



Industry Innovations 2025

INDUSTRY INNOVATIONS: PROVISIONAL HARVEST YIELD RESULTS – April Sown Wheat

2024 NSW Crop Technology Centre (Wallendbeen)

Sown: 17 April 2024

Harvested: 17 December 2024

Rotation position: 2022- Wheat; 2023- Canola

Soil type & management: Red clay loam; Kelly chained canola stubble pre-sowing

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 & Illabo), 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 0.17 – 3.36t./ha)*
- *The red feed wheat Triple 2 (tested previously as AGFWH010222) produced the highest yields under both plus and minus fungicide management with a yield of 9.88t/ha with fungicide and 9.40 without.*
- *BigRed, RGT Accroc, and Stockade were the only varieties that did not produce a statistical yield response to fungicide application.*
- *Stripe rust was the main disease influencing yield with the susceptible varieties RGT Cesario and TA0109 showing the largest yield loss to disease. Significant levels of leaf rust were also assessed in Triple 2 causing a yield reduction of nearly 0.5t/ha*
- *Avoca (AH) and Stockade (APW), very slow spring wheats significantly outyielded, Brighton (AH) and Illabo (APH) winter wheats when protected with fungicide.*
- *Variety 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 and screening where yield responses were greater.*

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

Variety	Management Level		
	Untreated	Plus fungicide	Mean
	Yield t/ha	Yield t/ha	Yield t/ha
BigRed (w)	8.21 efg	8.45 def	8.33 c
RGT Cesario (w)	5.55 l	8.01 fgh	6.78 e
RGT Accroc (w)	7.67 hij	7.87 g-j	7.77 d
Illabo (w)	6.72 k	7.50 ij	7.11 e
TA0109 (w)	4.58 m	7.94 ghi	6.26 f
Avoca (L12049-044) (s)	7.67 hij	8.99 bc	8.33 c
Brighton (V14051-172) (w)	7.45 j	7.95 ghi	7.70 d
Stockade (s)	8.64 cde	8.81 cd	8.72 b
Triple 2 (AGFWH010222) (w)	9.40 b	9.88 a	9.64 a
AGFWHWW2 (FAR WW2) (w)	7.91 g-j	8.66 cde	8.29 c
Mean	7.38 b	8.41 a	
LSD Cultivar p = 0.05	0.34	P value	<0.001
LSD Management p = 0.05	0.20	P value	<0.001
LSD Cultivar x Man. p = 0.05	0.48	P value	<0.001

