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Innovations**
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INDUSTRY INNOVATIONS 2024: PROVISIONAL HARVEST RESULTS – May Sown Barley

2024 SA Millicent Crop Technology Centre (HRZ)

Sown: 8 May 2024

Harvested: 19 December 2024

Rotation position: 2023 Canola

Soil type: Organosol over grey clay

FAR code: FAR SAC II B24-31

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.

Key Points:

- Despite a very dry start to the season and drier than average growing season, spring barley varieties yielded well with Neo CL achieving 8.07t/ha on average.
- Longer season 2 and 6-row winter type barleys did not match the yields achieved by spring barleys, with the delayed emergence and drier conditions shortening the season.
- The highest yielding winter variety was KWS Tardis (previously tested as FAR WB 2r 4) the current world record holding variety for barley.
- There was no significant yield interaction between variety and fungicide application ($p=0.214$), with varieties behaving similarly in their response to fungicide application.
- Proteins in the trial were too high to achieve malt standards with the exception of RGT Planet untreated with fungicide, however a low-test weight would be a limiting factor.
- Variety was the primary factor affecting grain quality with small improvements as a result of fungicide application, which were statistically significant with % screenings.
- Net form net blotch was the dominant disease on site however severity was lower than previous years with the worst affected varieties developing plot infections of <10% (Figure 2).

Yield (t/ha) & quality data (% protein, test weight, % screenings)

Table 1. Influence of fungicide application on the grain yield (t/ha) of winter and spring barley (varieties grown plus and minus fungicide) – May 8 sow.

Variety	Management Level					
	Untreated		Plus fungicide		Mean	
	Yield t/ha		Yield t/ha		Yield t/ha	
RGT Planet (s)	7.03	-	7.70	-	7.36	de
Neo CL (s)	7.35	-	8.78	-	8.07	a
Minotaur (s)	6.98	-	7.37	-	7.17	def
Rosalind (s)	6.03	-	6.49	-	6.26	h
AGTB0318 (s)	7.64	-	8.33	-	7.98	b
IGB22117 (s)	6.43	-	7.08	-	6.75	fg
IGB21130 (s)	6.46	-	7.77	-	7.11	def
KWS Thalix (FAR SB2) (s)	6.96	-	7.54	-	7.25	de
KWS Willis (FAR SB1) (s)	7.33	-	7.71	-	7.52	cd
KWS 18/3518 (FAR SB5) (s)	7.03	-	7.78	-	7.41	d
KWS Donau (FAR WB 2r 1) (w)	3.80	-	4.44	-	4.12	j
KW 2-1918 (FAR WB 2r 2) (w)	6.51	-	6.73	-	6.62	gh
KW 2-1958 (FAR WB 2r 3) (w)	5.20	-	6.18	-	5.69	i
KWS Tardis (FAR WB 2r 4) (w)	6.75	-	7.13	-	6.94	efg
KWS Faro (FAR WB 6r 1) (w)	5.90	-	6.53	-	6.21	h
KWS Wallace (FAR WB 6r 2) (w)	5.27	-	5.62	-	5.45	i
RGT Asteroid (s)	7.44	-	8.38	-	7.91	bc
RGT Orbiter (s)	7.23	-	7.86	-	7.55	bcd
Mean	6.52	b	7.19	a	6.85	
LSD Variety p = 0.05	0.40		P value		<0.001	
LSD Management p = 0.05	0.29		P value		0.005	
LSD Variety x Man. p = 0.05	ns		P value		0.214	

(w) – winter barley variety, (s) – spring barley variety 2r – two row, 6r – six row

