INDUSTRY INNOVATIONS: PROVISIONAL HARVEST YIELD RESULTS – May Sown Wheat

2023 SA Crop Technology Centre (Millicent)

Sown: 10 May 2023
Harvested: 15 January 2024
Rotation position: 2022 Canola
Soil type & management: Organosol over grey clay

The Germplasm Evaluation Network (GEN) is a FAR Australia Industry Innovations initiative that tests crop performance across FAR Australia's national network of Crop Technology Centres. GEN sites are situated in higher yielding regions of the country and test crop performance plus and minus 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 against feed and milling wheat controls (Anapurna, RGT Accroc & Rockstar), managed with and without fungicide, sown in mid-May in the Millicent (SA) HRZ environment.

Key Points:

- *There was a significant yield interaction (<0.001) between variety and fungicide application with coded wheats, all showing either no or small non-significant yield responses to fungicide application compared to the Rockstar and RGT Accroc controls.*
- *AGFWH010222 and FAR WW2 were significantly higher yielding than all other varieties tested in this trial and were resistant to stripe rust (the principal disease present).*
- *FAR WW2 which was only tested in Victoria in 2022 is a European red wheat which has performed extremely well, particularly in true HRZ environments such as Millicent, southern Victoria and Tasmania.*
- *RGT Waugh (white wheat) performed strongly giving similar yields to RGT Cesario and RGT Accroc, with RGT Accroc giving over 3t/ha yield response to fungicide application (3 sprays).*
- *Protein levels averaged 11.8% suggesting yields were optimised in the trial (150kg N/ha applied). The only significant differences were due to variety.*
- *Test weights and screenings were significantly improved with fungicide application, but the improvement varied with variety (significant interaction).*
- *V14035-125 has been awarded AH in the Southeast (other regions classification to follow in 2024). V15019-088 also has quality potential. Both varieties showed good resistance to disease.*

Issue Date: Friday 2nd February 2024

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

	Management Level		
	Untreated	**Full protection**	**Mean**
Cultivar	**Yield t/ha**	**Yield t/ha**	**Yield t/ha**
Anapurna (w)	6.71 i-m	7.75 f-i	**7.23**
Rockstar (s)	4.25 q	6.60 j-n	**5.43**
RGT Accroc (w)	5.74 m-p	9.06 cde	**7.40**
Genie (IGW6754) (s)	5.14 pq	7.68 f-j	**6.41**
IGW6755 (s)	4.63 pq	7.87 fgh	**6.25**
Sunmaster (s)	6.39 k-o	7.41 f-k	**6.90**
V14035-125 (s)	6.28 l-o	6.85 h-m	**6.57**
V15019-088 (s)	7.07 g-l	7.90 fgh	**7.48**
Willaura (s)	5.45 op	8.00 efg	**6.72**
RGT Waugh (w)	8.31 def	9.39 cd	**8.85**
RGT Cesario (w)	7.62 f-j	9.27 cd	**8.44**
AGFWH010222 (w)	9.49 bc	10.59 ab	**10.04**
FAR WW2 (w)	10.68 a	9.86 abc	**10.27**
FAR SW1 (s)	5.51 nop	4.90 pq	**5.21**
Mean	**6.66**	**8.08**	**7.37**
LSD Cultivar p = 0.05	0.79	**P val**	<0.001
LSD Management p = 0.05	0.55	**P val**	0.004
LSD Cultivar x Man. p = 0.05	1.11	**P val**	<0.001

