INDUSTRY INNOVATIONS: PROVISIONAL HARVEST YIELD RESULTS – May Sown Wheat

2024 VIC Crop Technology Centre (Gnarwarre)

Sown: 20 May 2024
Harvested: 16 December 2024
Rotation position: 2022 Wheat; 2023 Canola
Soil type & management: Grey clay; speed disced 1 pass (5-8cm depth) and Kelly chained

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 (Rockstar, LRPB Matador, Genie, and Scepter), sown in late May in the Gnarwarre (VIC) HRZ environment.

Key Points:

- *There was a significant yield interaction (<0.001) between variety and fungicide application, with all varieties giving a significant response to fungicide except Triple 2, Ironbark (V14035-125), Avoca (L12049-044) and winter wheat Brighton (V14051-172).*
- *With fungicide treatment the highest yielding cultivars were recorded with the spring wheats Genie and V15019-088 which were significantly better than all other varieties, with yields comparable to red feed wheats sown one month earlier.*
- *Fungicide responses in yield invariably led to better test weights with small differences in grain protein and screenings.*
- *Though not strictly comparable the yield of the winter wheats Brighton and to a lesser extent Triple 2 held up well with the later May sowing.*
- *The most severe stripe rust was observed in RockStar, Scepter, Mammoth, LRPB Matador, Genie, Boa and TA0109, with lower levels (<20% infection) affecting LRPB Major and V15019-088.*
- *The varieties with lower levels or no stripe rust were associated with no economic response from fungicide application. Only trace levels of other diseases were observed.*

Issue date: 3rd January 2025

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

	Management Level		
Variety	**Untreated**	**Plus fungicide**	**Mean**
	Yield t/ha	**Yield t/ha**	**Yield t/ha**
RockStar (s)	3.24 lm	4.14 d-h	**3.69 f**
Scepter (s)	2.80 n	4.00 e-h	**3.40 g**
Mammoth (IGW6755) (s)	3.21 lm	4.24 c-f	**3.72 f**
Ironbark (V14035-125) (s)	4.07 e-h	4.20 c-g	**4.13 cd**
V15019-088 (s)	4.22 c-f	4.82 a	**4.52 a**
KWS Expectum (FAR SW1) (s)	3.19 lm	3.40 kl	**3.30 g**
LRPB Matador (s)	3.65 jk	4.46 bc	**4.05 de**
Genie (s)	3.71 ij	4.81 a	**4.26 bc**
TA0109 (w)	2.75 n	3.96 f-i	**3.36 g**
LRPB Major (s)	3.93 ghi	4.39 bcd	**4.16 bcd**
Avoca (L12049-044) (s)	3.96 f-i	3.89 hij	**3.92 e**
Brighton (V14051-172) (w)	4.27 cde	4.44 bc	**4.35 ab**
Boa (LPB19-8035) (s)	3.08 m	4.16 d-h	**3.62 f**
Triple 2 (AGFWH010222) w)	4.58 ab	4.44 bc	**4.51 a**
Mean	**3.62 b**	**4.24 a**	
LSD Variety p = 0.05	0.19	**P value**	0.001
LSD Management p = 0.05	0.16	**P value**	<0.001
LSD Variety x Man. p = 0.05	0.28	**P value**	<0.001