Note: w = Winter Wheat, s = Spring Wheat

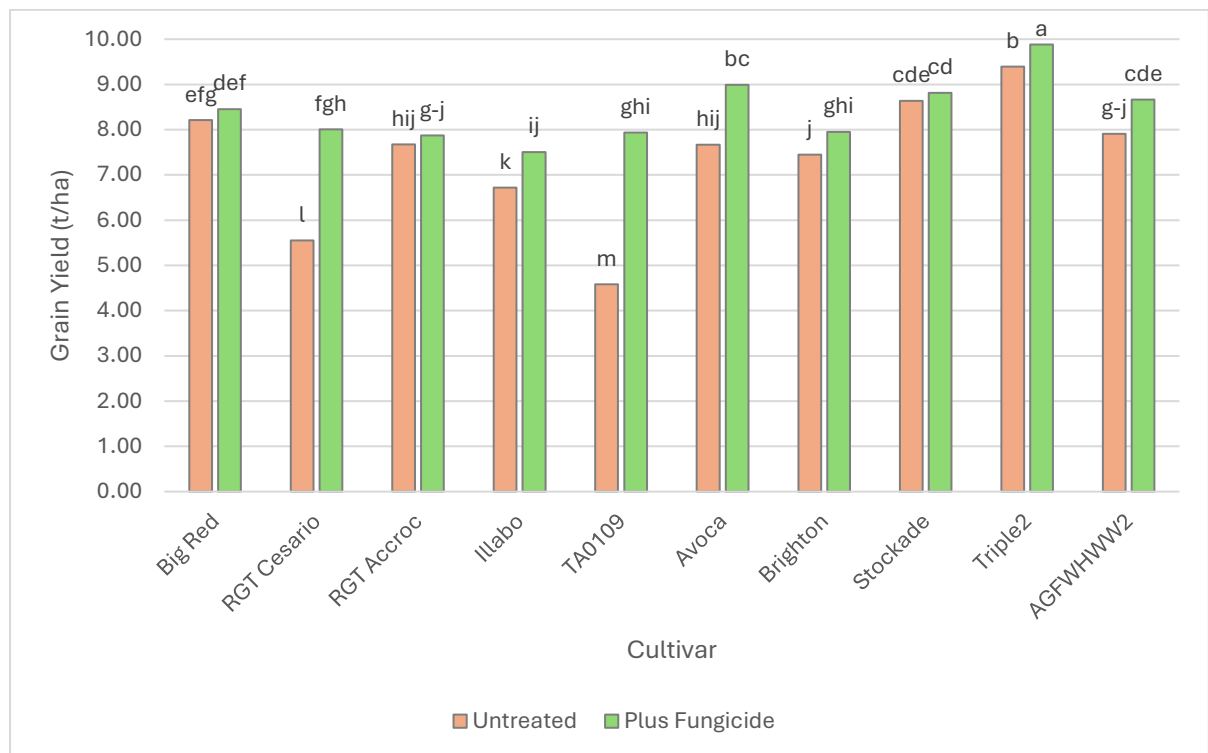


Figure 1. Influence of variety and fungicide application on grain yield (t/ha)

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

				Grain quality assessments			
Variety		Protein (%)		Test Weight (kg/hL)		Screenings (%)	
1	Illabo	12.1	ab	72.3	c	4.9	f
2	Big Red	11.3	c	73.4	c	6.1	cd
3	RGT Cesario	11.6	bc	70.6	d	5.7	de
4	RGT Accroc	12.3	a	72.4	c	5.1	f
5	TA0109	11.2	c	65.6	e	10.6	a
6	Avoca	10.4	de	75.6	ab	5.3	ef
7	Brighton	11.2	c	76.8	a	4.2	g
8	Stockade	10.1	e	74.9	b	6.8	b
9	Triple2	10.7	d	75.0	b	6.4	bc
10	AGFWHWW2	11.3	c	72.5	c	5.3	ef
LSD p = 0.05		0.5		1.3		0.5	
Variety P-Value		<0.001		<0.001		<0.001	
Management		Protein (%)		Test Weight (kg/hL)		Screenings (%)	
1	Untreated	11.1	b	72.1	b	6.5	a
2	Plus Fungicide	11.4	a	73.7	a	5.6	b
LSD p = 0.05		0.2		0.8		0.5	
Disease Management P-Value		0.005		0.007		0.015	
Variety x Disease Management		Protein (%)		Test Weight (kg/hL)		Screenings (%)	
No Fungicide							
1	Illabo	12.0	-	71.7	g	5.0	hij
2	Big Red	11.2	-	73.3	efg	6.3	c-f
3	RGT Cesario	11.2	-	68.9	h	6.3	cde
4	RGT Accroc	12.3	-	72.1	fg	5.6	e-h
5	TA0109	10.7	-	61.3	i	13.5	a
6	Avoca	10.0	-	74.7	de	5.8	d-g
7	Brighton	11.2	-	76.7	ab	4.1	k
8	Stockade	10.0	-	75.0	b-e	6.6	c
9	Triple2	10.6	-	74.7	de	6.4	cd
10	AGFWHWW2	11.4	-	72.5	fg	5.1	g-j
Plus Fungicide							
1	Illabo	12.2	-	72.9	fg	4.9	hij
2	Big Red	11.4	-	73.6	def	5.9	d-g
3	RGT Cesario	12.1	-	72.3	fg	5.2	ghi
4	RGT Accroc	12.3	-	72.7	fg	4.7	ijk
5	TA0109	11.8	-	69.8	h	7.7	b
6	Avoca	10.9	-	76.6	abc	4.9	hij
7	Brighton	11.2	-	76.9	a	4.4	jk
8	Stockade	10.2	-	74.9	cde	7.0	bc
9	Triple2	10.9	-	75.2	a-d	6.4	cd
10	AGFWHWW2	11.3	-	72.6	fg	5.5	fgh
LSD p = 0.05		ns		1.8		0.8	
Variety x Disease Mang. P-Value		0.143		<0.001		<0.001	