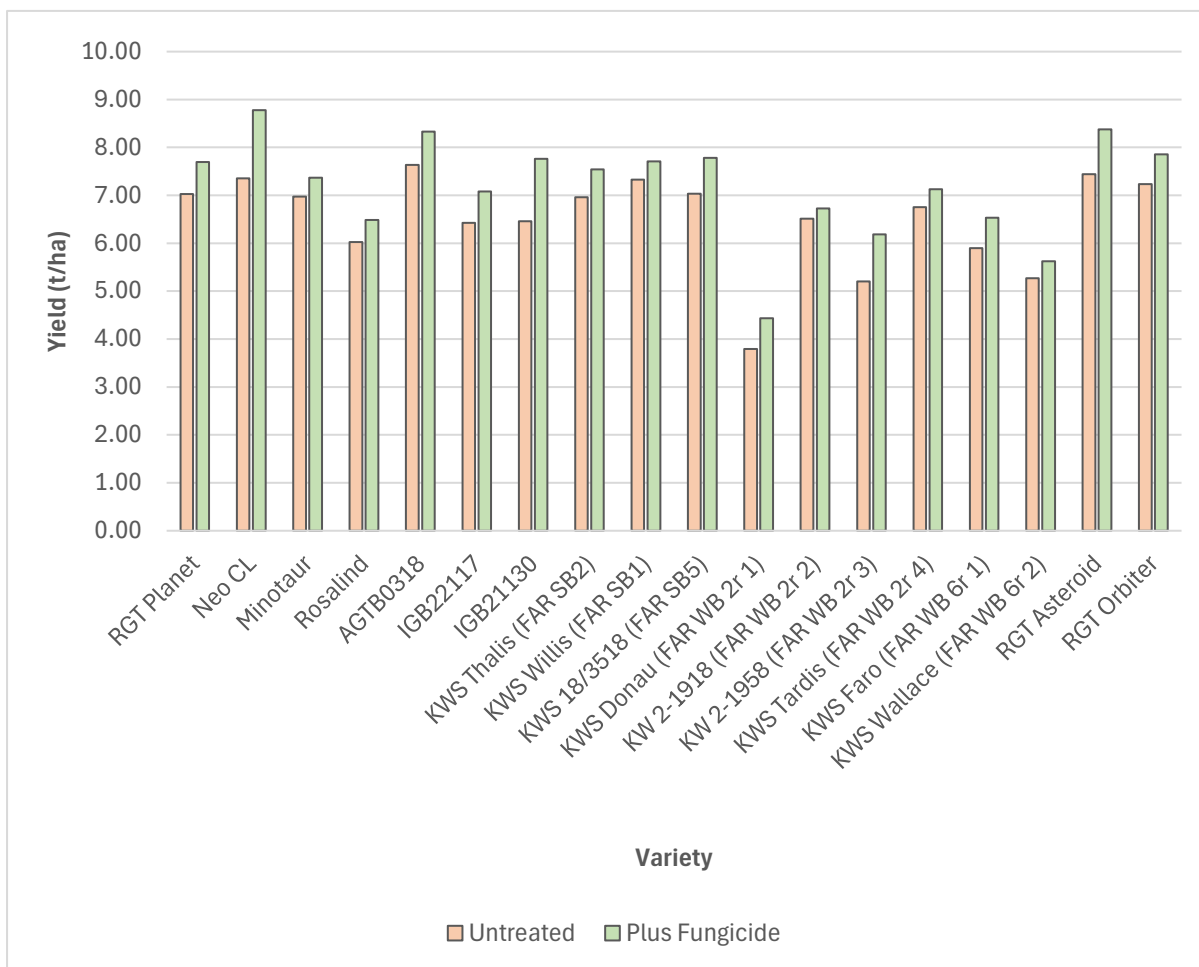


Figure 1. Influence of variety and fungicide application on grain yield (t/ha) – May 8 sown.

Table 2. Influence of variety and fungicide application on the grain protein (%) and test weights (kg/hL) – December 19 harvest.

