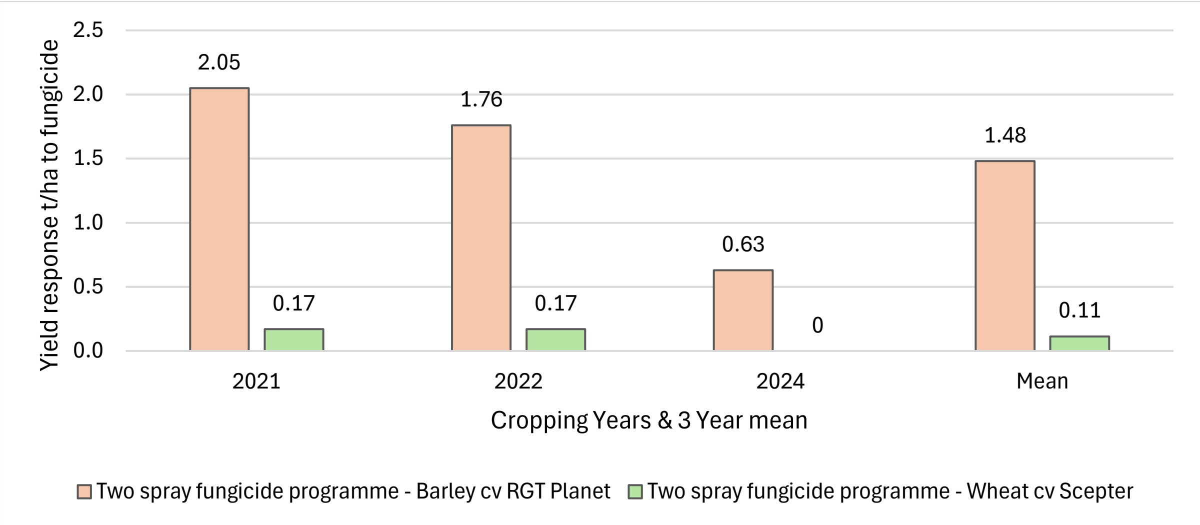


Figure 3. Response to fungicide application in wheat and barley (t/ha) at **Esperance, WA CTC** in 2021, 2022 and 2024. *Note: There was no FAR Australia CTC in the HRZ in 2023 in port zone.*

***Key point:** Spending fungicide input money on barley gives significantly better returns than wheat.*

Wheat phenology – winter wheat performance

At the Frankland River Crop Technology Centre, the grain yields have been more variable in comparison to Esperance, in part due to a change of site and soil type between 2020 and 2021 (Figure 4). Over the three project years *Optimising High Rainfall Zone Cropping for Profit" (DAW1903-008RMX)* the notable difference between Esperance and Frankland River was better performance of winter germplasm relative to spring germplasm. This was not only apparent with the shorter season winter wheats Mowhawk and Illabo, but also the long season red wheat RGT Accroc, which has been much more consistent than expected over the three varying seasons. However longer season springs such as Rockstar and Denison have performed similarly to winter wheats when sown in mid - late April

Closing the yield gap - reflection on FAR Australia research results from the Albany Port Zone.

