

2. Crop Variety Trials

2.1 Wheat

2.1.1 Wheat Variety Trial - Inverleigh, Vic #1

Location: Inverleigh, VIC.

Funding:

Thanks to the members and sponsors for supporting the trial.

Researchers:

Wes Arnott, Gary Sheppard, Rohan Wardle, Louisa Ferrier and Colin Hacking, SFS

Author:

Jon Midwood, Southern Farming Systems Ltd.

Acknowledgements:

Thanks to John Hamilton for providing the land for the trial programme.

Rainfall (mm):

2007 Annual: 528.6 mm

GSR (April – November): 393 mm

- Growing season rainfall was average
- August to October was very dry only 67% of long term average
- Significant rainfall during November 07 and above average rainfall in December 07.

Summary of Findings:

- Average treated wheat yields in the trial were 4.81 t/ha.
- The late timing of the rain in November tended to favour the longer season varieties which were just starting to grain fill at this time.
- Of the 20 varieties included in the trial, 5 are not commercially available at present.
- The highest yielding commercially available variety was Amarok at 111% of the site mean.
- The top four yielding varieties were red grained wheat.
- Stripe rust pressure was extremely high at the site giving an average yield increase of 0.21t/ha from applying a two spray fungicide programme.



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Background to the Trial:

This trial compares a number of varieties that are either commercially available or close to commercial release that may be suitable for south west Victoria. This trial differs from other comparative crop variety testing in that it evaluates the varieties with a fungicide programme to determine the yield response of the varieties to controlling foliar leaf diseases, principally stripe and leaf rust, against a control of no fungicide.

Additionally, the management of inputs in the trial is based on the objective to gain the best margin per hectare.

▼ **Table 2.1: Trial inputs**

Previous Crop:	Canola
Sowing Date:	29 May 2007
Harvest Date:	17 December 07

	Product	Rate	Date Applied
Herbicides	Roundup PMax	1.5Lt	28 May 2007
	Triflur X	1.2Lt	28 May 2007
	Striker	0.1Lt	28 May 2007
	Dual Gold	0.25Lt	4 June 2007
	Diuron	0.5Lt	4 June 2007
	Tigrex	0.55Lt	2 August 2007
Fertiliser	MAP	100 Kg	29 May 2007
	Urea	90 Kg	16 July 2007
Fungicides	Folicur	0.145Lt	13 September 2007
	Folicur	0.145Lt	8 October 2007

Trial Design:

A replicated randomized block design consisting of 3 repetitions treated with foliar fungicide and 1 repetition untreated with foliar fungicide to demonstrate local disease pressure and varietal susceptibility. Plot length of 12 metres and plot width of 1.45 metres. The yield results are expressed without taking the width of the furrows into account. The total bed width is 2.0 metres.



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Trial Results:

▼ Table 2.2 : Grain yields of the varieties, corrected to 12.5% moisture, sprayed with fungicide, yield as % of site mean and grain protein.

Entry No.	Variety Name	Yield (t/ha)	Sig Difference ¹	% Site Mean	Protein (%)
9	CS95102.1	5.95	a	124%	10.30
20	GS1078	5.46	b	114%	9.90
19	Amarok	5.34	bc	111%	10.63
2	MacKellar	5.23	bcd	109%	11.17
15	Bolac	5.19	bcde	108%	11.63
6	Derrimut	5.17	bcde	108%	10.90
12	Yenda	5.03	cdef	105%	11.23
7	Peake	4.99	cdefg	104%	11.20
17	LPB1101	4.93	defg	102%	11.43
14	Kellalac	4.83	efgh	100%	12.70
16	Young	4.82	efgh	100%	11.43
1	Chara	4.80	fgh	100%	12.43
5	Rudd	4.68	fghi	97%	11.00
3	Sentinal	4.64	ghi	96%	12.47
4	Wedgetail	4.62	ghi	96%	11.83
8	HRZ02.0010	4.55	hij	95%	12.07
11	Eaglehawk	4.31	ijk	90%	13.33
10	Ruby	4.19	jk	87%	11.80
13	Sunzell	4.12	k	86%	13.37
18	LR03-0078	3.35	l	70%	14.07
Mean		4.81			11.74
LSD (P=.05)		0.37			0.88
CV		4.67			4.52

