INDUSTRY INNOVATIONS 2025: HARVEST YIELD RESULTS – April Sown Wheat

2025 NSW Crop Technology Centre (Wallendbeen)

Sown: 22 April 2025
Harvested: 17 December 2025
Trial Code: FAR NSW II W25-71
GSR (Apr- Nov): 343.2mm
Soil type & management: Red clay loam; Kelly chained canola stubble pre-sowing
Previous Crop(s): 2023 Wheat; 2024 Canola

The Germplasm Evaluation Network (GEN) is a FAR Australia 'Industry Innovations' initiative that tests crop variety performance across FAR Australia's national network of Crop Technology Centres. GEN sites test variety performance with and without fungicide. FAR Australia provides the control varieties and breeders enter their chosen lines for evaluation.

Objectives:

To assess the yield performance of a range of winter and spring wheats, managed with and without fungicide against four regional controls (BigRed, RGT Cesario, RGT Accroc & Brighton), sown in mid-April in the Wallendbeen (NSW) high altitude environment.

Key Points:

- *There was a significant interaction in grain yield between variety and fungicide application (P<0.001), with varieties differing in their response to fungicide application (ranging from 0.11 – 4.07t./ha).*
- *The red feed wheat Triple 2 produced the highest yields under both plus and minus fungicide management with a yield of 9.01t/ha with fungicide and 8.25t/ha without. It significantly outyielded all varieties except 19Q3H0499 when fungicide treated.*
- *Brighton, AGFWH01022, RW71608* (*RGT Enebro), and RGT Waugh were the only varieties that did not produce a statistical yield response to fungicide application.*
- *Stripe rust (Yr) was the main disease influencing yield with the susceptible varieties showing the largest yield loss to disease.*
- *Low levels of leaf rust (Lr) were also assessed in Triple 2, AGFWH01022, and RGT Waugh, and low levels of Septoria tritici blotch (STB) assessed in Brighton, 16Q2H0310, and LRPB Major.*
- *Long season red wheats were generally lower yielding than quick winters and spring wheats tested.*
- *Variety and fungicide management had a significant impact on all grain quality parameters tested.*
- *Grain quality differences mirrored yield differences with significant effects of fungicide application on test weight, screening and protein where yield responses were greater.*

Table 1. Influence of fungicide application on the grain yield (t/ha) of wheat varieties plus and minus fungicide.

	Management Level					
Variety	**Untreated**		**Plus fungicide**		**Mean**	
	Yield t/ha		**Yield t/ha**		**Yield t/ha**	
BigRed *(w)*	6.47	ijk	7.34	e-h	**6.90**	**d**
RGT Cesario *(w)*	4.81	l	6.26	jk	**5.53**	**h**
RGT Accroc *(w)*	4.42	l	6.52	ij	**5.47**	**h**
Brighton *(w)*	7.97	b-e	8.08	bcd	**8.02**	**b**
Mowhawk *(w)*	5.81	k	8.26	bc	**7.03**	**d**
LRPB Major *(s)*	7.24	fgh	7.97	b-e	**7.60**	**bc**
Packer (LPB19-3527) *(s)*	5.78	k	7.69	b-f	**6.74**	**de**
Triple2 *(w)*	8.25	bc	9.01	a	**8.63**	**a**
AGFWH01022 *(w)*	7.58	c-g	8.26	bc	**7.92**	**b**
RGT Ponsford *(s)*	4.56	l	7.91	b-f	**6.23**	**fg**
19Q3H0499 *(s)*	4.25	l	8.32	ab	**6.28**	**efg**
16Q2H0310 *(s)*	4.39	l	8.16	bcd	**6.27**	**efg**
RGT Marsh (H16Q3x0336.SCI-097D) *(s)*	4.36	l	7.76	b-f	**6.06**	**g**
RW71608 (RGT Enebro) *(w)*	6.83	hij	7.46	d-h	**7.15**	**cd**
RGT Waugh *(w)*	6.43	ijk	6.97	ghi	**6.70**	**def**
Mean	**5.94**	**b**	**7.73**	**a**		
LSD Cultivar p = 0.05	0.50			**P value**	<0.001	
LSD Management p = 0.05	0.83			**P value**	0.006	
LSD Cultivar x Man. p = 0.05	0.71			**P value**	<0.001	