Nick Poole – FAR Australia

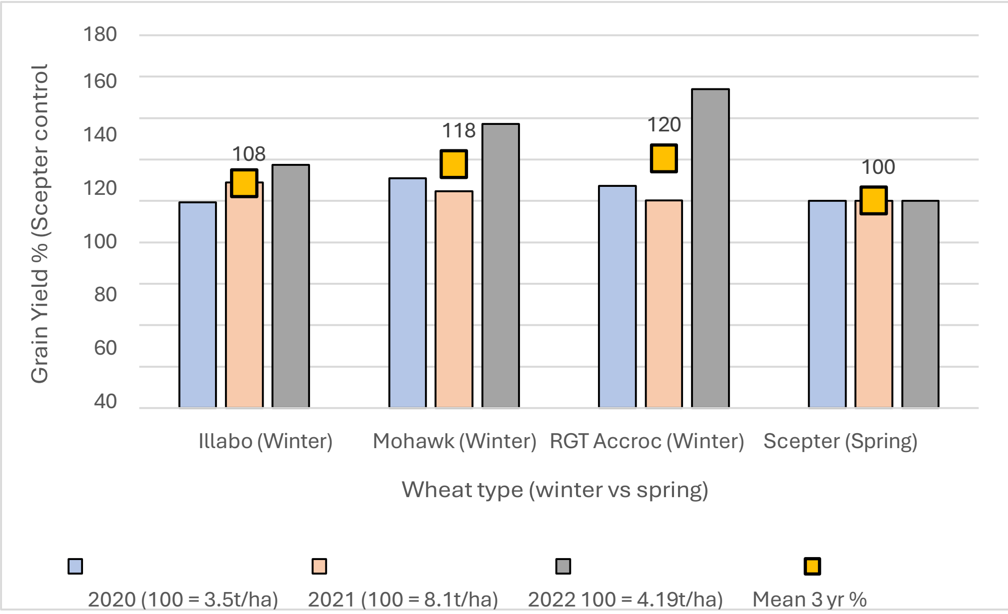


Figure 4. Winter vs. spring germplasm grain yield (%) under high input management over three seasons – Frankland River, WA 2020 - 2022.

Key point: *In seasons with higher yield potential winter wheat germplasm has performed (relative to spring wheat) more strongly at Frankland River than results experienced in the warmer Esperance environment.*

A spring in winter wheat clothing?

Spring yields with winter wheat flexibility in dry years.

Ben Jones and Sophie Paul, FAR Australia

Introduction

The dream for winter wheats is the possibility of early (wet or dry), or late sowing whilst still flowering close to an optimum time. Additional biomass from the longer growing season and better utilisation of rainfall could possibly be grazed or left to convert into yield. The reality has been that in drier environments; winter wheats have achieved higher biomass but struggled to reliably convert that into higher yields.

Winter wheats differ from springs by having a requirement for a certain amount of cold temperature before development towards flowering (anthesis) continues. This is what gives them more stable anthesis dates. Whilst waiting for the cold, they tiller and accumulate biomass, if conditions permit. They've had little breeding effort in Australian environments compared to springs, but that also means that the possibility of further improvement exists.

The winter/spring wheat harvest index experiment north of Esperance (Grass Patch) is being conducted by FAR Australia as part of a University of Melbourne led GRDC project set up to investigate the physiological mechanisms behind lower winter wheat yields in dry environments, and whether there are possibilities to at least match spring wheat yields with further genetic improvements.

Method

The experiment compared Australian winter and spring wheats released between 1983 and 2023 (Figure 1). Cultivars were chosen to give approximately equal anthesis dates with winters sown early (mid-April, ~10 mm irrigation to secure emergence), and springs sown a month later. Unfortunately at Grass Patch in 2024 there was some pre-emergent damage on spring wheats, but enough unaffected area remained for detailed quadrat harvests in most cases. Similar experiments were sown at Wagga (NSW), Dookie (Vic) and Turretfield (SA) in 2024.

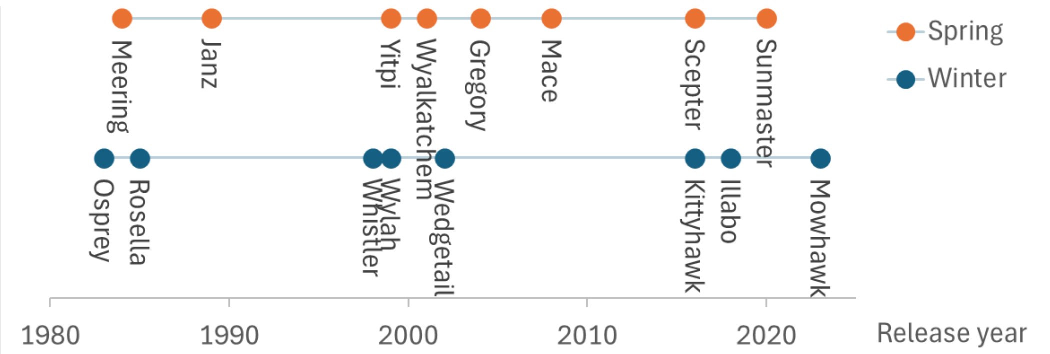


Figure 1. Release years for winter and spring cultivars in the experiment.