Variety	Management Level												
	Untreated			Plus Fungicide		Mean		Untreated		Plus Fungicide		Mean	
	Protein %			Protein %			Protein %		Test weight kg/hL			Test weight kg/hL	
RGT Planet	11.9	m	12.3	i-l	12.1	j	63.9	-	64.8	-	64.4	b-e	
Neo CL	12.0	lm	12.5	ijk	12.2	hij	63.0	-	64.0	-	63.5	c-f	
Minotaur	12.7	hi	13.6	de	13.1	e	64.2	-	65.6	-	64.9	a-d	
Rosalind	13.2	fg	13.1	fg	13.2	e	61.5	-	63.4	-	62.4	efg	
AGTB0318	12.5	hij	12.4	ijk	12.5	h	62.3	-	64.0	-	63.1	c-g	
IGB22117	12.7	hi	13.1	fg	12.9	fg	61.8	-	63.9	-	62.8	d-g	
IGB21130	12.0	lm	12.4	i-l	12.2	ij	64.6	-	65.5	-	65.0	abc	
KWS Thalix	12.3	jkl	12.3	i-l	12.3	hij	65.1	-	66.2	-	65.7	ab	
KWS Willis	12.4	i-l	12.5	ijk	12.4	hi	63.0	-	65.3	-	64.1	b-f	
KWS 18/3518	12.2	j-m	12.2	j-m	12.2	hij	62.5	-	63.7	-	63.1	c-g	
KWS Donau	15.4	a	15.4	a	15.4	a	61.0	-	61.4	-	61.2	g	
KW 2-1918	13.3	ef	12.9	gh	13.1	ef	66.4	-	63.6	-	65.0	abc	
KW 2-1958	14.7	b	14.3	bc	14.5	b	65.6	-	67.8	-	66.7	a	
KWS Tardis	13.4	def	13.7	d	13.5	d	63.1	-	64.5	-	63.8	b-f	
KWS Faro	13.1	fg	13.1	fg	13.1	ef	61.5	-	62.8	-	62.1	fg	
KWS Wallace	14.1	c	14.3	c	14.2	c	57.6	-	58.2	-	57.9	h	
RGT Asteroid	12.5	hij	13.1	fg	12.8	g	63.2	-	65.4	-	64.3	b-e	
RGT Orbiter	12.1	klm	12.3	i-l	12.2	hij	63.7	-	64.8	-	64.2	b-e	
Mean	12.9	-	13.1	-			63.0	-	64.1	-			
Variety	LSD p = 0.05		0.3	P val	<0.001		LSD p = 0.05		2.1	P val	<0.001		
Management	LSD p = 0.05		ns	P val	0.126		LSD p = 0.05		ns	P val	0.062		
Var. x Man.	LSD p = 0.05		0.4	P val	<0.001		LSD p = 0.05		ns	P val	0.890		

Table 3. Influence of variety and fungicide application on retention (%) and screenings (%)– December 19 harvest.

