



Wheat Germplasm x Fungicide Interaction – Time of Sowing 2 (26 April)

2018 Yield Results (t/ha) (*Provisional*)

Sown: 26 April 2018

Harvested: 2 February 2019

Rotation position: 1st Wheat after Chickpeas

Table 1. Grain yield (t/ha) of 10 cultivars under plus and minus fungicide protection

Cultivar	Fungicide Management		Response to Fungicide	
	Full Protection	Nil (untreated)	t/ha	%
RGT Accroc	11.69 c	9.61 f	2.08	22
Annapurna	12.32 b	10.34 e	1.98	19
RGT Calabro	10.77 de	9.68 f	1.09	11
RGT Relay	9.41 f	7.21 h	2.20	31
DS Bennett	11.00 d	5.67 j	5.33	94
Conqueror	10.37 e	6.43 i	3.94	61
Genius	10.83 de	8.55 g	2.28	27
Kittyhawk	8.33 g	6.45 i	1.88	29
Manning	13.08 a	9.17 f	3.91	43
SFR 86-044*	6.11 ij	5.59 j	0.52	9
Mean	10.39	7.87		
LSD Cultivar p = 0.05		0.40 t/ha	P val	0.001
LSD Management p=0.05		0.63 t/ha	P val	<0.001
LSD Cultivar x Fungicide. P=0.05		0.57 t/ha	P val	<0.001

Please read the notes accompanying these provisional results for interpretation

Figures followed by different letters are considered to be statistically different ($p=0.05$), for example a yield of 10.83 de is considered statistically different to 9.41 f but is considered to be statistically the same as a yield of 10.37 e.

All varieties are covered under variety license agreements.

*SFR 86-044 subject to poor germination and establishment so yield should be treated with caution.

The principal diseases were Septoria tritici blotch and leaf rust caused by the pathogen *Zymoseptoria tritici* and *Puccinia triticina* which were present at high levels in the trial.

There was a statistical interaction ($p<0.001$) between cultivar and fungicide management indicating that cultivars responded differently to full fungicide protection (Table 1), DS Bennett, Conqueror and Manning giving large responses to fungicide protection compared to Annapurna which was the highest yielding cultivar without fungicides. Full fungicide protection had significant impact on grain quality, however with test weight and screenings the impact was dependant on the cultivar (Table 2).



Table 2. Influence of treatment on grain quality (protein (%), test weight (kg/hL) and screenings (%)).

	Protein				Test Weight				Screening			
	Full		Nil		Full		Nil		Full		Nil	
	Protection		(untreated)		Protection		(untreated)		Protection		(untreated)	
Cultivar	%				Kg/hl				%			
RGT Accroc	12.1	efg	11.4	g-j	79.2	bc	78.0	cde	0.5	h	0.9	fgh
Annapurna	13.2	bc	12.7	cde	80.4	ab	79.1	bcd	0.9	gh	1.2	d-g
RGT Calabro	11.1	j	11.1	j	76.9	efg	76.5	e-h	1.5	de	1.4	def
RGT Relay	12.4	def	11.8	f-j	74.6	hij	70.8	m	2.2	c	2.9	b
DS Bennett	11.7	f-j	12.0	efg	79.8	abc	72.7	kl	1.0	efg	2.4	bc
Conqueror	12.0	e-h	11.1	ij	71.5	lm	68.3	n	2.7	b	4.1	a
Genius	11.8	f-i	11.3	hij	75.1	g-j	73.6	jk	2.6	bc	2.5	bc
Kittyhawk	13.8	ab	14.1	a	81.6	a	79.8	abc	1.0	fgh	1.1	efg
Manning	11.2	ij	10.2	k	77.3	def	74.5	ijk	1.6	d	2.2	c
SFR 86-044	13.2	bc	13.0	bcd	75.7	f-i	75.6	f-i	2.6	bc	2.7	b
Mean	12.2		11.9		77.2		74.9		1.7		2.1	
LSD Cultivar p = 0.05			0.2				1.3				0.3	
LSD Fung. p=0.05			0.5				1.3				0.3	
LSD Cult. x Fung. P=0.05			0.7				1.9				0.5	
P val Cultivar			<0.001				0.012				0.011	
P val Fung.			0.007				<0.001				<0.001	
P val Cult. x Fung.			0.138				<0.001				<0.001	

Figures followed by different letters are considered to be statistically different ($p=0.05$)

Table 3. Margin (\$/ha) from additional yield after fungicide input cost and application costs have been deducted (fungicide cost based on \$95/ha and application cost based on \$45/ha).

Cultivar	Response to Fungicide t/ha	Extra income from fungicide @\$350/t	Margin after input cost and application \$/ha	Return on Investment \$ back for every \$1 spent
RGT Accroc	2.08	728	588	5.2
Annapurna	1.98	693	553	5.0
RGT Calabro	1.09	382	242	2.7
RGT Relay	2.20	770	630	5.5
DS Bennett	5.33	1866	1726	13.3
Conqueror	3.94	1379	1239	9.9
Genius	2.28	798	658	5.7
Kittyhawk	1.88	658	518	4.7
Manning	3.91	1369	1229	9.8
SFR 86-044	0.52	182	42	1.3
Mean	2.52	882	742	6.3



Table 4. Detail of management levels applied

Sowing date:		26-April	
Seed Rate:		200 seeds/m ²	
Sowing Fertiliser:		120kg MAP	
Seed Treatment		Pontiac	
Management:		Untreated	Total Protection
Fungicide:	GS00	---	Systiva
	GS31	---	Opus 500ml/ha
	GS39	---	Radial 840ml/ha
	GS61	---	Prosaro 300ml/ha
Overall Inputs			
Nitrogen:	8- Aug	60 kg N/ha	
	10-Sep	92kg N/ha	
	29-Sep	92kg N/ha	
PGR:	4-Sep	Moddus Evo 200ml/ha	
Insecticide:	24-May	Karate Zeon 40ml/ha	
	7-Jan	Ambush 200ml/ha	
Trace elements:	24-May	Kontrace 8 3L/ha	
Irrigation:	28-Sep	10mm	
	17-Oct	25mm	
	1-Nov	25mm	

Notes:

- Sown in late April, all cultivars responded to fungicide protection, giving yield increases between 0.52 - 5.33t/ha (9 - 94%).
- Manning was the highest yielding cultivar with significantly less erect heads showing poor grain fill at harvest.
- The greatest margin response to fungicide protection came from DS Bennett which returned approximately \$13 for every dollar spent (Table 3).
- The least responsive cultivars were RGT Calabro, Kittyhawk and Annapurna, however all gave profitable outcomes from protection (return on investment of 2:7 for RGT Calabro, 4:7 for Kittyhawk and 5:0 for Annapurna).



Image 1. 15 November 2018, location of trial within the Hyper Yielding Cereals research site.