Note: w = Winter Wheat, s = Spring Wheat

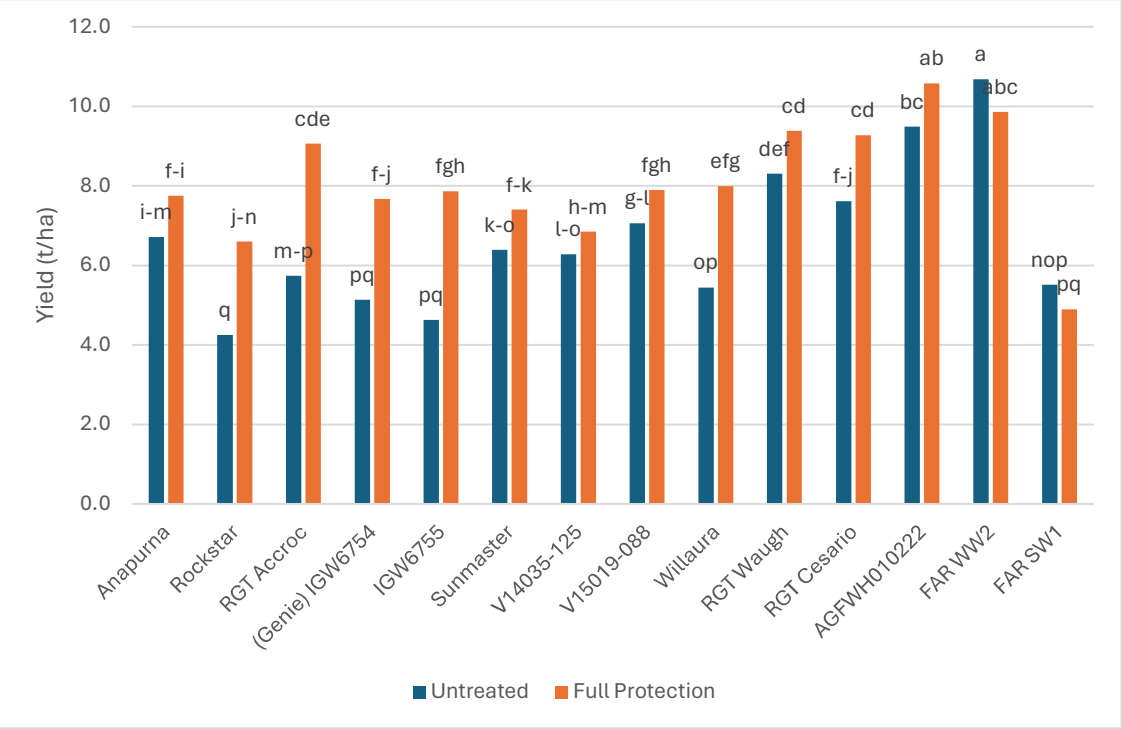

Figure 1. Influence of cultivar and fungicide application (3 foliar sprays) on grain yield (t/ha).

Table 2. Influence of fungicide on the test weight (kg/hl) and protein (%) of wheat cultivars plus and minus fungicide.

	Management Level											
	Untreated		Full protection		Mean	Untreated		Full protection		Mean		
Cultivar	Test Weight (kg/hl)		Test Weight (kg/hl)		Test Weight (kg/hl)	Protein %		Protein %		Protein %		
Anapurna	73.5	gh	76.5	a-e	**75.0**	12.5	-	12.8	-	**12.6**	**b**	
Rockstar	64.5	j	75.8	c-g	**70.1**	11.6	-	11.9	-	**11.8**	**d**	
RGT Accroc	70.5	i	74.9	c-h	**72.7**	11.0	-	11.6	-	**11.3**	**e**	
Genie (IGW6754)	72.6	hi	78.4	ab	**75.5**	11.2	-	12.0	-	**11.6**	**de**	
IGW6755	64.9	j	74.5	d-h	**69.7**	12.0	-	11.6	-	**11.8**	**d**	
Sunmaster	74.8	c-h	77.1	abc	**76.0**	11.8	-	12.7	-	**12.2**	**c**	
V14035-125	73.5	gh	76.2	a-f	**74.9**	11.8	-	11.9	-	**11.8**	**d**	
V15019-088	75.5	c-g	78.5	a	**77.0**	10.6	-	11.1	-	**10.8**	**g**	
Willaura	66.5	j	74.0	e-h	**70.2**	10.9	-	10.9	-	**10.9**	**fg**	
RGT Waugh	75.7	c-g	77.3	abc	**76.5**	12.1	-	12.7	-	**12.4**	**bc**	
RGT Cesario	75.2	c-g	77.1	abc	**76.2**	11.5	-	11.8	-	**11.6**	**de**	
AGFWH010222	73.7	fgh	75.9	b-g	**74.8**	10.6	-	11.0	-	**10.8**	**g**	
FAR WW2	75.9	b-g	76.8	a-d	**76.3**	10.9	-	11.6	-	**11.3**	**ef**	
FAR SW1	75.6	c-g	77.3	abc	**5.21**	14.5	-	14.8	-	**14.7**	**a**	
Mean	**72.3**		**76.4**		**74.4**	11.6	-	12.0	-	**11.8**		
Cultivar	**LSD p=0.05**	1.81	**P val**	<0.001		**LSD p=0.05**	0.58	**P val**	<0.001			
Management	**LSD p=0.05**	1.84	**P val**	0.006		**LSD p=0.05**	ns	**P val**	0.135			
Cultivar x Man.	**LSD p=0.05**	2.57	**P val**	<0.001		**LSD p=0.05**	ns	**P val**	0.101			

Table 3. Influence of fungicide on the screenings (%) of wheat cultivars plus and minus fungicide.

	Management Level				
	Untreated		Full protection		Mean
Cultivar	Screenings %		Screenings %		Screenings %
Anapurna	2.8	de	2.0	f-l	**2.4**
Rockstar	3.6	c	1.5	i-m	**2.5**
RGT Accroc	2.7	def	2.0	f-l	**2.3**
Genie (IGW6754)	4.7	b	2.4	d-g	**3.5**
IGW6755	5.3	b	2.3	d-h	**3.8**
Sunmaster	2.5	d-g	1.6	i-m	**2.0**
V14035-125	2.8	d	2.0	f-k	**2.4**
V15019-088	1.9	g-m	1.3	klm	**1.6**
Willaura	6.8	a	3.6	c	**5.2**
RGT Waugh	1.3	lm	1.3	m	**1.3**
RGT Cesario	2.0	f-j	1.4	j-m	**1.7**
AGFWH010222	2.4	d-g	2.1	e-i	**2.2**
FAR WW2	1.8	g-m	1.6	i-m	**1.7**
FAR SW1	1.7	h-m	1.4	j-m	**1.5**
Mean	**3.0**		**1.9**		**2.4**
LSD Cultivar p = 0.05	0.48		**P val**	<0.001	
LSD Management p = 0.05	0.25		**P val**	<0.001	
LSD Cultivar x Man. p = 0.05	0.68		**P val**	<0.001	

Table 4. Trial input and management details (kg, g, ml/ha).