Variety	Management Level											
	Untreated		Plus Fungicide		Mean		Untreated		Plus Fungicide		Mean	
	Retention %		Retention %		Retention %		Screenings %		Screenings %		Screenings %	
RGT Planet	85.2	-	89.5	-	87.3	d-g	4.6	-	4.0	-	4.3	cde
Neo CL	86.5	-	91.2	-	88.9	c-f	4.7	-	4.0	-	4.3	cde
Minotaur	90.4	-	90.7	-	90.6	abc	5.0	-	4.6	-	4.8	bcd
Rosalind	86.4	-	89.1	-	87.7	def	5.1	-	4.6	-	4.9	bcd
AGTB0318	90.6	-	93.2	-	91.9	ab	4.2	-	3.2	-	3.7	ef
IGB22117	83.4	-	86.3	-	84.9	g	6.3	-	4.8	-	5.5	b
IGB21130	86.2	-	91.4	-	88.8	c-f	4.5	-	4.0	-	4.3	cde
KWS Thalys	85.9	-	89.2	-	87.5	def	4.5	-	4.1	-	4.3	cde
KWS Willis	91.9	-	93.4	-	92.7	a	3.6	-	3.0	-	3.3	f
KWS 18/3518	84.7	-	88.5	-	86.6	efg	5.2	-	4.7	-	5.0	bc
KWS Donau	89.3	-	90.3	-	89.8	bcd	5.2	-	4.6	-	4.9	bc
KW 2-1918	87.8	-	87.6	-	87.7	def	4.4	-	4.4	-	4.4	cde
KW 2-1958	89.2	-	91.7	-	90.4	abc	4.4	-	3.2	-	3.8	ef
KWS Tardis	88.1	-	89.5	-	88.8	c-f	4.3	-	4.0	-	4.1	c-f
KWS Faro	86.3	-	86.5	-	86.4	fg	4.9	-	4.9	-	4.9	bc
KWS Wallace	77.2	-	75.8	-	76.5	h	7.0	-	6.6	-	6.8	a
RGT Asteroid	89.2	-	92.8	-	91.0	abc	4.2	-	3.3	-	3.7	ef
RGT Orbiter	87.0	-	91.2	-	89.1	cde	4.5	-	3.5	-	4.0	def
Mean	87.0	-	89.3	-			4.8	a	4.2	b		
Variety	LSD p = 0.05		2.6	P val	<0.001		LSD p = 0.05		0.9	P val	<0.001	
Management	LSD p = 0.05		ns	P val	0.089		LSD p = 0.05		0.5	P val	0.027	
Var. x Man.	LSD p = 0.05		ns	P val	0.507		LSD p = 0.05		ns	P val	0.987	

