Variety Specific AGRONOMY Packages

Cereal Stripe Rust, Jerilderie

Fungicide treatment increased grain yield when trace levels of stripe rust was present.

The trial

Location: Jerilderie Research Station

Soil type: light clay
pH_{CaCl_2} (0-10 cm)–4.8;
Colwell P–44 mg/kg;
Deep N (nitrate 0-60cm)–12 mg/kg.

Rainfall: 354 mm annual total
194 mm in-crop (GSR)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	67	31	32	53	13	52	3	0	10	23	65

Irrigation: 23 August–1 ML/ha
20 September–1 ML/ha

Previous crop: failed sub clover establishment

Management

Sowing date: 19 June

Fertiliser: DAP (18 N, 20 P)–138 kg/ha

Herbicide: 1 June–2 L/ha glyphosate (450 g/L), 100 mL/ha oxyfluorfen (240 g/L) and 10% Hasten®

Harvest date: 10 December

Treatments

Fungicide: untreated control and treated with foliar fungicide–500 ml/ha Opus® (epoxiconazole 125 g/L) at first node (GS 31) and start of anthesis (GS 61)

Varieties: bread wheat–Carinya$^{\Phi}$, Drysdale$^{\Phi}$, EGA_Wentworth$^{\Phi}$, Ellison$^{\Phi}$, GBA_Ruby$^{\Phi}$, GBA_Sapphire$^{\Phi}$, H46$^{\Phi}$, Janz, Lang$^{\Phi}$, Ventura$^{\Phi}$, Young$^{\Phi}$
durum wheat–EGA_Bellaroi$^{\Phi}$
barley–Hindmarsh$^{\Phi}$ and Schooner

Seasonal review

The trial was sown into good moisture and established well. Following the establishment rainfall events soil moisture was quickly depleted with just 3 mm of rain falling on the 1st August and no further rainfall until mid-October.

Two irrigations were applied using high flow rates. The use of high flow rates aimed to reduce deep percolation losses therefore minimising the amount of water applied. The intervals between the irrigations were longer than ideal, but were the best compromise between plant water use, high cost of the water and the limited amount of irrigation water available.

Temperatures during the season were around average. There was a short period (3 days) of high temperature just prior to the third irrigation in October.

Results

Only a trace level of stripe rust was recorded in the trial during the flowering and grain fill (GS 61) periods of plant growth. Despite this very low level of disease observed, treatment with fungicide significantly increased grain yield (Figure 1).

Grain yield varied significantly between varieties (Figure 1) with the recently released Hindmarsh barley the stand-out, yielding more than 700 kg/ha higher than each of the other varieties. The durum variety Bellaroi yielded significantly less than each of the other varieties in the trial.

The fungicide treatment had no significant effect on the grain quality (protein, test weight, 1000 grain weight and screenings). However grain quality varied significantly between variety (Table 1).

Discussion

The stripe rust trial was sprayed twice, the first application of Opus® was at first node (GS 31)

Table 1 Grain quality parameters for the bread and durum wheat and barley varieties grown at Jerilderie in 2007.

Variety	Grain protein (%)		1000 grain weight (g)		Screenings (%)		Test weight (kg/hL)	
Bellaroi	15.8	a	41.0	ab	3.5	ab	79.4	f
Ellison	14.7	b	42.9	a	3.6	a	84.3	abc
H46	14.3	bc	34.0	h	1.2	g	83.6	cde
Drysdale	14.2	bc	38.4	cd	3.3	ab	84.8	ab
Ruby	14.2	bc	39.7	bc	2.5	cd	85.0	a
Hindmarsh	14.2	bc	42.4	a	2.4	cd	71.6	g
Schooner	14.2	bc	42.7	a	2.4	cd	71.1	g
Ventura	14.2	bc	40.2	bc	2.4	cd	83.9	cd
Lang	14.1	bcd	34.1	h	2.9	bc	83.0	e
Carinya	14.0	cd	37.5	de	1.5	fg	83.5	de
Janz	13.9	cd	36.4	ef	1.9	def	83.3	de
GBA_Sapphire	13.8	cd	36.2	efg	1.7	efg	83.8	cd
EGA_Wentworth	13.7	cd	34.5	fgh	2.5	cd	83.6	cde
Young	13.5	d	34.3	gh	2.3	cde	84.0	cd
Mean	14.2		38.2		2.4		81.8	
lsd	0.6		1.9		0.6		0.7	

Note: Significance between varieties within each of the quality parameters is indicated by different letters. The list of varieties in the tabled was established using the ranking of grain protein percentage from highest to lowest.

before any disease was observed. The second application was at the start of anthesis (GS 61) targeting a very low level of stripe rust infection, which had a direct influence on grain yield.