Sowing date:		**10 May**	
Harvest date:		**15 January**	
Seed rate:		180 seeds/m2	
Basal fertiliser:	10 May	100 kg MAP	
Herbicide:	9 May	TriflurX 3 L/ha	
	9 May	Spreadwet 0.2 L/ha	
	15 Aug	Broadside 1.4 L/ha	
Crop protection:	20 Jun	Metarex 3 kg/ha	
	10 Nov	Alpha Scud 0.08 L/ha	
	7 Jan	Metarex 3 kg/ha	
Trace elements:	15 Aug	*Spray Gro 5 L/ha	
	2 Sept	Spray Gro 5 L/ha	
	5 Sept	Spray Gro 5 L/ha	
	16 Sept	Spray Gro 5 L/ha	
Nitrogen:	26 July	50 kg N/ha	
	19 Sept	100 kg N/ha	
Fungicide:		**Untreated**	**Full Protection**
	GS31	----	Prosaro 0.30 L/ha
	GS39	----	Aviator 0.50 L/ha
	GS59-61	----	Opus 0.50 L/ha

**SprayGro Smartrace Triple*

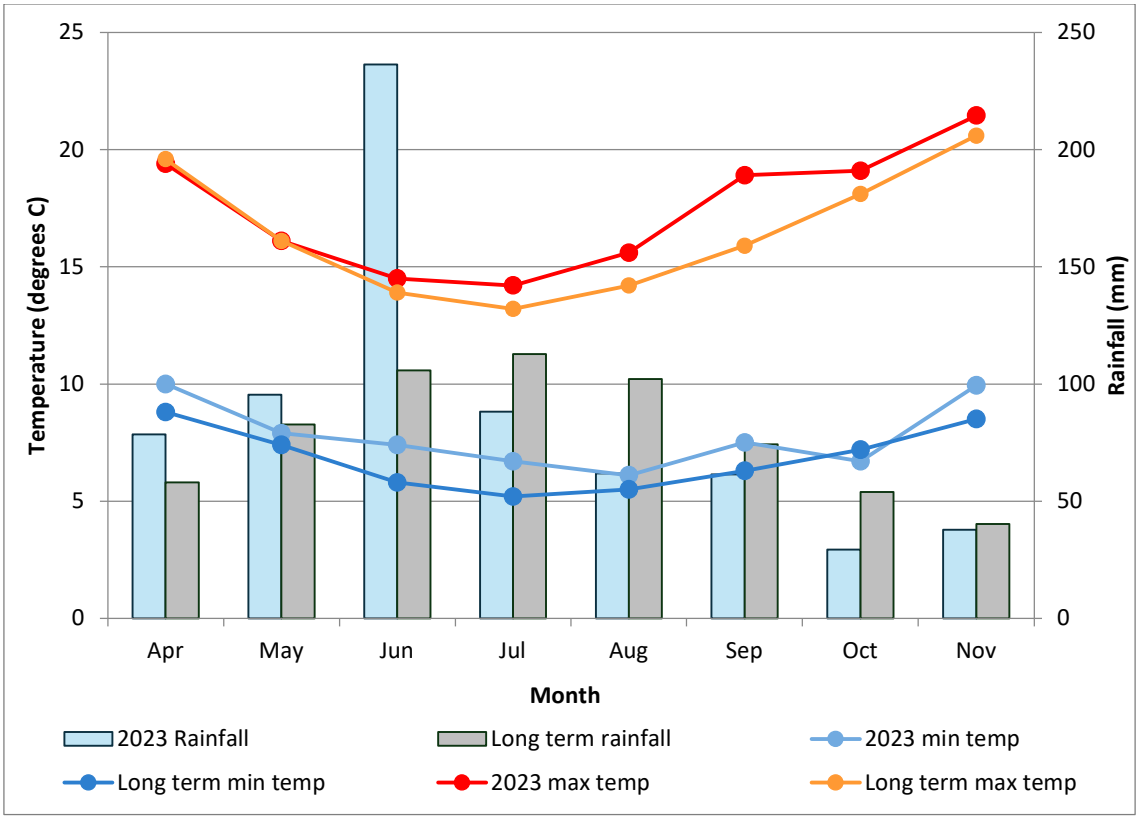

Figure 2. 2023 growing season rainfall and long-term rainfall recorded at Millicent (1878-2023). 2023 min and max temperatures, and long-term temperatures recorded at Mount Gambier (1942-2023). *Growing season rainfall April to November = 689 mm.*

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