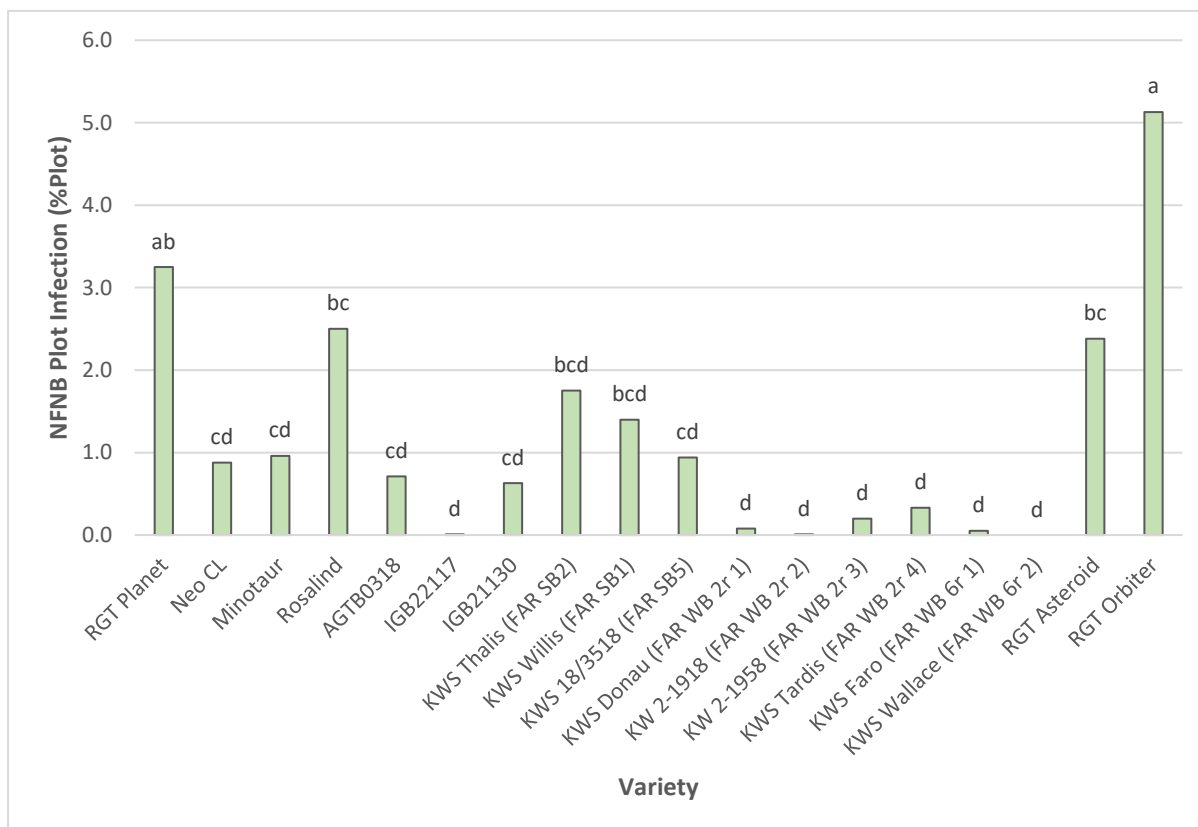


Figure 2. Influence of plot net form net blotch (NFNB) severity (%Plot) ($LSD_{0.05} = 1.9$, $P\text{-value} = <0.001$) on average per variety (untreated and plus fungicide) – assessed October 22.

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

Sowing date:		8 May	
Harvest date:		19 December	
Seed rate:		200 seeds/m ²	
Basal fertiliser:	8 May	100 kg/ha MAP	
Pre-em herbicide:	6 May	MCPA 750 0.70 L/ha	
	7 May	Overwatch 1.25 L/ha	
		Treflan 1.50 L/ha	
Nitrogen:	8 Aug	50 kg N/ha	
	26 Sep	100 kg N/ha	
Fungicide:		Untreated	Fungicide Protection
	GS32	----	Prosaro 0.30 L/ha
	GS45	----	Aviator Xpro 0.42 L/ha