Measurements were timed to break crop growth into "vegetative" (up to flag leaf emergence), "grain set" (flag leaf to anthesis) and "grain fill" (anthesis to maturity) periods. In between each period the canopy was characterised by NDVI, height, light interception, leaf chlorophyll, and dry matter measurement of leaf, stem, spike (and ultimately grain).

A spring in winter wheat clothing?

Spring yields with winter wheat flexibility in dry years.

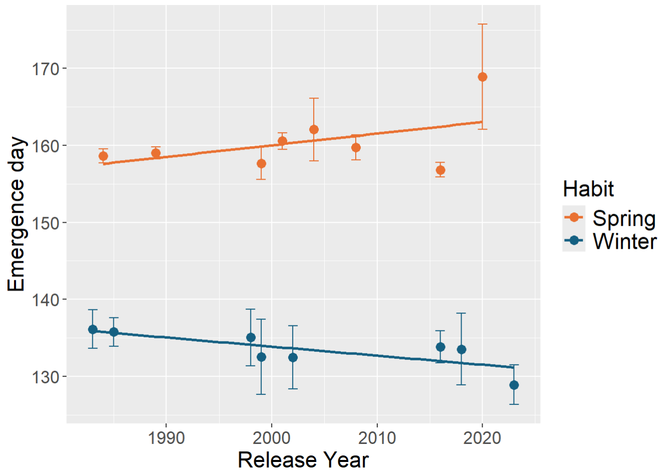
Ben Jones and Sophie Paul, FAR Australia

Results

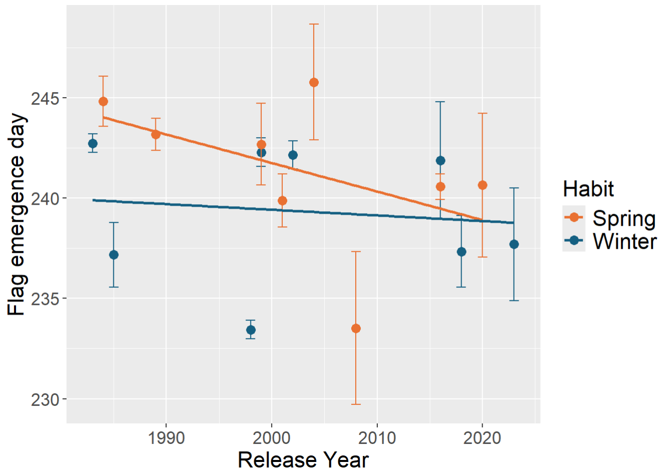
Total growing season rainfall was 207 mm, with most falling in the winter months. Last significant fall was 12 mm on August 19.

Breeding has advanced the timing of flag leaf emergence and anthesis of the selected spring wheats (Figure 2b, c; trend not significant for both), and the emergence timing of winter wheats (Figure 2a, -0.15 days/yr; p=0.036). At flag leaf and anthesis, Whistler and Mace tended to be early, and EGA Gregory late.

a.



b.



A spring in winter wheat clothing?

Spring yields with winter wheat flexibility in dry years.

Ben Jones and Sophie Paul, FAR Australia

c.