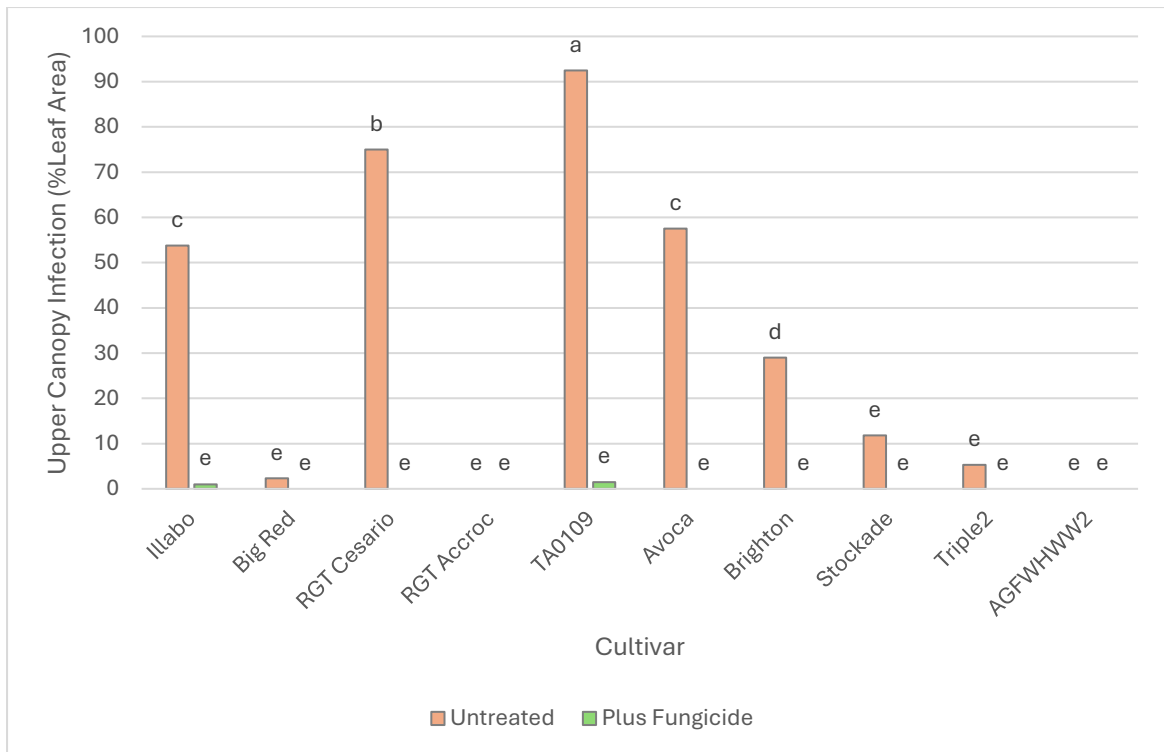


Figure 2. Influence of variety and fungicide application (3 spray programme) on **stripe rust** plot infection (P-Value= <0.001, LSD= 12.1), assessed on 29 October 2024.

