



Industry Innovations 2025

INDUSTRY INNOVATIONS: PROVISIONAL HARVEST YIELD RESULTS – May Sown Barley

2023 SA Millicent Crop Technology Centre

Sown: 10 May 2023

Harvested: 4 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 tests crop performance plus and minus fungicide. FAR Australia provides the control varieties and breeders enter their chosen lines for evaluation.

Objectives:

To assess the performance of twelve spring barley varieties and one winter variety against two FAR control varieties RGT Planet (malt) and Rosalind (feed) plus and minus fungicide in the lower southeast of SA (Millicent).

Key Points:

- *Yields ranged from 5.44 – 9.15t/ha depending on variety and fungicide treatment.*
- *There was a significant response to fungicide (which averaged 0.64t/ha across all varieties) as a result of net form of net blotch (NFNB), leaf rust and scald infection depending on variety.*
- *The coded European barley SB1 was significantly higher yielding than all varieties other than Asteroid with both varieties exceeding 9t/ha when treated with fungicide.*
- *SB1 and Asteroid both had favourable grain characteristics, but Asteroid had significantly better test weight.*
- *RP 19013 exhibited significantly more lodging than other varieties/lines tested with a susceptibility to scald.*
- *Minotaur yields were disappointing with a large response to fungicide as a result of late leaf rust infection and noticeably higher Barley yellow dwarf virus infection (BYDV), data not shown.*
- *The winter barley Newton was potentially disadvantaged by May sowing and later development but was exceptionally disease resistant.*
- *Neo was lower yielding than in FAR Australia GEN trials in WA with leaf rust infection in the untreated becoming more severe from mid-October onwards.*

Table 1. Influence of fungicide on the grain yield (t/ha) of barley cultivars plus and minus fungicide – May 10 sown.

Cultivar	Management Level		Mean
	Untreated	Full protection	
	Yield t/ha	Yield t/ha	Yield t/ha
RGT Planet	7.98 -	8.48 -	8.23 cd
Rosalind	7.10 -	8.29 -	7.70 ef
Newton	5.99 -	5.94 -	5.97 i
AGTB0318	7.86 -	8.43 -	8.14 cde
Minotaur	5.69 -	7.09 -	6.39 hi
Asteroid	8.37 -	9.15 -	8.76 ab
RP 19034	8.15 -	8.99 -	8.57 bc
RP 19013	6.70 -	7.21 -	6.95 g
Laureate	7.82 -	8.15 -	7.98 de
Firefoxx	7.60 -	8.29 -	7.94 def
IGB21130	5.44 -	6.57 -	6.00 i
Neo	7.19 -	7.84 -	7.51 f
FAR SB2	6.29 -	6.69 -	6.49 gh
FAR SB1	8.98 -	9.22 -	9.10 a
FAR SB5	8.31 -	8.83 -	8.57 bc
Mean	7.30 b	7.94 a	7.62
LSD Cultivar p = 0.05	0.47	P val	<0.001
LSD Management p = 0.05	0.47	P val	0.022
LSD Cultivar x Man. p = 0.05	N.S.	P val	0.227