Grain yield was limited by low soil moisture and limited irrigation.

Hindmarsh, the highest yielding variety is quick maturing, with high yield potential and is suited to low rainfall environments. It is likely that the two irrigations applied were more closely matched to the critical growth stages (head emergence and flowering) in Hindmarsh compared with other varieties due to its rapid maturity. The superior yield of Hindmarsh over Schooner is consistent with results reported elsewhere.

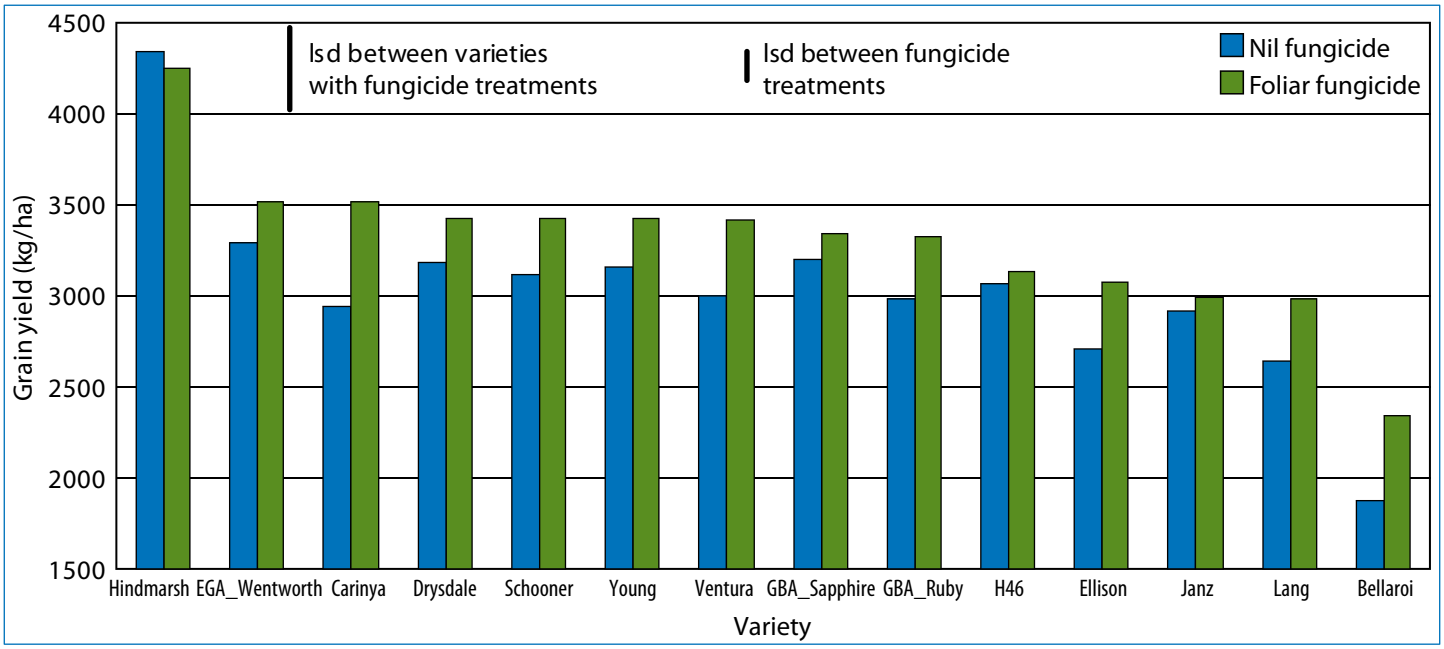

Figure 1 Grain yield of bread wheat, durum wheat and barley varieties treated or untreated with foliar fungicide at Jerilderie.

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