Note: w = Winter Wheat, s = Spring Wheat

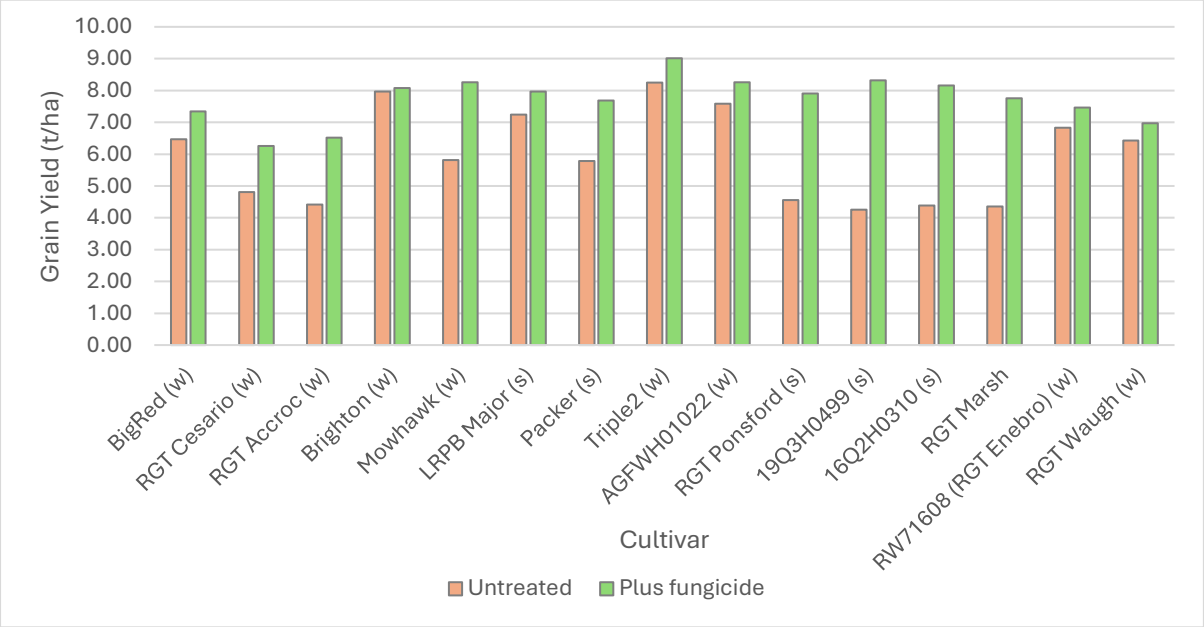

Figure 1. Influence of variety and fungicide application on grain yield (t/ha).

Please note, establishment of plots in 2025 was variable due to lack of April rainfall. Sown on 22 April some plants did germinate from soil moisture at sowing, but majority of plants didn't germinate until it rained on 22 May.