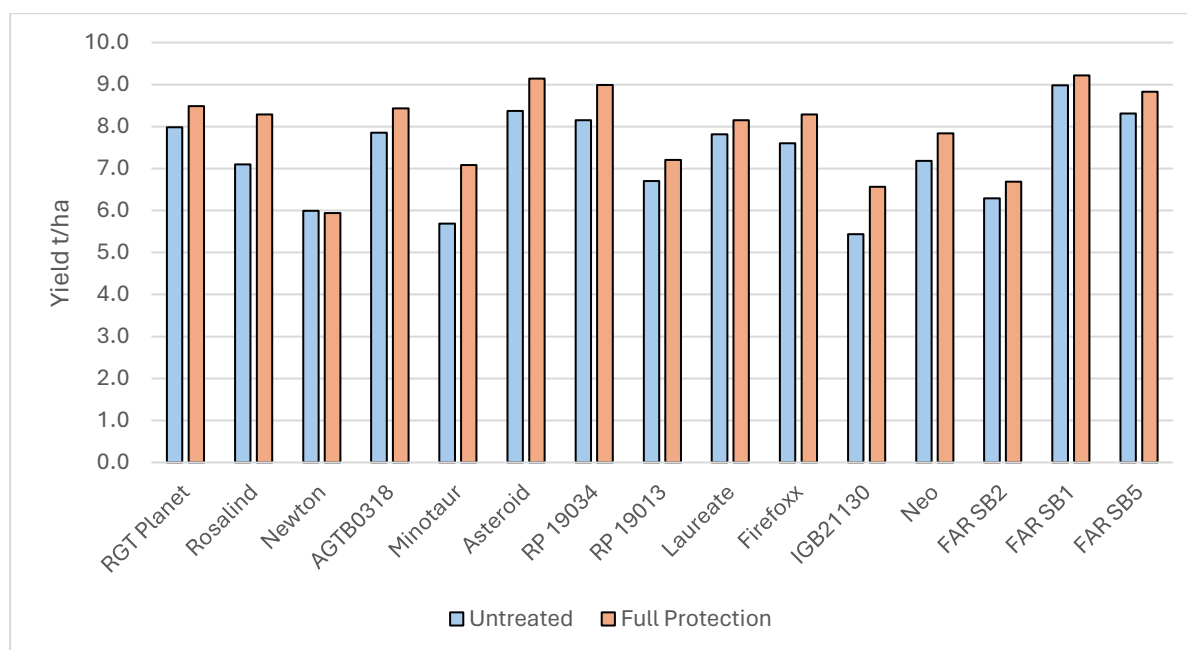


Figure 1. Influence of fungicide on the grain yield (t/ha) of barley cultivars plus and minus fungicide – May 10 sown

Table 2. Influence of fungicide on the protein (%) and test weights (kg/hL) of barley cultivars plus and minus fungicide – May 10 sown.

Cultivar	Management Level												
	Untreated			Full protection			Mean						
	Protein %			Protein %			Test weight kg/hL						
RGT Planet	12.2	-		12.3	-		12.3	e	60.4	ijk	63.3	abc	61.8
Rosalind	12.6	-		12.8	-		12.7	bcd	62.2	c-f	63.3	bc	62.7
Newton	14.7	-		15.4	-		15.1	a	60.6	h-k	61.2	f-j	60.9
AGTB0318	12.3	-		13.0	-		12.7	b-e	59.3	k	60.7	g-j	60.0
Minotaur	11.8	-		12.9	-		12.4	de	63.0	bcd	64.6	a	63.8
Asteroid	11.9	-		12.6	-		12.2	e	63.0	cd	64.3	ab	63.6
RP 19034	11.9	-		12.7	-		12.3	e	62.0	d-g	62.5	cde	62.2
RP 19013	12.2	-		12.4	-		12.3	de	60.1	jk	61.7	e-i	60.9
Laureate	12.9	-		12.8	-		12.8	bc	60.5	h-k	63.4	abc	62.0
Firefoxx	12.5	-		12.7	-		12.6	b-e	61.1	f-j	63.1	bcd	62.1
IGB21130	12.5	-		12.9	-		12.7	bcd	60.7	g-j	63.3	bc	62.0
Neo	12.4	-		12.3	-		12.3	de	57.8	l	61.8	d-h	59.8
FAR SB2	12.9	-		13.1	-		13.0	b	61.4	e-j	62.3	c-f	61.9
FAR SB1	12.3	-		12.6	-		12.5	cde	61.3	e-j	63.4	abc	62.3
FAR SB5	12.3	-		12.6	-		12.4	cde	60.7	g-j	61.1	f-j	60.9
Mean	12.5	-		12.9	-		12.7		60.9		62.7		61.8
Cultivar	LSD p = 0.05		0.44	P val		<0.001	LSD p = 0.05		0.9	P val		<0.001	
Management	LSD p = 0.05		ns	P val		0.156	LSD p = 0.05		1.1	P val		0.016	
Cultivar x Man.	LSD p = 0.05		ns	P val		0.336	LSD p = 0.05		1.3	P val		0.007	

Table 3. Influence of fungicide on the retention (% > 2.5mm) and screenings (% < 2.2mm) of barley cultivars plus and minus fungicide – May 10 sown.