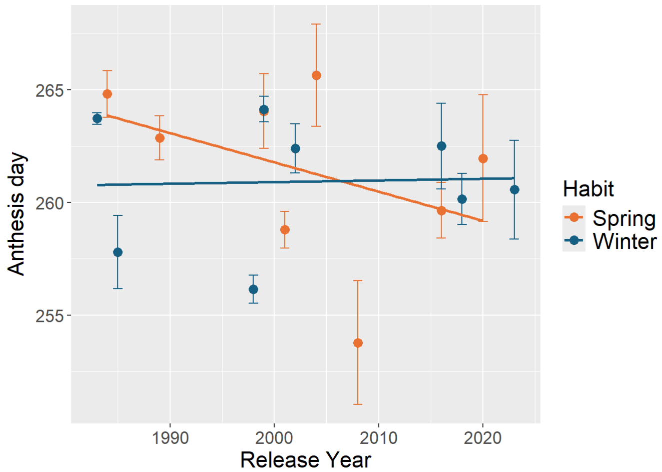
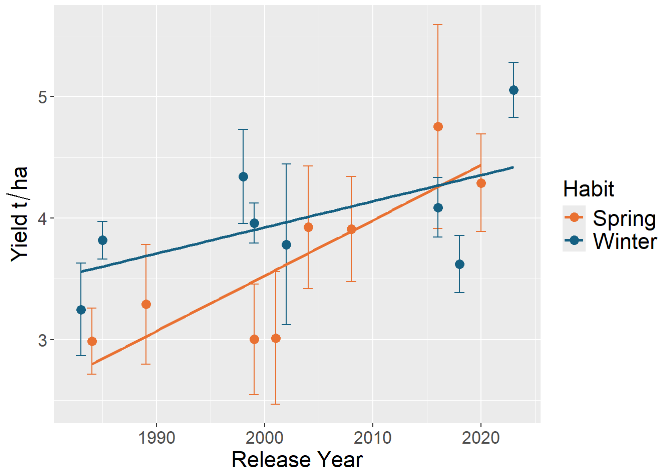


Figure 2a-c. Phenology of winter and spring cultivars at Grass Patch in 2024, against release year. Error bars are standard error of the mean, and trend lines fitted on means.

The vegetative period has shortened in springs (not shown; -0.30 days/yr; p=0.007), partly because of earlier flag leaf emergence. Grain set period has lengthened in winters, and the grain fill period has lengthened in springs (both not significantly).

Yield increased with release year for both spring and winter wheats (Figure 3a, +0.029 t/ha/yr; p<0.001). The increase related mostly to size of grains (Figure 3c, +0.185 mg/grain/yr, p<0.001). Although there was a visual trend to increase in grain number for spring wheats, in this experiment it wasn't significant (Figure 3b, p=0.38).

a.

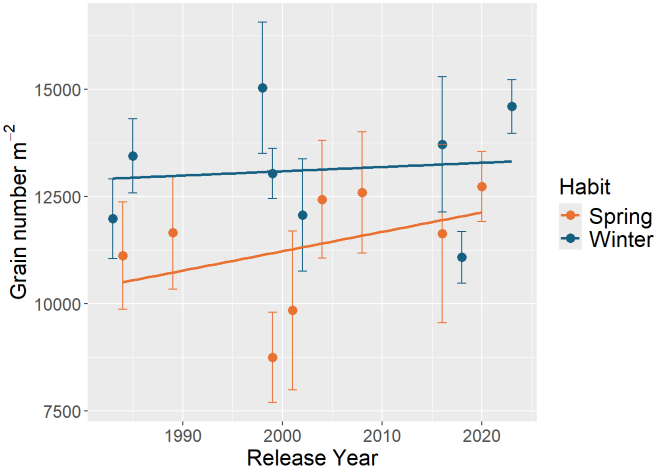


A spring in winter wheat clothing?

Spring yields with winter wheat flexibility in dry years.

Ben Jones and Sophie Paul, FAR Australia

b.



c.