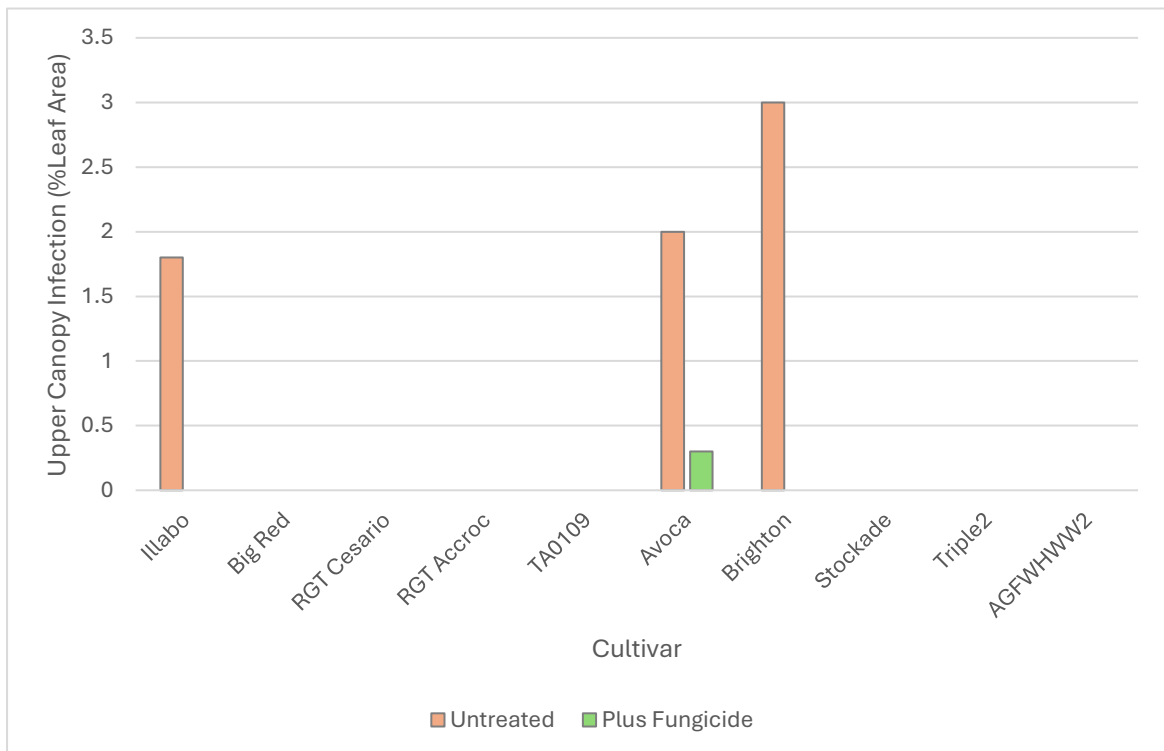


Figure 3. Influence of variety and fungicide application (3 spray programme) on **Septoria tritici blotch (STB)** plot infection (P-Value= 0.105, LSD= ns), assessed on 29 October 2024.