Cultivar	Management Level									
	Untreated			Full protection			Mean			
	Retention %		Retention %		Retention %	Screenings %		Screenings %	Screenings %	
RGT Planet	87.7	a-e	88.0	a-e	87.9	5.6	e-h	5.2	f-i	5.4
Rosalind	75.2	ij	83.5	e-h	79.3	8.0	b	5.6	e-h	6.8
Newton	87.9	a-e	88.4	a-d	88.1	5.3	e-i	4.6	hij	4.9
AGTB0318	84.8	d-g	88.9	a-d	86.8	6.4	de	5.0	ghi	5.7
Minotaur	81.9	gh	87.5	a-e	84.7	6.8	cd	5.3	e-i	6.1
Asteroid	89.1	a-d	91.3	ab	90.2	4.6	hij	3.4	kl	4.0
RP 19034	87.6	a-e	90.2	abc	88.9	5.6	e-h	4.6	hij	5.1
RP 19013	79.8	hi	85.6	c-g	82.7	6.1	def	4.6	hij	5.3
Laureate	86.8	b-f	91.8	a	89.3	5.2	f-i	3.1	l	4.1
Firefoxx	84.8	d-g	89.3	a-d	87.1	5.5	e-h	3.8	jkl	4.7
IGB21130	74.8	j	78.9	hij	76.8	7.5	bc	4.3	ijk	5.9
Neo	63.2	k	79.7	hi	71.5	11.0	a	5.9	d-g	8.4
FAR SB2	75.4	ij	82.4	fgh	78.9	7.8	bc	6.2	def	7.0
FAR SB1	88.1	a-e	90.9	ab	89.5	5.3	e-i	3.7	jkl	4.5
FAR SB5	85.9	c-g	87.9	a-e	86.9	6.0	d-g	5.5	e-h	5.7
Mean	82.2		87.0		84.6	6.4		4.7		5.6
Cultivar	LSD p = 0.05		3.4	P val	<0.001	LSD p = 0.05		0.8	P val	<0.001
Management	LSD p = 0.05		2.9	P val	0.013	LSD p = 0.05		0.5	P val	0.002
Cultivar x Man.	LSD p = 0.05		4.8	P val	0.003	LSD p = 0.05		1.1	P val	<0.001

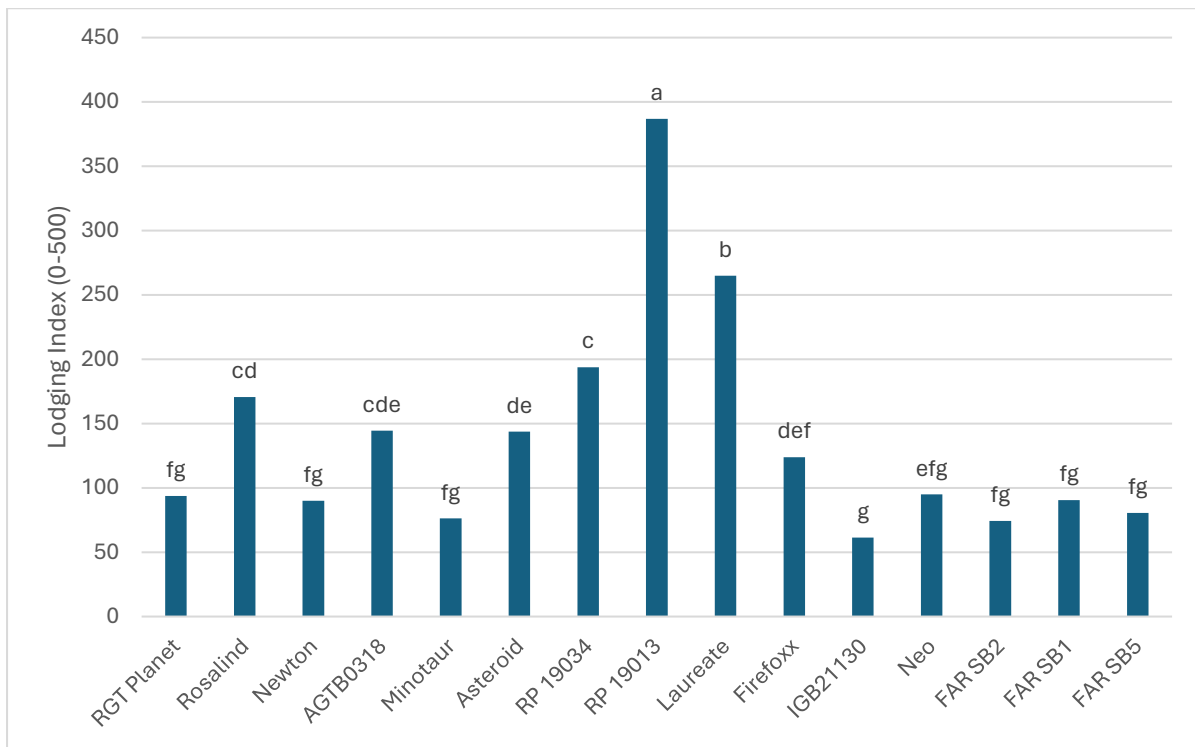


Figure 2. Influence of variety on the lodging index (0-500 scale) of barley cultivars assessed at harvest – January 4th.