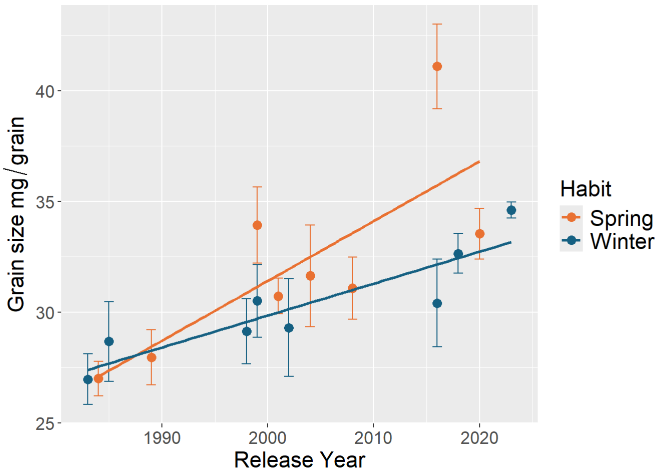


Figure 3a-c. Yield and grain number/size of winter and spring cultivars at Grass Patch in 2024, against release year. Error bars are standard error of the mean, and trend lines fitted on means.

Total biomass was highest for winters ($p<0.001$) and didn't change with release year (Figure 4). Total biomass increased with release year in spring wheat at flag leaf ($p=0.03$) and maturity ($p=0.09$), although the same trend wasn't evident at flowering. This led to more stem mass (not shown; $p=0.04$ for both).

A spring in winter wheat clothing?

Spring yields with winter wheat flexibility in dry years.

Ben Jones and Sophie Paul, FAR Australia

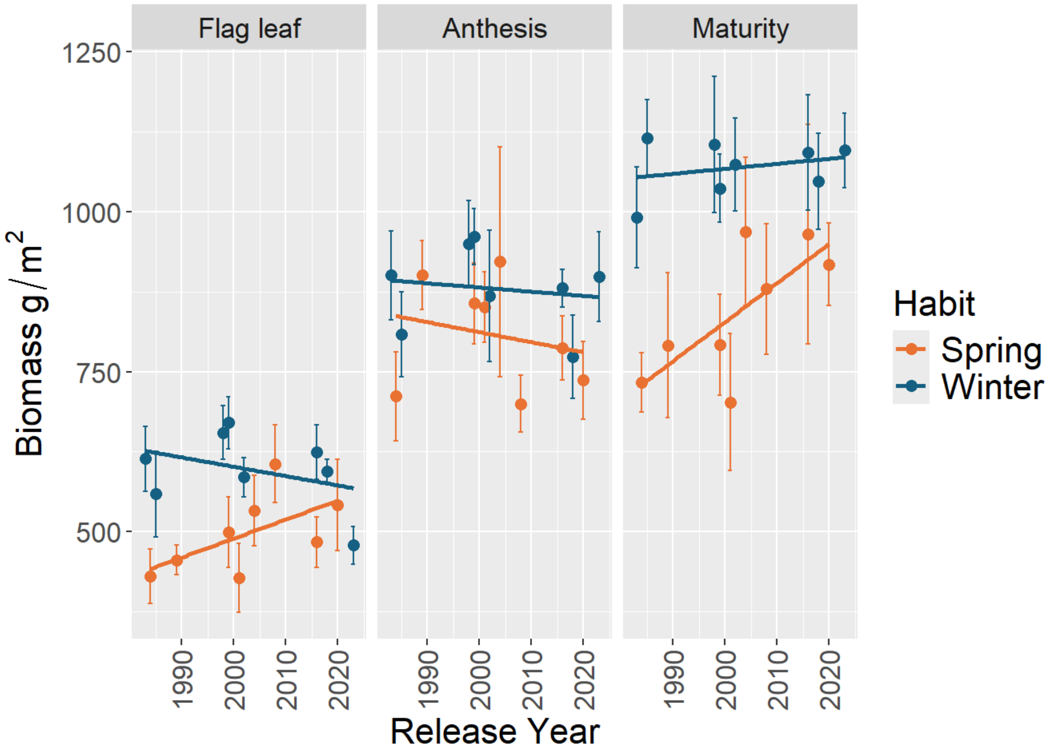


Figure 4. Biomass vs release year of spring and winter cultivars at flag leaf, anthesis and maturity in experiment sown at Grass Patch in 2024. Error bars are standard error of the mean, and trend lines fitted on means.