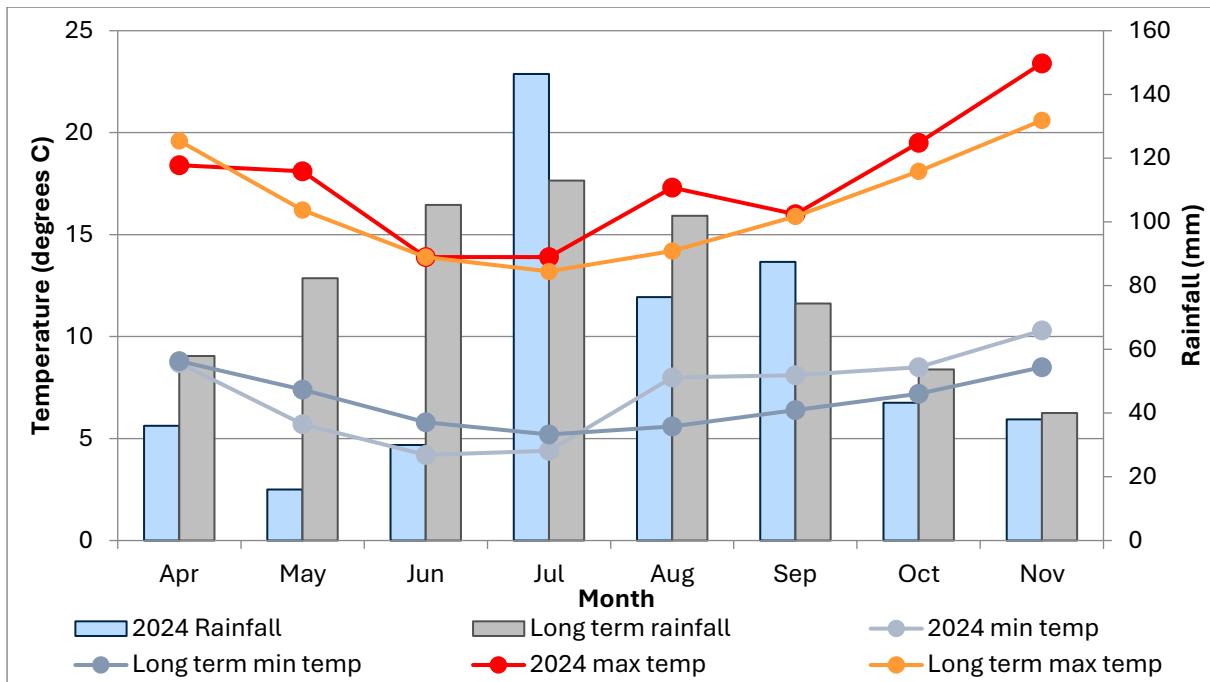


Figure 3. 2024 growing season rainfall and long-term rainfall recorded at Millicent (1877-2024). 2024 min and max temperatures, and long-term temperatures recorded at Mount Gambier Aero (1941-2024). Growing season rainfall April to November= 473 mm.

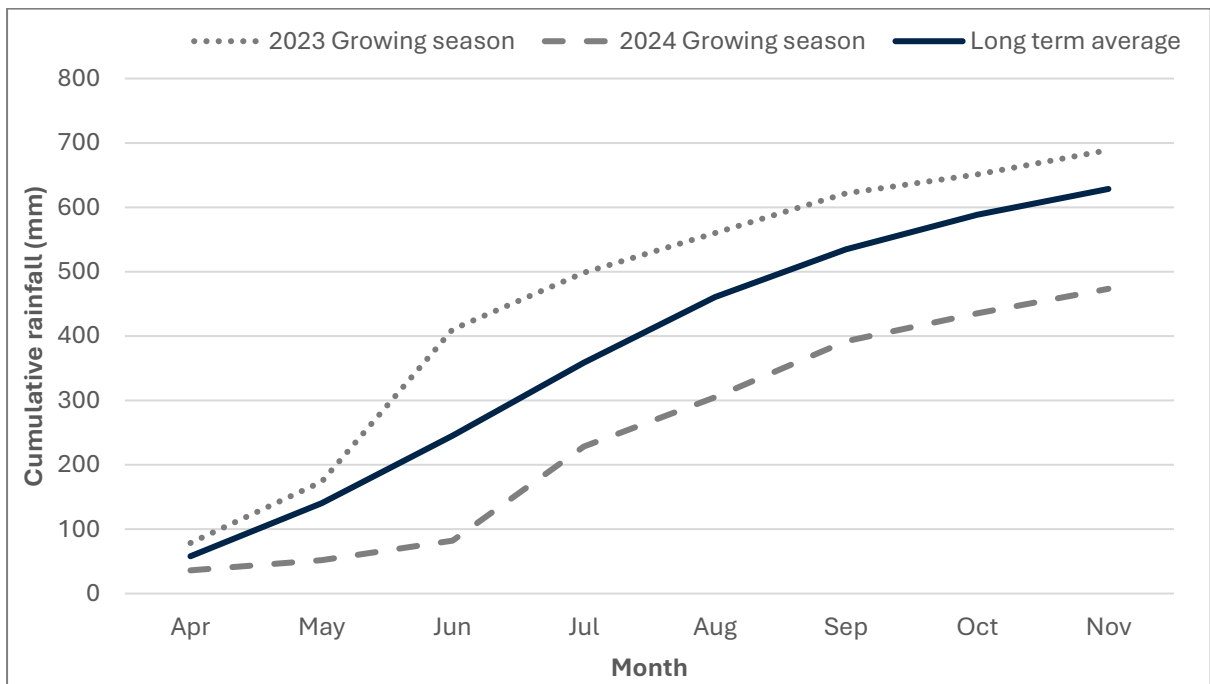


Figure 4. Cumulative growing season rainfall for 2023, 2024 and the long-term average for the growing season (April - November).

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