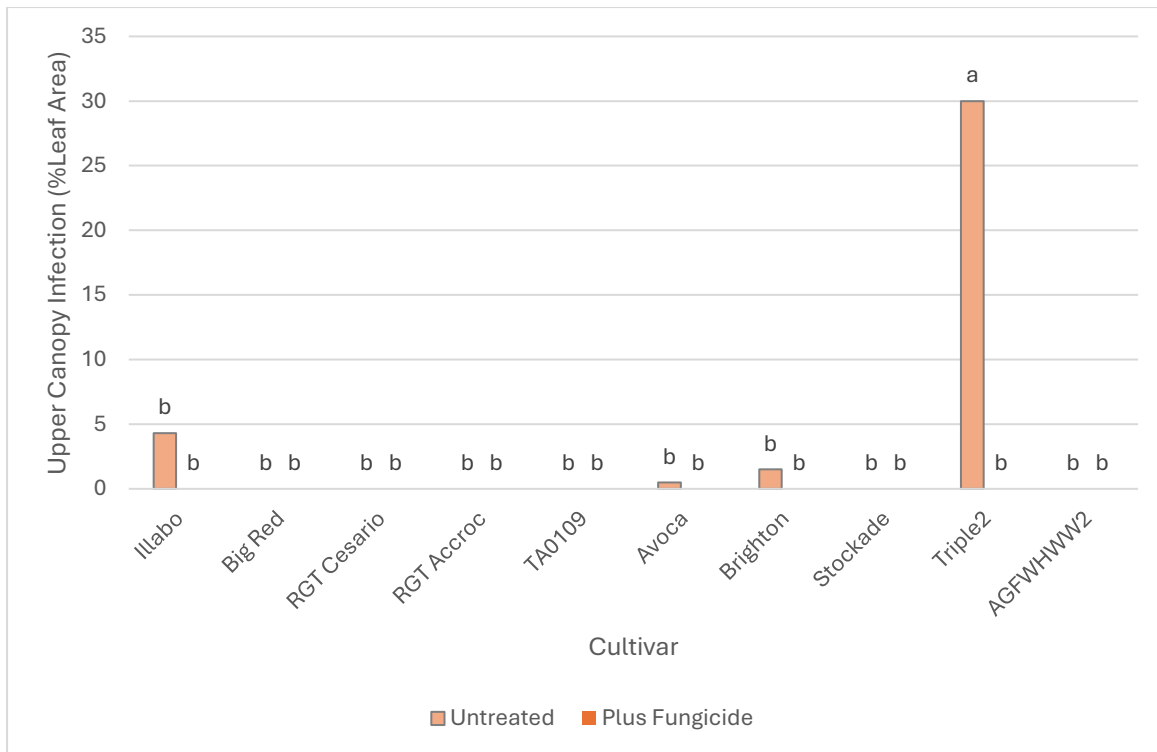


Figure 4. Influence of variety and fungicide application (3 spray programme) on **leaf rust** plot infection (P-Value= <0.001, LSD= 12.1), assessed on 29 October 2024.