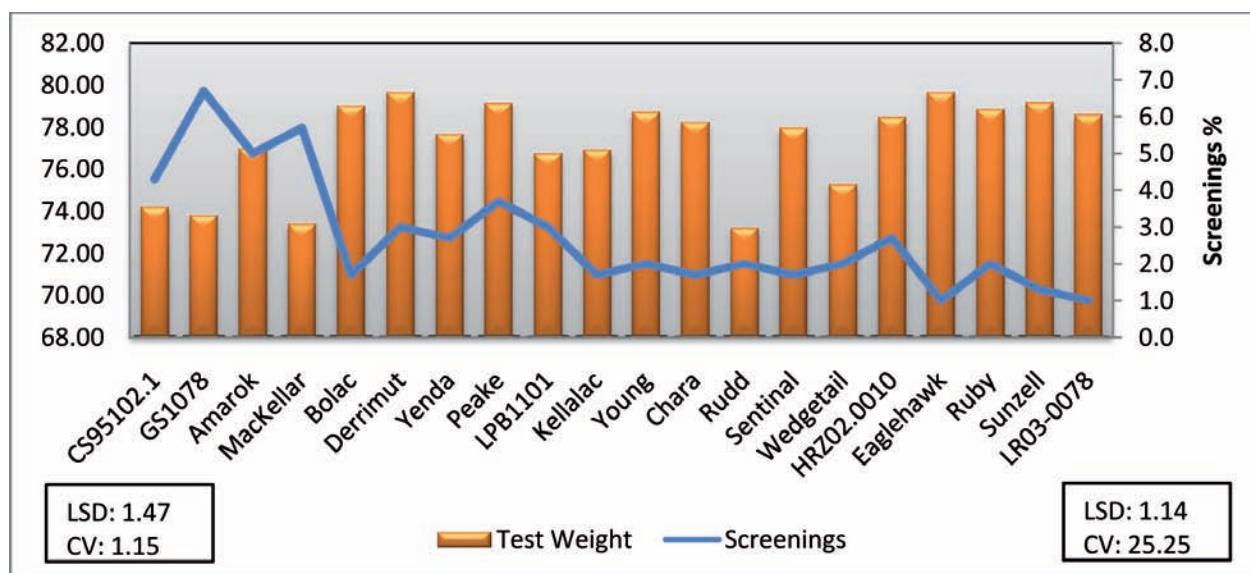
¹ Means followed by same letter do not significantly differ (P=0.05, LSD)

The top four highest yielding varieties at the Inverleigh site were all red wheats and of these, only Amarok and MacKellar are currently commercially available.

The top yielding variety CS95102.1, which comes from the CSIRO programme, has previously performed well in both grazed and ungrazed trials, has a similar maturity to Amarok and has good resistance to all the rusts. Like Amarok and GS1078, which also have good rust resistance, these three varieties averaged an extra 0.47t/ha from a simple two spray fungicide programme. In the absence of disease, this suggests that the fungicides extended the green leaf retention which the plant converted to grain yield with the higher rainfall in November and December.

It is also interesting to note that the grain protein of these three varieties is less than 11%, suggesting that grain yield would almost certainly have been increased had more nitrogen fertiliser been applied; grain protein will increase if sufficient nitrogen is applied to achieve season yield.

The white wheat varieties Derrimut, Bolac, Peake and LPB1101 have yielded well again for the second season in a row and are commercially available for the 2008 apart from the Longreach variety 1101. These varieties have to now become a serious consideration in cropping plans for 2008 as Chara and Kellalac both suffered significant yield penalties from stripe rust and even with a fungicide to protect them, only yielded the site average.



▲ Figure 2.1: Test weights and screening % for the varieties

There were some significant differences between varieties and their test weights. All the red feed wheats, except Amarok, had significantly lower test weights than the site average of 77.3kg/hl. With the higher level of screenings in these varieties, this lower test weight could be explained by the additional grains per ear that these varieties would have set as a result of the late rains. The single replicates in the trial which had no fungicide applied to them were for demonstration purposes. They were to show both the background disease pressure during the season and secondly, the individual varieties susceptibility and the impact the disease would have on its yield. Because there was only one replicate, we cannot apply any statistics to these figures.

▼ Table 2.3: Yield response to the fungicide sprays and the economic return

Variety Name	Response to Fungicide Sprays	Net Return on Fungicide \$/Ha
Amarok	0.64	226
Yenda	0.56	211
CS95102.1	0.53	182
Chara	0.43	155
Peake	0.37	129
Kellalac	0.33	112
Eaglehawk	0.29	95
GS1078	0.25	70
Derrimut	0.24	73
Wedgetail	0.24	73
HRZ02.0010	0.19	46
Bolac	0.19	52
Sunzell	0.10	13
Rudd	0.08	2
Young	0.06	-4
MacKellar	0.01	-26
Sentinal	0.01	-26
Ruby	-0.04	-47
LR03-0078	-0.15	-95
LPB1101	-0.21	-120

Grain is valued at \$400/t (Feed) and \$430/t (APW/ASW), cost of spraying Folicur @ 145ml/ha \$15/ha (per application)