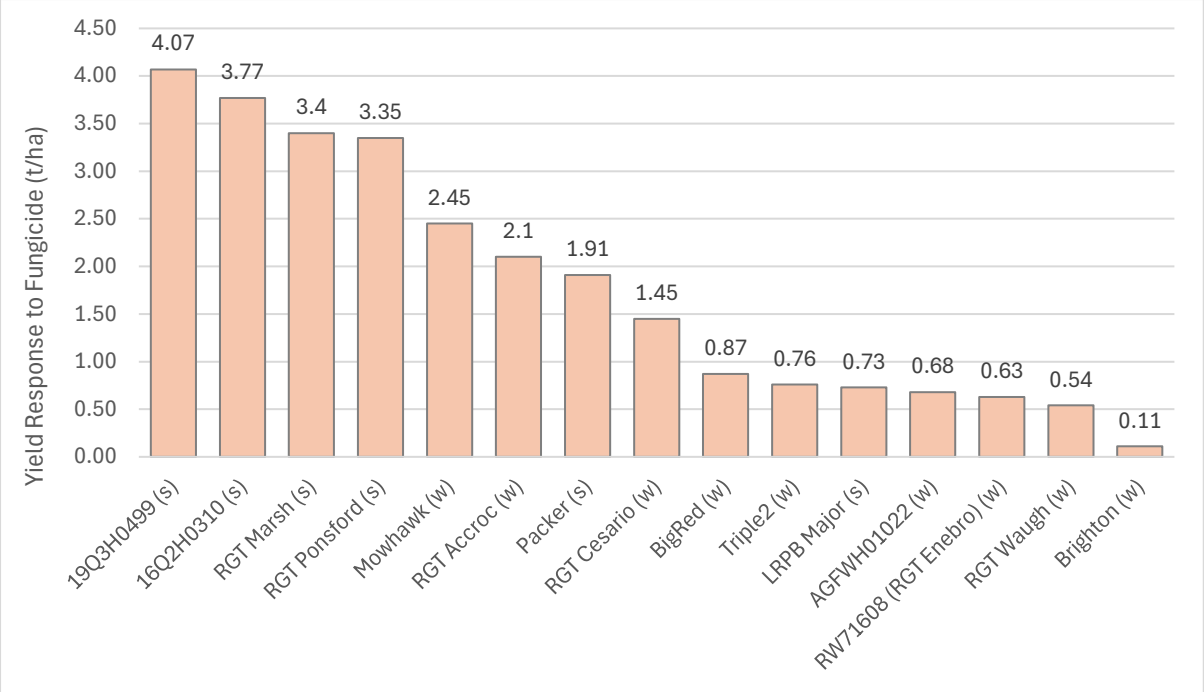

Figure 2. Fungicide yield response (t/ha) based on three-spray fungicide programme compared to the untreated.

Table 2. Influence of fungicide application the grain quality (% protein – corrected to 0% moisture, test weight and screenings) of wheat variety plus and minus fungicide.

		Grain Quality Assessments					
Management (mean of all cultivars)		**Protein (%)**		**Test Weight (kg/hL)**		**Screenings (%)**	
1	Untreated	12.1	-	69.7	b	3.1	a
2	Plus Fungicide	11.8	-	76.0	a	1.8	b
	Pval	0.263		0.038		0.034	
	LSD P=0.05	ns		5.6		1.1	
Cultivar (mean of treated and untreated)		**Protein (%)**		**Test Weight (kg/hL)**		**Screenings (%)**	
1	BigRed	11.3	gh	77.2	ab	2.1	def
2	RGT Cesario	12.4	bc	75.0	ab	3.3	abc
3	RGT Accroc	11.6	e-h	68.7	cde	2.8	bcd
4	Brighton	12.1	cde	80.2	a	1.1	f
5	Mowhawk	12.0	c-f	72.7	bcd	2.5	cde
6	LRPB Major	11.7	d-g	77.0	ab	2.1	de
7	Packer	11.3	gh	77.0	ab	2.3	cde
8	Triple2	11.1	h	77.9	ab	2.0	def
9	AGFWH01022	12.1	cd	72.9	bcd	1.6	ef
10	RGT Ponsford	11.8	d-g	68.1	de	2.4	cde
11	19Q3H0499	11.5	fgh	65.9	e	4.0	a
12	16Q2H0310	13.0	a	66.9	e	2.5	cde
13	RGT Marsh	12.7	ab	65.7	e	3.8	ab
14	RW71608 (RGT Enebro)	11.9	c-f	74.6	b	2.5	cde
15	RGT Waugh	12.9	a	73.5	bc	1.8	ef
	Pval	<0.001		<0.001		<0.001	
	LSD P=0.05	0.5		5.4		1.0	

Table 2 (continued). Influence of fungicide application the grain quality (% protein – corrected to 0% moisture, test weight and screenings) of wheat variety plus and minus fungicide.