The proportion of biomass in the stem (not shown) also increased with release year for both winters and springs at flag leaf (0.1%/yr, p=0.003), and decreased at maturity (-0.1%/yr, p=0.001). Winters in general had more mass in the stem at flag leaf (+2.8%, p=0.003) and maturity (+3.1%, p<0.001). Recently released winters had less biomass in live leaves at flag leaf, and dead leaf at anthesis and maturity.

Despite the differences in biomass and allocation between winters and springs, significant differences in spike biomass were only measured at maturity (when the spike contained grain; + 70 g/m^2 for winters, p=0.006, and average increase for both of +3.3 g/m^2/yr, p<0.001).

Recently released winters had fewer spikes at flag leaf (p=0.053) and had little change in spike number between flag leaf and maturity. Approximately 110 fewer spikes/m^2 were measured at maturity in springs, with a trend for more of the reduction to take place by anthesis in recently released cultivars (-1.45 spikes/m^2/yr, p=0.003).

A spring in winter wheat clothing?

Spring yields with winter wheat flexibility in dry years.

Ben Jones and Sophie Paul, FAR Australia

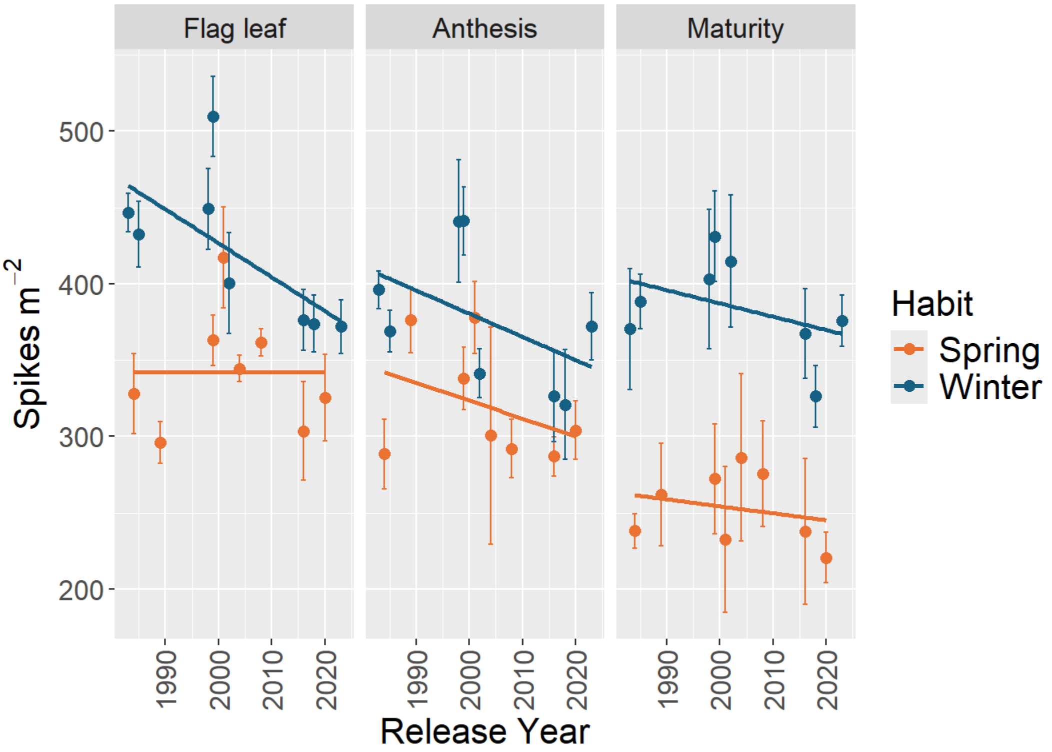


Figure 5. Spike number vs release year for spring and winter cultivars in experiment sown at Grass Patch in 2024. Error bars are standard error of the mean, and trend lines fitted on means.