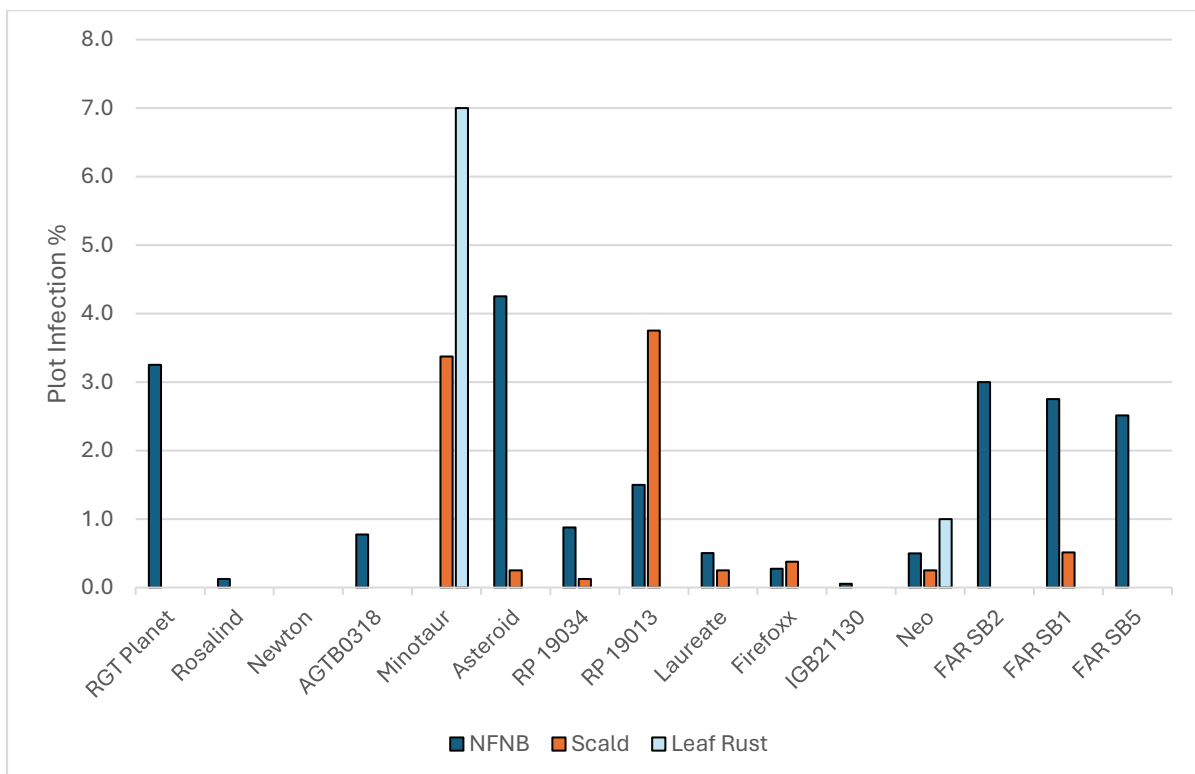


Figure 3. Influence of cultivar on the severity of Net Form of Net Blotch (NFNB), Scald and Leaf Rust (plot infection %) on barley cultivars untreated with fungicide (refer to table 4 for p values) – assessed October 18th.

Table 4. Influence of cultivar on phenology (Zadoks) and the influence of fungicide on the severity of Net Form of Net Blotch (NFNB), Scald and Leaf Rust (plot infection %) on barley cultivars – assessed October 18th.

		Fully Protected Barley Disease Levels Oct 18th		
		NFNB	Scald	Leaf Rust
Cultivar	25 September Growth Stage	Plot Infection %	Plot Infection %	Plot Infection %
RGT Planet	45	2.5 -	0.0 -	0.0 -
Rosalind	49	0.0 -	0.0 -	0.0 -
Newton	33	0.0 -	0.0 -	0.0 -
AGTB0318	43	0.0 -	0.0 -	0.0 -
Minotaur	45	0.0 -	0.0 -	0.0 -
Asteroid	39	0.6 -	0.0 -	0.0 -
RP 19034	37	0.3 -	0.0 -	0.0 -
RP 19013	37	1.0 -	0.5 -	0.0 -
Laureate	33-37	0.0 -	0.0 -	0.0 -
Firefoxx	37-39	0.0 -	0.0 -	0.0 -
IGB21130	33-37	0.0 -	0.0 -	0.0 -
Neo	47	0.0 -	0.0 -	0.0 -
FAR SB2	37-39	0.3 -	0.0 -	0.0 -
FAR SB1	41	1.0 -	0.0 -	0.0 -
FAR SB5	43	0.3 -	0.0 -	0.0 -
	Mean	0.4	0.0	0.0
NFNB	LSD Cultivar p = 0.05	1.2	P val	<0.001
NFNB	LSD Management p = 0.05	0.4	P val	0.006
NFNB	LSD Cultivar x Man. p = 0.05	ns	P val	0.084
Scald	LSD Cultivar p = 0.05	1.2	P val	0.010
Scald	LSD Management p = 0.05	0.3	P val	0.007
Scald	LSD Cultivar x Man. p = 0.05	ns	P val	0.063
Leaf Rust	LSD Cultivar p = 0.05	0.8	P val	<0.001
Leaf Rust	LSD Management p = 0.05	0.3	P val	0.015
Leaf Rust	LSD Cultivar x Man. p = 0.05	1.2	P val	<0.001