		Grain Quality Assessments					
Cultivar x Disease Management		**Protein (%)**		**Test Weight (kg/hL)**		**Screenings (%)**	
	Untreated						
1	BigRed	11.3	j-m	76.3	ab	2.4	c-i
2	RGT Cesario	12.4	c-f	75.1	ab	3.8	bc
3	RGT Accroc	11.4	h-m	63.5	cd	3.5	bcd
4	Brighton	12.0	e-i	80.1	a	1.3	hij
5	Mowhawk	11.9	e-k	70.7	bc	3.2	b-e
6	LRPB Major	11.8	e-l	77.0	ab	2.3	d-j
7	Packer	11.4	h-m	76.1	ab	2.5	c-i
8	Triple2	11.0	m	77.8	ab	2.1	d-j
9	AGFWH01022	12.0	e-i	72.8	ab	1.8	e-j
10	RGT Ponsford	12.4	c-f	61.2	de	2.8	b-g
11	19Q3H0499	12.1	d-h	53.9	e	6.4	a
12	16Q2H0310	13.6	a	58.9	de	4.0	b
13	RGT Marsh	13.4	ab	55.9	e	5.9	a
14	RW71608 (RGT Enebro)	11.6	g-m	74.5	ab	2.4	c-j
15	RGT Waugh	12.8	bcd	72.2	b	2.0	d-j
	Plus Fungicide						
1	BigRed	11.3	i-m	78.1	ab	1.8	e-j
2	RGT Cesario	12.4	c-f	74.9	ab	2.8	b-f
3	RGT Accroc	11.7	e-m	73.8	ab	2.2	d-j
4	Brighton	12.1	d-h	80.2	a	1.0	j
5	Mowhawk	12.1	d-h	74.7	ab	1.9	e-j
6	LRPB Major	11.7	f-m	77.0	ab	2.0	e-j
7	Packer	11.1	lm	78.0	ab	2.1	d-j
8	Triple2	11.2	klm	77.9	ab	1.9	e-j
9	AGFWH01022	12.2	d-g	73.1	ab	1.4	g-j
10	RGT Ponsford	11.2	klm	75.0	ab	2.0	e-j
11	19Q3H0499	11.0	m	77.9	ab	1.6	f-j
12	16Q2H0310	12.5	cde	74.9	ab	1.1	ij
13	RGT Marsh	12.0	e-j	75.5	ab	1.8	e-j
14	RW71608 (RGT Enebro)	12.1	d-h	74.8	ab	2.5	c-h
15	RGT Waugh	13.1	abc	74.8	ab	1.6	f-j
	Pval	<0.001		<0.001		<0.001	
	LSD P=0.05	0.7		7.6		1.4	