Recently released springs had higher leaf chlorophyll at anthesis (also NDVI, but this was not significant), and there is some indication of a mixed strategy in winters (more recent released cultivars have also had increased NDVI). Winters intercepted more radiation (despite similar NDVI and leaf chlorophyll) at flag leaf (+10.5%, p=0.001), but no significant differences were measured at anthesis (p=0.85) and there were no significant trends with release year.

Discussion/Conclusion

The evidence from the Grass Patch experiment in 2024 is that breeding has narrowed the yield gap between winter and spring wheats (given similar flowering times), in a low rainfall environment. Much of the breeding effect for both winters and springs was in grain size rather than number (which was generally higher for the winters).

Winter cultivars produced higher biomass, but in recently released cultivars had partitioned more of that to the growing stem by flag leaf, set fewer spikes, and at maturity transferred more of that stem biomass to the grain. Spring cultivars were still more efficient at transferring biomass from stem to grain, and winter cultivars at maturity had more dead leaf, and also chaff mass (even in proportion to grain number). More recently released spring cultivars had higher biomass at maturity, which suggests post-anthesis growth of older cultivars possibly being limited by grain set or size. In this way, spring cultivars are becoming more winter-like.

A spring in winter wheat clothing?

Spring yields with winter wheat flexibility in dry years.

Ben Jones and Sophie Paul, FAR Australia

Winter cultivars also continued to maintain spike number with the dry finish (regardless of breeding). Spring cultivars had high spike mortality, with a higher proportion of that occurring before anthesis in more recently released cultivars

A surprising trend was the earlier emergence of recently released winter wheats. It will be interesting to see if this is duplicated in other environments.

In the 2024 season at Grass Patch, recently released winter wheats matched the yields of recently released springs. The comparative efficiency of modern spring wheats suggests the possibility of still higher yield potential in winters if more biomass can be transferred from the stem, and grain set more efficiently.

Acknowledgements

Thank you to the Longbottom family at Grass Patch for their assistance with establishing and maintaining the experiment, and to Lucinda Matthews, Deep Das and Nicky Tesoriero who made many of the measurements in 2024. Funding provided by GRDC under UoM2312-001RTX, with particular thanks to James Hunt and Juan Wang for the project concept, detailed protocols and logistical support.

FUNGICIDE
FINGERPRINTING
an independent fungicide evaluation network

Would you like to test your fungicide in 2026?

This independent initiative allows the industry to compare product applications and timings under identical conditions, assessing efficacy, yield response, and profitability. It helps generic manufacturers showcase their products and provides a platform for new actives to demonstrate improvements over existing standards. Resellers and consultants can also test fungicide strategies before recommending them to clients.

Fungicide Fingerprinting, developed by FAR Australia, was launched in 2021 and is the first coordinated and independent fungicide evaluation network in Australia. This initiative aims to generate an independent evaluation of existing and newly developed fungicide strategies to help growers and advisers make better decisions when managing disease. It is:

- independent
- accurate
- consistent in the approach to disease assessment
- within the label stipulations and AFREN compliant control framework

Collaborating Industry Stakeholders

This industry initiative is of benefit to agrichemical manufacturers involved in both new active and generic, fungicide resellers with agronomists in the field, private advisers and regional farming groups.

Purpose

To develop independent results on profitable, productive and sustainable approaches to disease management in wheat and barley using specific strategies devised by fungicide manufacturers, resellers consultants and FAR Australia for commonly occurring fungal pathogens in the HRZ of Australia.

SCAN THE QR CODE TO LEARN MORE ABOUT US

SOWING THE SEED FOR A BRIGHTER FUTURE

Field Applied Research (FAR) Australia

HEAD OFFICE: Shed 2/ 63 Holder Road
Bannockburn
VIC 3331
Ph: +61 3 5265 1290

12/95-103 Melbourne Street
Mulwala
NSW 2647
Ph: 03 5744 0516

9 Currong Street
Esperance
WA 6450
Ph: 0437 712 011

Email: comms@faraustralia.com.au
Web: www.faraustralia.com.au