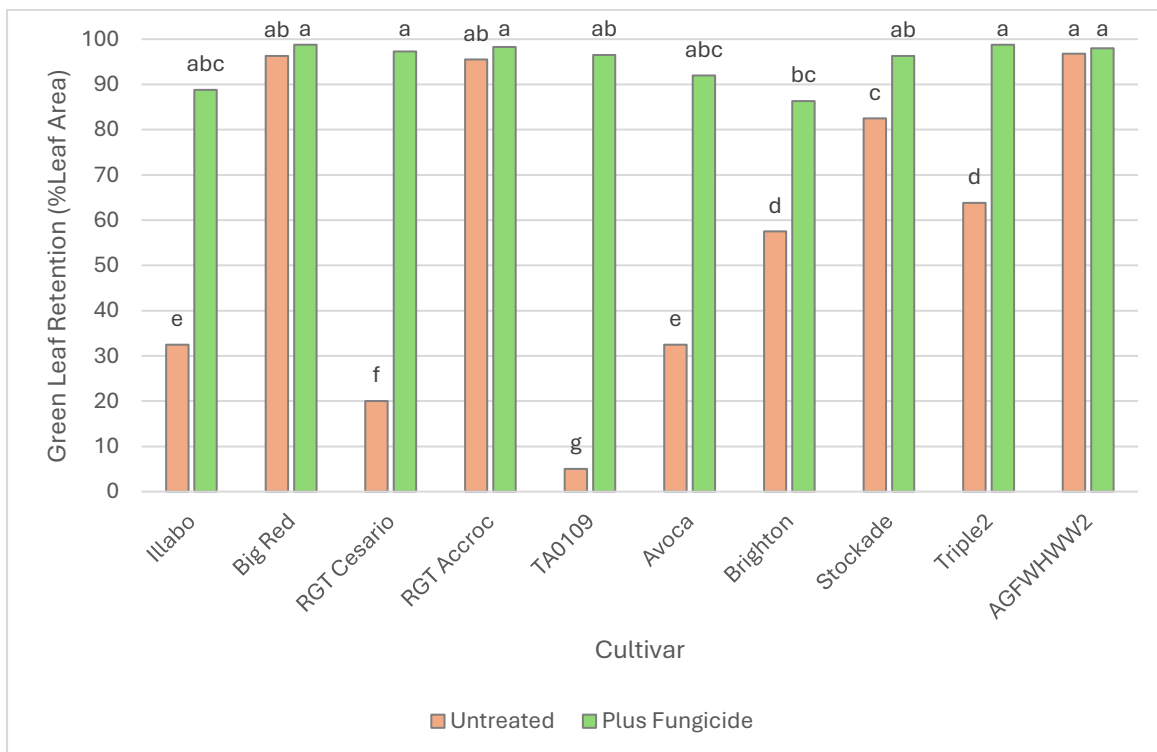


Figure 4. Influence of variety and fungicide application (3 spray programme) on **green leaf retention** (P-Value= <0.001, LSD= 10.3), assessed on 29 October 2024.

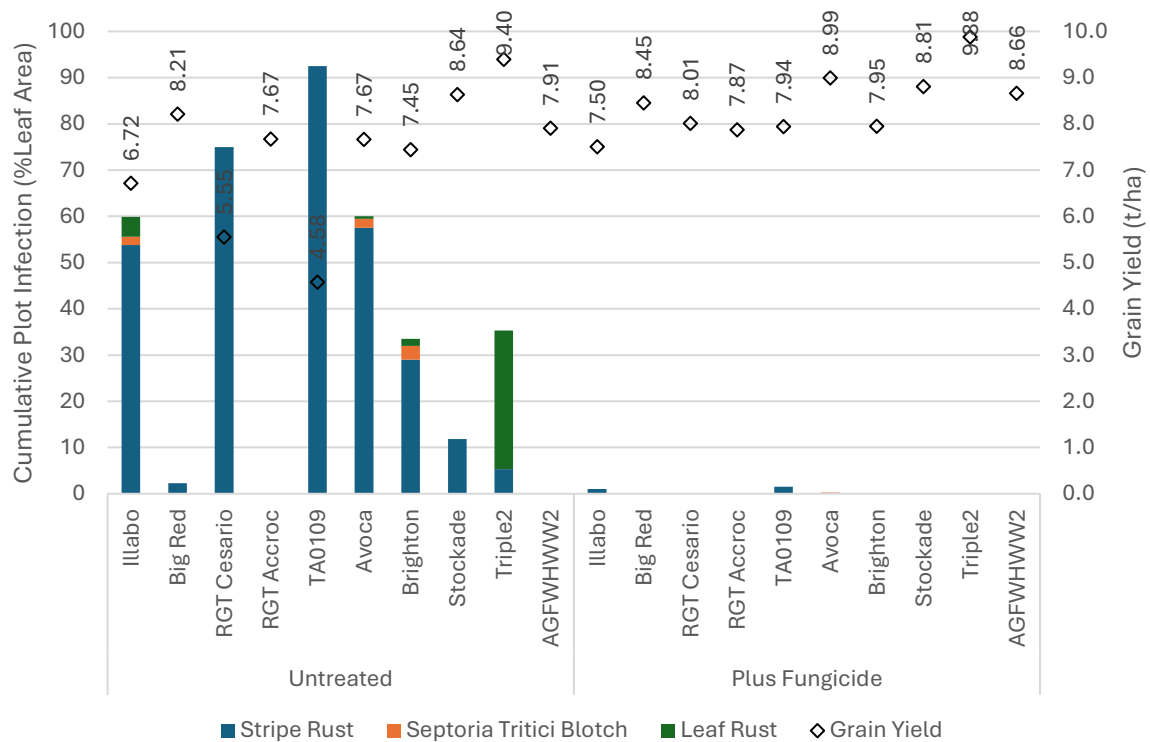


Figure 5. Influence of variety and fungicide application on cumulative plot % infection and yield (t/ha), assessed on 29 October 2024.