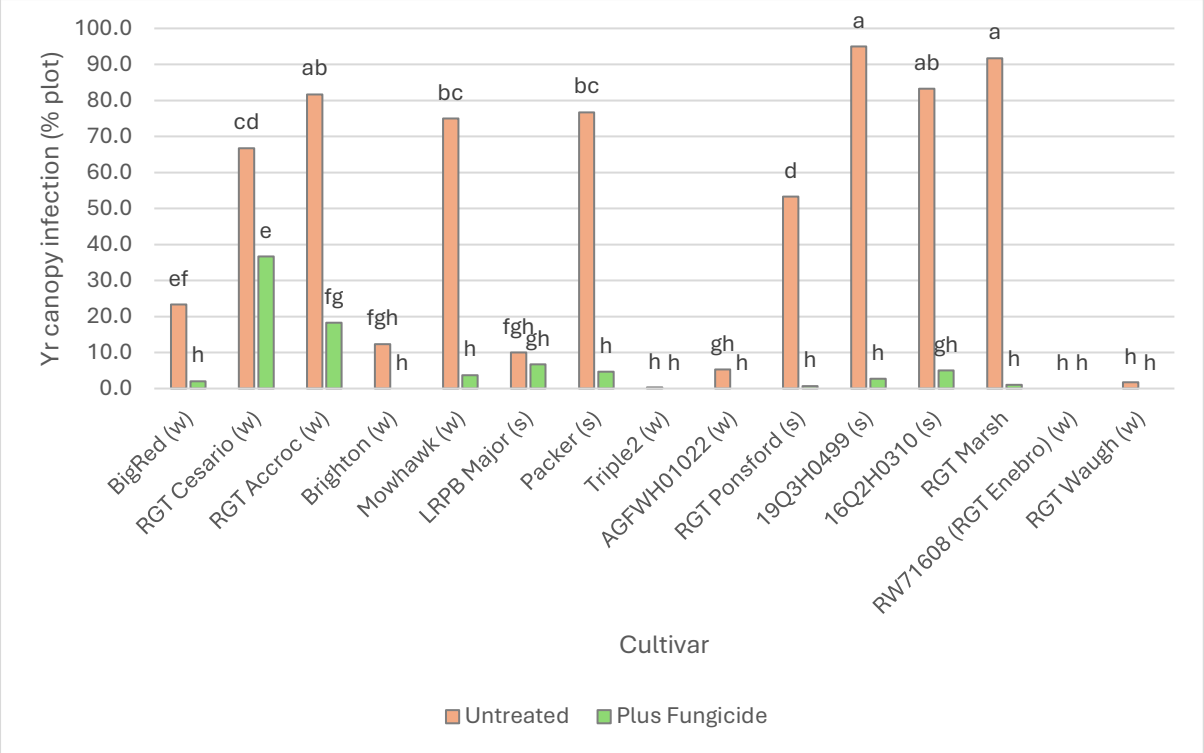

Figure 3. Influence of variety and fungicide application (3 spray programme) on **stripe rust (Yr)** plot infection (P-Value < 0.001, LSD (p=0.05) = 13.4), assessed on 6 November 2025.

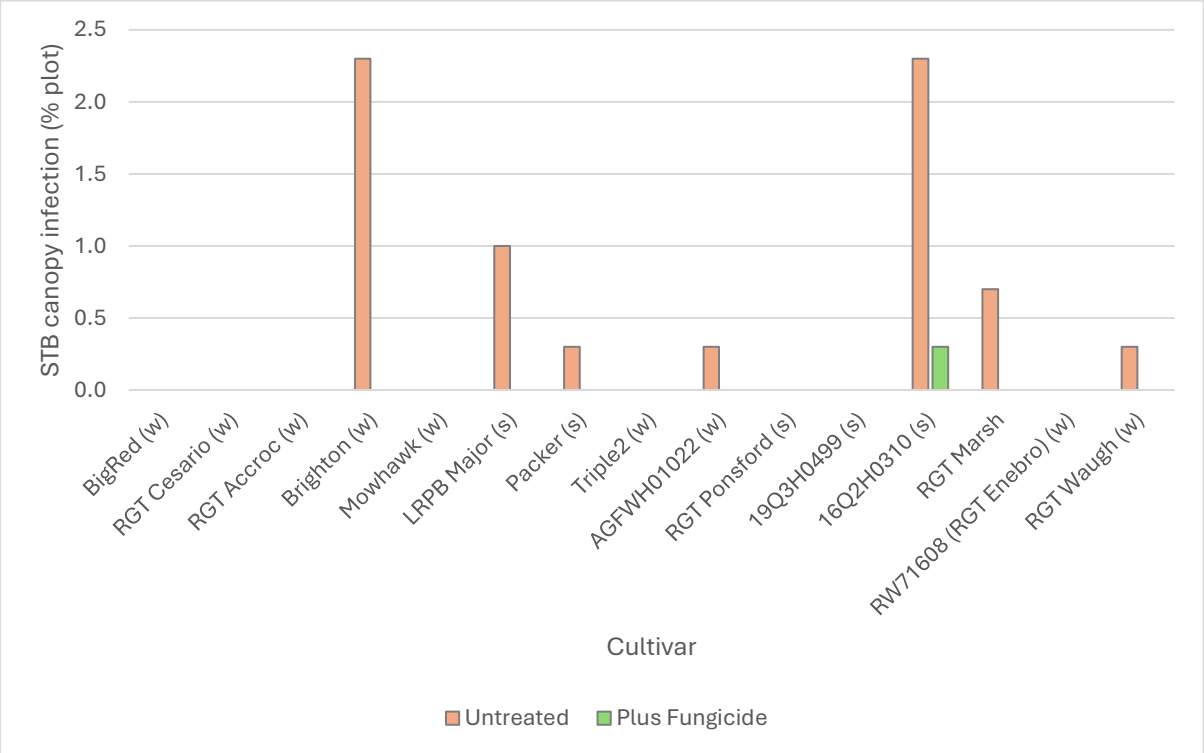

Figure 4. Influence of variety and fungicide application (3 spray programme) on **Septoria tritici blotch (STB)** plot infection (P-Value = 0.061, LSD (p=0.05) = ns), assessed on 6 November 2025.