Note: w = Winter Wheat, s = Spring Wheat

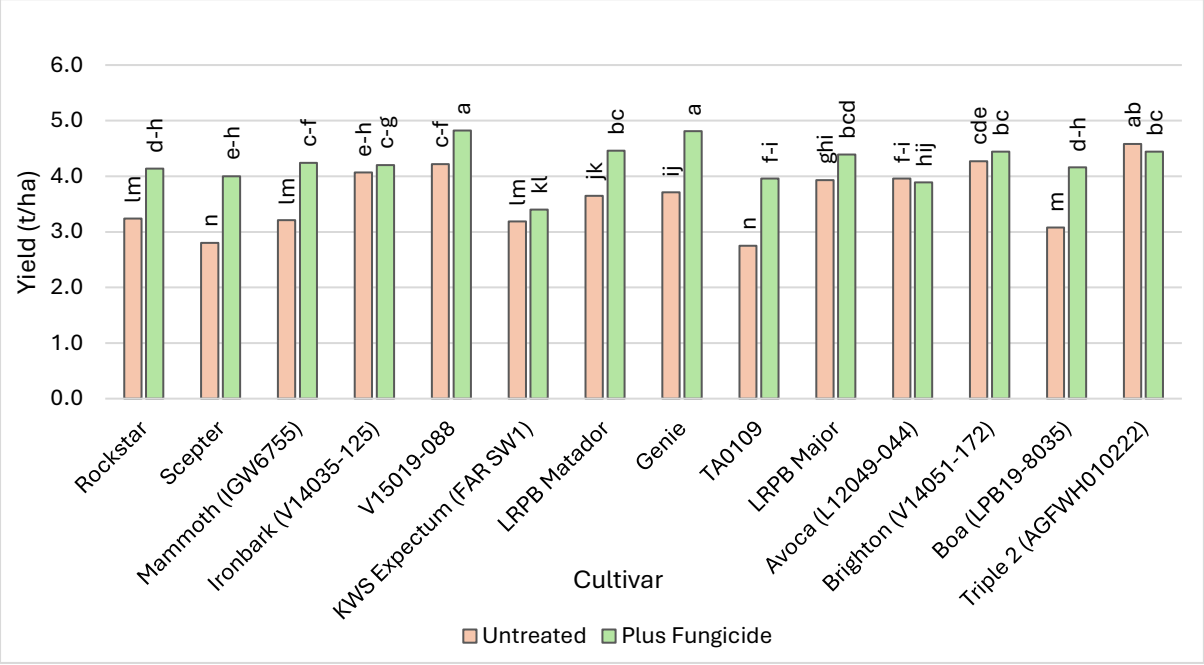

Figure 1. Influence of wheat variety and fungicide application on grain yield (t/ha) (P Value= <0.001, LSD= 0.28)

Table 2. Influence of fungicide on the protein (%) of wheat varieties plus and minus fungicide.

Variety	Protein (%)		
	Management Level		
	Untreated	Plus fungicide	Mean
RockStar	10.1 -	10.2 -	**10.1 f**
Scepter	10.9 -	11.1 -	**11.0 cd**
Mammoth (IGW6755)	11.3 -	11.4 -	**11.4 bc**
Ironbark (V14035-125)	11.3 -	11.7 -	**11.5 b**
V15019-088	10.8 -	10.3 -	**10.5 e**
KWS Expectum (FAR SW1)	13.8 -	13.5 -	**13.7 a**
LRPB Matador	10.7 -	10.7 -	**10.7 de**
Genie	10.4 -	10.8 -	**10.6 e**
TA0109	10.8 -	11.3 -	**11.1 c**
LRPB Major	10.5 -	10.7 -	**10.6 e**
Avoca (L12049-044)	11.2 -	11.6 -	**11.4 bc**
Brighton (V14051-172)	11.5 -	11.6 -	**11.5 b**
Boa (LPB19-8035)	11.7 -	11.5 -	**11.6 b**
Triple 2 (AGFWH010222)	10.9 -	11.3 -	**11.1 c**
Mean	**11.1 b**	**11.2 a**	
LSD Variety p = 0.05	0.4	**P value**	0.015
LSD Management p = 0.05	0.1	**P value**	<0.001
LSD Variety x Man. p = 0.05	ns	**P value**	0.511

Table 3. Influence of fungicide on test weight (kg/hL) of wheat varieties plus and minus fungicide.