Table 3: Approximate number of days from sowing (17 Apr 2024) to GS30 (stem elongation) and to start of flowering (GS61).

	Days to GS30	Days to Flowering
Illabo	97	168
Big Red	120	176
RGT Cesario	120	176
RGT Accroc	120	176
TA0109	97	171
Avoca	81	161
Brighton	94	168
Stockade	89	171
Triple2	97	171
AGFWHWW2	114	176

Table 3. Trial input and management details.

Sowing date:		17 April 2024	
Harvest date:		17 December 2024	
Seed rate:		180 seeds/m ²	
Basal fertiliser:	17 April	120 kg MAP	
Pre-em herbicide:	17 April	Roundup450 2L/ha Sakura 118g/ha Avadex Xtra 2L/ha	
Post-em herbicide:	7 July	Paradigm 25g/ha Polo 570 LVE 420mL/ha	
	26 June	Cyhella 18mL/ha Wetter 1000 0.2%	
Nitrogen:	23 July	Urea 217 kg/ha (100 kg N/ha)	
	22 August	Urea 217 kg/ha (100 kg N/ha)	
Fungicide:		Untreated	Plus fungicide
	GS31	----	Prosaro 300 mL/ha Wetter 1000 0.2%
	GS39	----	Radial 840mL/ha
	GS59	----	Opus 500 mL/ha