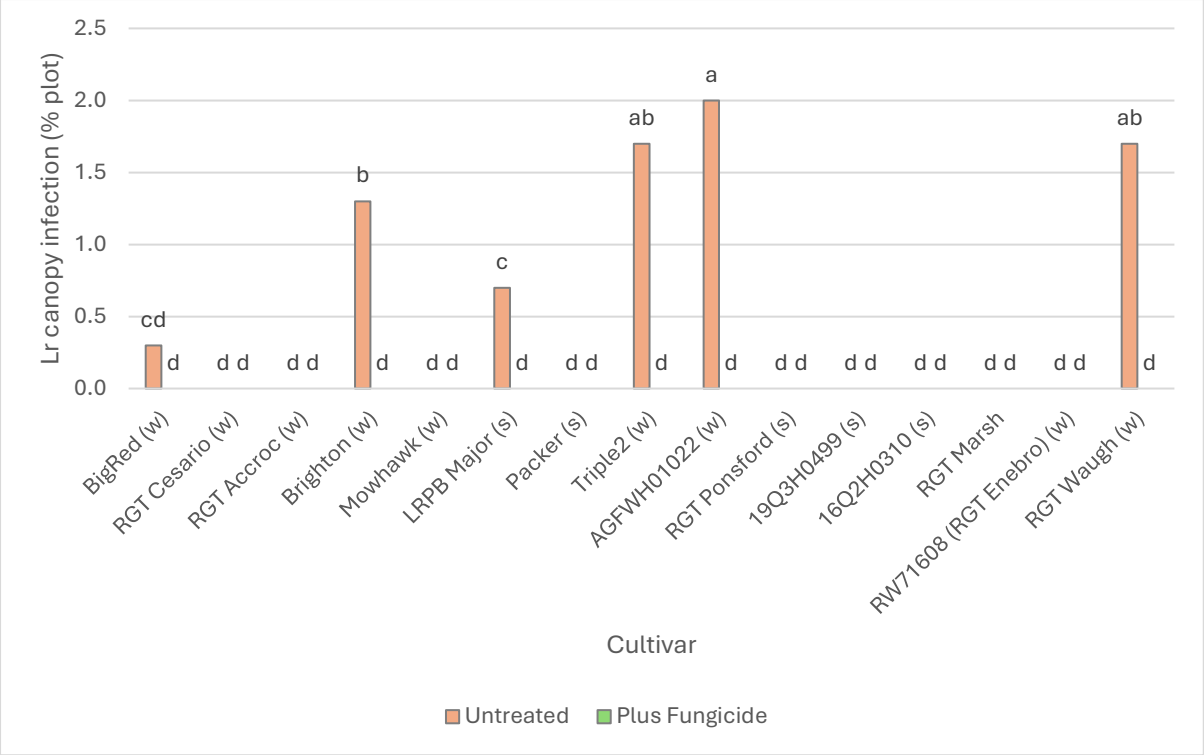

Figure 5. Influence of variety and fungicide application (3 spray programme) on **leaf rust (Lr)** plot infection (P-Value < 0.001, LSD (p=0.05) = 0.56), assessed on 6 November 2025.