Variety	Test Weight (kg/hL)		
	Management Level		
	Untreated	Plus fungicide	Mean
RockStar	76.2 ij	79.2 fgh	**77.7 e**
Scepter	76.6 i	80.8 a-d	**78.7 d**
Mammoth (IGW6755)	78.6 h	79.5 e-h	**79.1 cd**
Ironbark (V14035-125)	79.0 gh	79.3 fgh	**79.1 cd**
V15019-088	80.5 a-e	81.1 ab	**80.8 a**
KWS Expectum (FAR SW1)	76.6 i	75.9 ij	**76.3 f**
LPRB Matador	79.9 c-g	81.5 a	**80.7 a**
Genie	79.5 e-h	81.2 ab	**80.3 ab**
TA0109	73.4 k	74.0 k	**73.7 g**
LRPB Major	80.2 b-f	80.9 abc	**80.5 a**
Avoca (L12049-044)	79.8 d-g	79.6 e-h	**79.7 bc**
Brighton (V14051-172)	80.6 a-e	80.8 a-d	**80.7 a**
Boa (LPB19-8035)	75.3 j	79.3 fgh	**77.3 e**
Triple 2 (AGFWH010222)	79.2 fgh	79.3 fgh	**79.2 cd**
Mean	**78.2 b**	**79.4 a**	
LSD Variety p = 0.05	0.8	**P value**	<0.001
LSD Management p = 0.05	0.5	**P value**	0.004
LSD Variety x Man. p = 0.05	1.1	**P value**	<0.001

Table 4. Influence of fungicide on screenings (%) of wheat cultivars plus and minus fungicide.

Variety	Screenings (%)		
	Management Level		
	Untreated	Plus fungicide	Mean
RockStar	4.5 -	3.0 -	**3.8 de**
Scepter	4.4 -	4.0 -	**4.2 d**
Mammoth (IGW6755)	3.5 -	3.0 -	**3.3 f**
Ironbark (V14035-125)	2.4 -	2.3 -	**2.3 g**
V15019-088	3.5 -	3.2 -	**3.4 ef**
KWS Expectum (FAR SW1)	4.6 -	4.8 -	**4.7 c**
LRPB Matador	4.5 -	3.9 -	**4.2 cd**
Genie	5.8 -	5.0 -	**5.4 b**
TA0109	6.9 -	6.1 -	**6.5 a**
LRPB Major	2.7 -	2.6 -	**2.6 g**
Avoca (L12049-044)	3.7 -	3.3 -	**3.5 ef**
Brighton (V14051-172)	2.4 -	2.3 -	**2.3 g**
Boa (LPB19-8035)	3.5 -	3.1 -	**3.3 f**
Triple 2 (AGFWH010222)	3.5 -	3.6 -	**3.5 ef**
Mean	**4.0 -**	**3.6 -**	
LSD Variety p = 0.05	0.5	**P value**	<0.001
LSD Management p = 0.05	ns	**P value**	0.077
LSD Variety x Man. p = 0.05	ns	**P value**	0.091