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

Meteorological Data

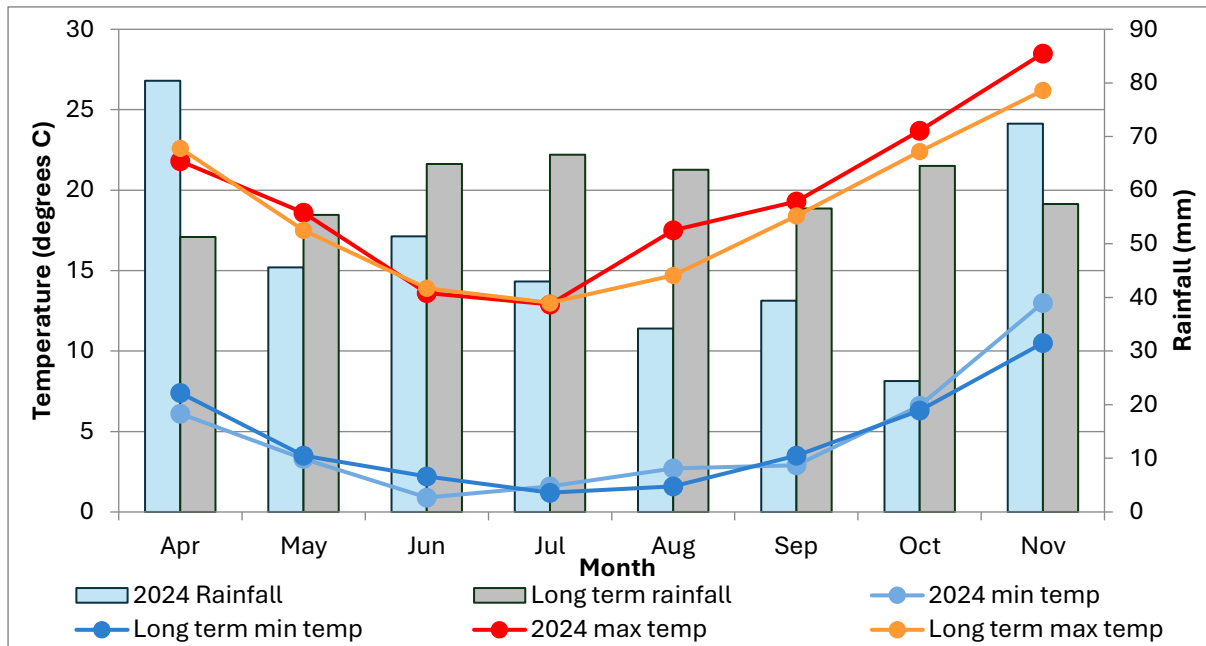


Figure 6. 2024 growing season rainfall and long-term rainfall recorded at Wallendbeen (Corang) (1914 to 2024) and 2024 and long-term minimum and maximum temperatures recorded at Cootamundra Airport (1995 to 2024) for the growing season (April to November). *Rainfall April to November = 390.8mm.*

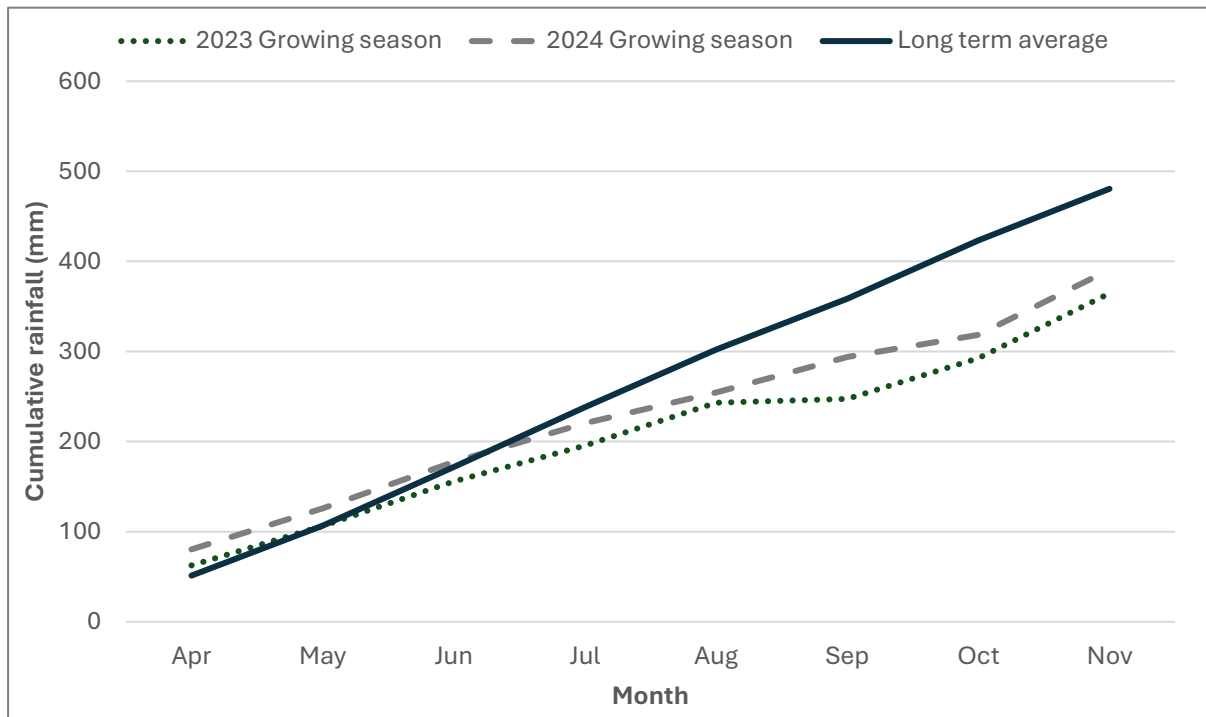


Figure 7. Cumulative growing season rainfall for 2023, 2024 and the long-term average for the growing season (April-November).

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