Table 3: Approximate number of days from date of germinating rains (22 May) to GS30 (stem elongation) and to start of flowering (GS61). *(Shorter periods denoted green in table)*

	Days to GS30	Days to Flowering
BigRed *(w)*	90	155
RGT Cesario *(w)*	90	163
RGT Accroc *(w)*	90	151
Brighton *(w)*	76	141
Mowhawk *(w)*	76	135
LRPB Major *(s)*	71	129
Packer *(s)*	71	132
Triple2 *(w)*	85	146
AGFWH01022 *(w)*	90	155
RGT Ponsford *(s)*	64	123
19Q3H0499 *(s)*	76	129
16Q2H0310 *(s)*	57	121
RGT Marsh *(s)*	57	129
RW71608 (RGT Enebro) *(w)*	85	155
RGT Waugh *(w)*	90	163

Table 4. Trial input and management details.

Sowing date:		**22 April 2025**	
Harvest date:		**17 December 2025**	
Seed rate:		180 seeds/m^2	
Basal fertiliser:	22 April	120 kg MAP	
Pre-em herbicide:	22 April	Roundup450 2.5L/ha	
		Sakura 118g/ha	
		Avadex Xtra 3.2L/ha	
Post-em herbicide:	7 Aug	Ally 5g/ha	
		MCPA LVE 800mL/ha	
		Lontrel 600 150mL/ha	
		BS1000 0.2%	
	8 Aug	Dimethoate 400 500mL/ha	
Nitrogen:	3 July	Urea 217 kg/ha (100 kg N/ha)	
	20 August	Urea 109 kg/ha (50 kg N/ha)	
Fungicide:		**Untreated**	**Plus fungicide**
	GS31	----	Prosaro 300 mL/ha Wetter 1000 0.2%
	GS39	----	Revystar 750mL/ha
	GS59	----	Opus 125 500 mL/ha

Please note *that the label cut off for Opus is ear emergence (GS59).*

Table 5. Australian cereal rust survey pathotype results analysed at PBI Cobbitty, University of Sydney. All varieties with rust infection were sampled but not all have had results returned.

Cultivar	**Pathotype**
Mowhawk	239 E237 A- 17+ 33+ 238 E191 A+ 17+ 33+ (Trace)
Major	239 E237 A- 17+ 33+ 238 E191 A+ 17+ 33+ (Trace)
Packer	239 E237 A- 17+ 33+
16Q2H0310	239 E237 A- 17+ 33+ 238 E191 A+ 17+ 33+
19Q2H0499	239 E237 A- 17+ 33+ 238 E191 A+ 17+ 33+
RGT Marsh	238 E191 A+ J+ T+ 17+ 239 E237 A- 17+ 33+
AGFWH01022	239 E237 A- 17+ 33+
Ponsford	239 E237 A- 17+ 33+

Note: Stripe rust pathotype 198 E16 A+J+T+17+ Ma+ was also detected in DS Bennett on site but was not detected in any cultivars tested in this trial.