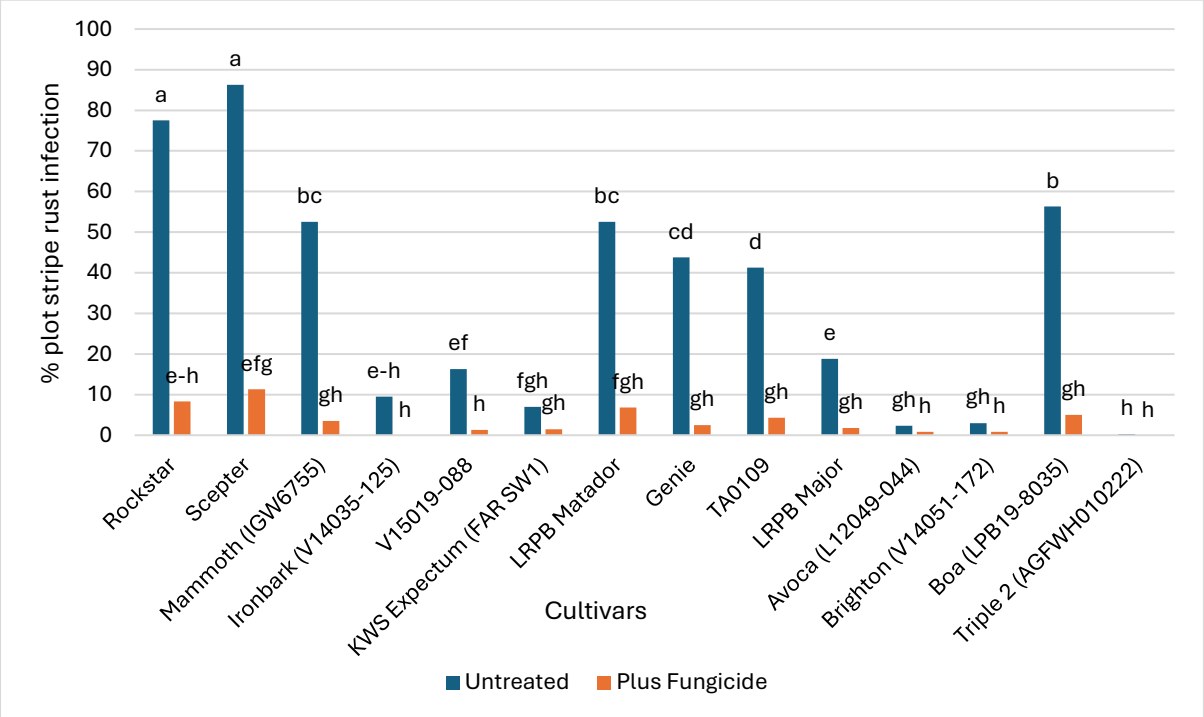

Figure 2. Influence of variety and fungicide on **stripe rust plot** infection (%) (P Value= <0.001, LSD= 9.82), assessed on 21 October 2024.

Table 5. Trial input and management details.

Sowing date:		**20 May 2024**	
Harvest date:		**16 December 2024**	
Seed rate:		180 seeds/m^2	
Basal fertiliser:	20 May	100 kg MAP	
Pre-em herbicide:	20 May	Mateno Complete 1.0 L/ha	
		Paraquat 2.4 L/ha	
Post-em herbicide:	26 June	Triathlon 0.75 L/ha	
		Lontrel Advanced 0.125 L/ha	
Nitrogen:	18 July	Urea 109 kg/ha (50 kg N/ha)	
	14 Aug	Urea 217 kg/ha (100 kg N/ha)	
Fungicide:		**Untreated**	**Plus fungicide**
	GS31	----	Radial 840 mL/ha
	GS39	----	Aviator 0.50 L/ha
	GS59-61	----	Opus 0.50 L/ha