Table 5. Trial input and management details (kg, g, ml/ha).

Sowing date:		11 May	
Harvest date:		4 January	
Seed rate:		180 seeds/m ²	
Basal fertiliser:	11 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

*SprayGro Smartrace Triple

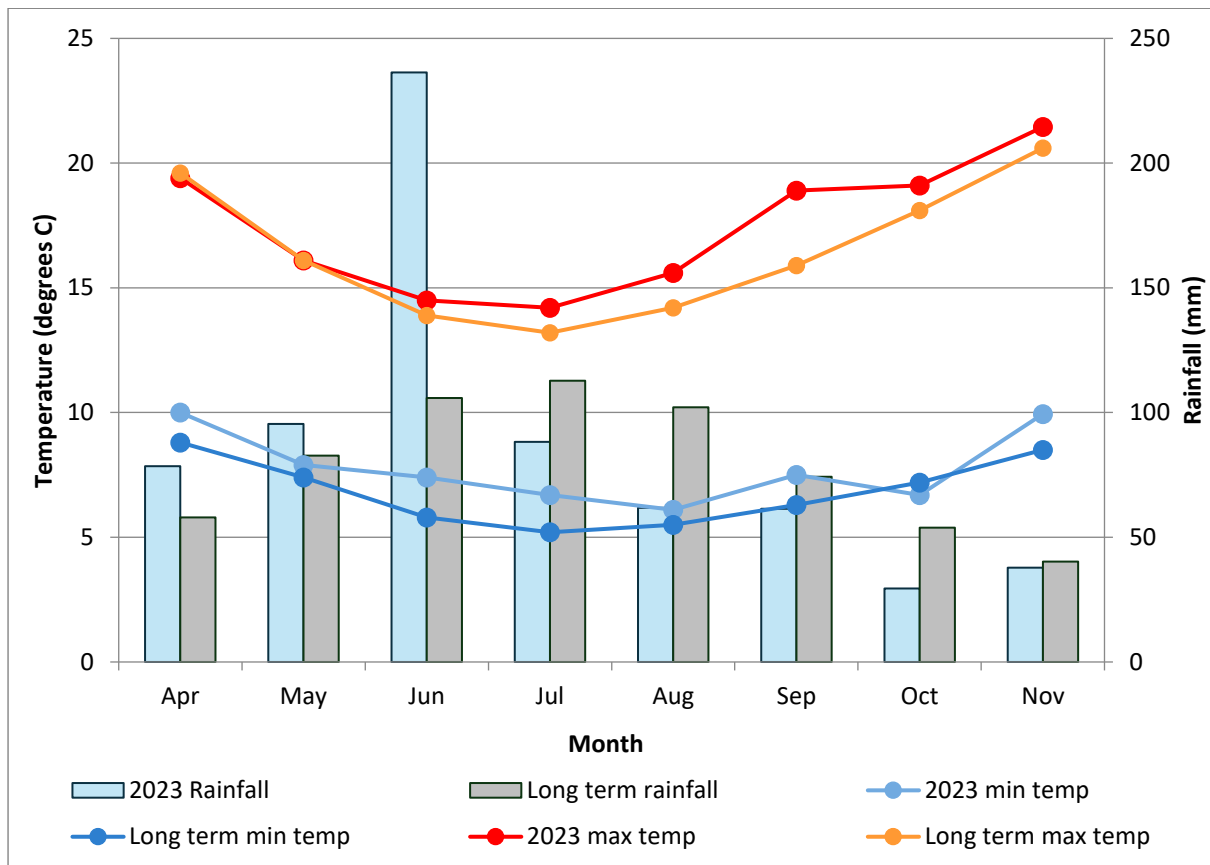


Figure 6. 2023 growing season rainfall and long-term rainfall recorded at Millicent (1878-2023). 2023 min and max temperatures, and long-term temperatures recorded at Mount Gambier (1942-2023). Growing season rainfall April to October= 689 mm.

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