Meteorological Data

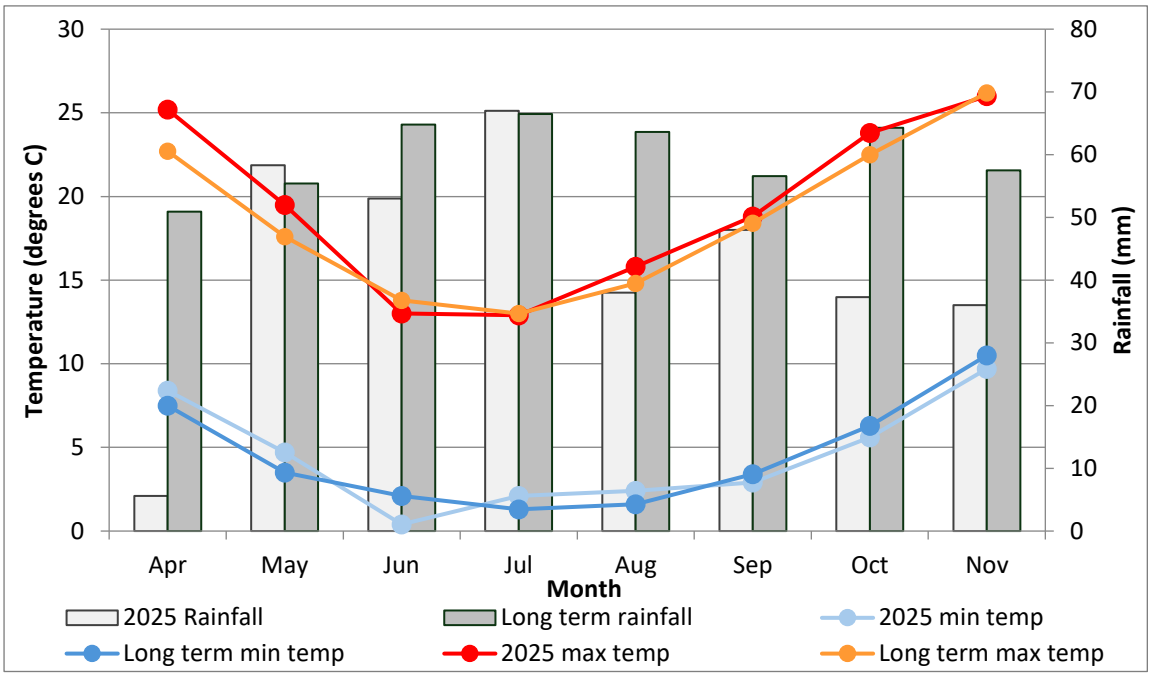

Figure 6. 2025 growing season rainfall recorded on site and long-term rainfall recorded at Wallendbeen (Corang) (1914 to 2025). 2025 and long-term minimum and maximum temperatures recorded at Cootamundra Airport (1995 to 2025) for the growing season (April to November). *Rainfall April to November = 343.2mm*.

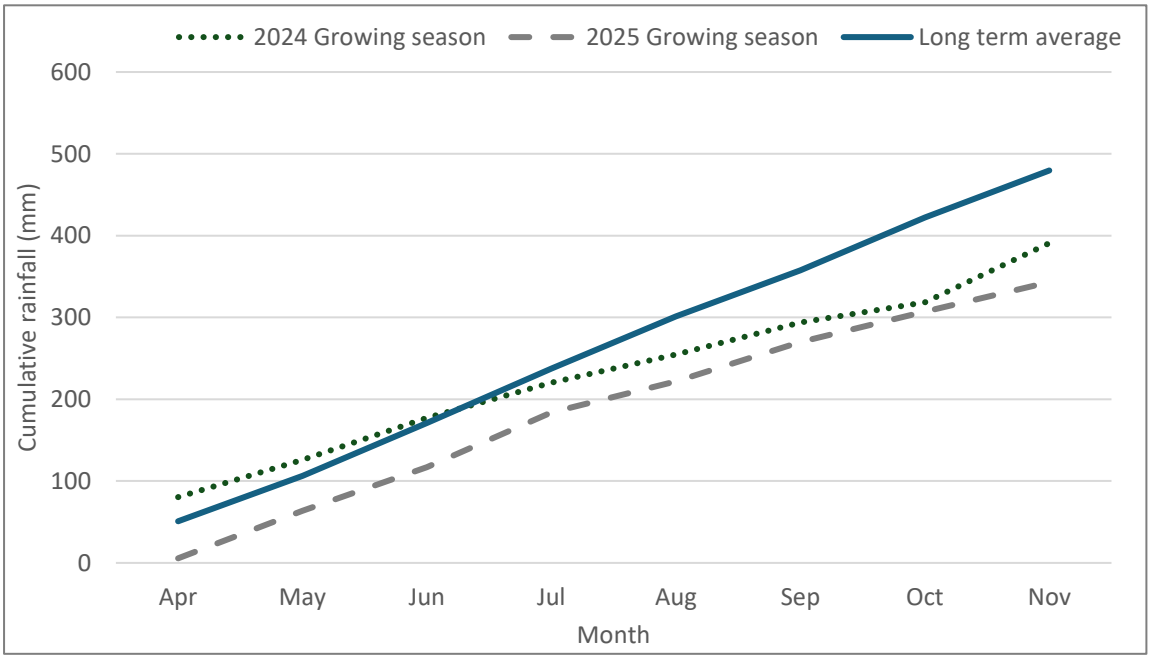

Figure 7. Cumulative growing season rainfall for 2024, 2025 and the long-term average for the growing season (April-November).

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