Meteorological Data

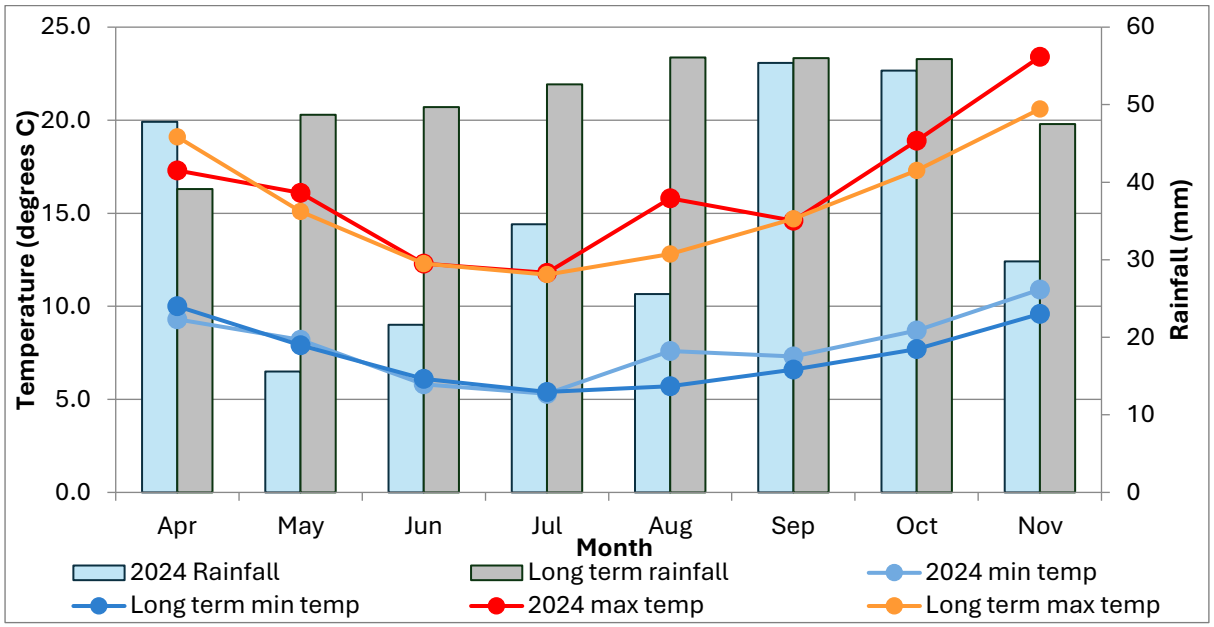

Figure 3. 2024 growing season rainfall and long-term rainfall recorded at Winchelsea Post Office (1898 -2024) and long-term min and max temperatures recorded at Mount Gellibrand (2000 to 2024) for the growing season (April to November). *Rainfall April to November = 284.8mm.*

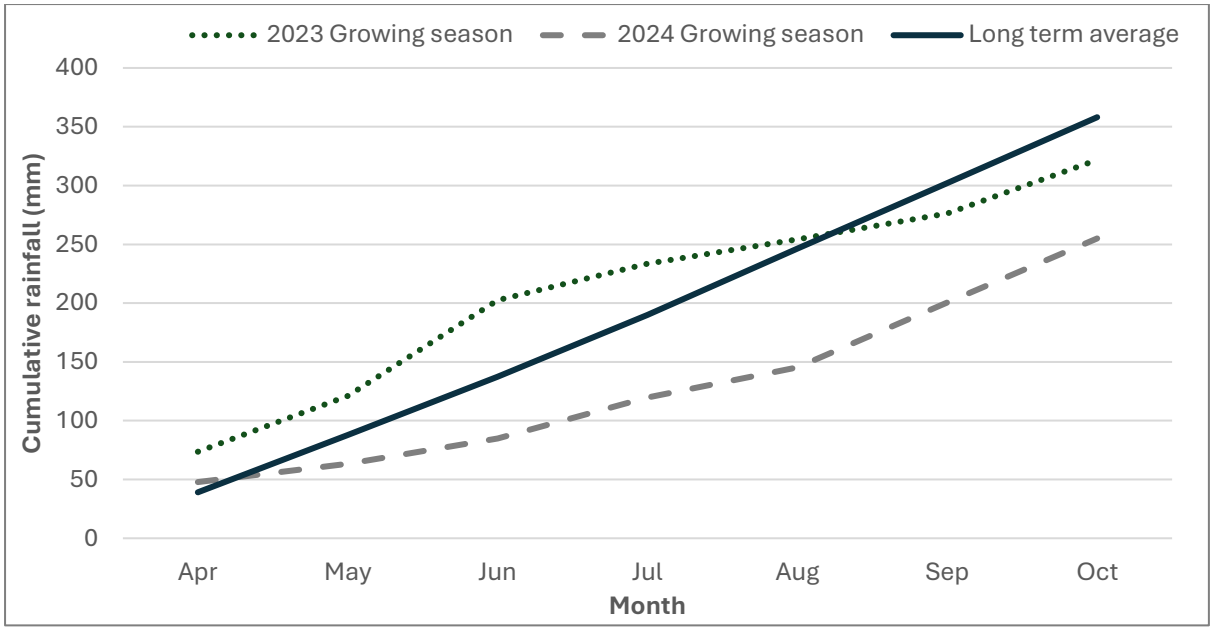

Figure 4. Cumulative growing season rainfall for 2023, 2024 and the long-term average for the growing season (April-November).

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