

## 2.1.4 Winter wheat variety trial - Mininera, Vic

### Location:

Mininera Research Site.

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### Researchers:

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programme.

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funded trial.

### Background/Aim:

This trial compares a number of  
varieties that are either commercially  
available or close to commercial  
release that may be suitable for  
southwest 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 by  
comparing controlled leaf disease  
against an untreated check.  
Additionally, the management of  
inputs in the trial are based on the  
objective to gain the best margin per  
hectare.

### Paddock history:

2006: Wheat, 2007: Canola

**Soil type:** Sandy clay

### Soil nutrients:

N = 30mg/kg (0-10cm) + 7.4mg/kg  
(10-60cm),  
P = 51mg/kg (Colwell),  
K = 0.49 Meq/100g,  
S = 14mg/kg,  
pH (CaCl<sub>2</sub>) = 4.7

### Take home messages:

- The average foliar fungicide treated wheat yields for the Mininera winter wheat trial were 4.60t/ha. Rust activity was moderately low at this site in 2008, resulting in an average yield increase of 0.26t/ha across all varieties from the one spray fungicide programme, with 2 of the 8 varieties achieving a 19% or more yield increase from the single fungicide application – when compared to the untreated check.
- All 8 varieties achieved the F1 specifications based on NACMA classifications, consequently quality had no effect on profitability. The highest yielding variety was CS95102. 1 at 111% of the site mean, also the most profitable variety obtaining a gross margin of \$776.40/ha.

### Trial information:

Trial design consisted of a replicated randomised block design using 3 repetitions treated with foliar fungicide and leaving 1 repetition untreated, to demonstrate local disease pressure and varietal susceptibility. Plot lengths were 12 metres long and 1.45m wide. Rainfall was highly variable throughout the season, with a wet winter, then very dry Spring. Late rainfall in mid December did not contribute to the yield result of this trial.

### Rainfall:

Avg. Annual: 589.7mm Ararat Prison 1669-2008  
Avg. G.S.R.: 449.4mm Ararat Prison 1969-2008  
2008 Total: 534.0mm Mininera Research Site  
2008 G.S.R.: April – November = 330.5mm<sup>1</sup>

<sup>1</sup> Yield Potential: 1/3 of Dec (70.5mm), Jan (79mm) & Feb (14.8mm) with monthly totals above 20mm + 1/2 March (22.5mm) rainfall when total above 20mm + ((April – November rainfall) – 90mm\*) x 20kg/mm/ha. In total December-March adjusted rainfall to stored soil water = 61.0mm, plus April-November = 330.5mm, minus evaporation factor\* =>301.5mm. Therefore, for Mininera, the Winter wheat variety Trial water limited yield should be 6.03t/ha, or 301.5mm x 20kg/mm/ha.

### Treatment list:

8 new and current winter  
wheat varieties. Measurements  
included yield and grain quality  
components, including protein, test  
weight, screenings and resulting  
classification.

### Seeding equipment and row

**spacing:** SFS cone seeder using  
2.5cm knifepoints and Janke high V  
press wheel on 17.12cm (6 ¾ inches)  
row spacing.

### Sowing rate:

Seeding rate based on 1000 grain  
weight with a desire to establish 180  
plants/m<sup>2</sup>.

**Sowing date:** 14<sup>th</sup> May 2008

### Fungicides:

- 14/10/08 Opus @ 0.30L/ha

### Fertiliser:

- 14/5/08 MAP @ 100kg/ha
- 26/9/08 Urea @ 50kgN/ha
- 14/10/08 Coptrel @ 0.4L/ha

### Herbicides:

- 13/5/08 RoundUp PowerMax @1.50L/ha + Triflur 480@ 1.50L/ha + Striker @0.10L/ha
- 20/5/08 Dual Gold @ 0.25L/ha + Diuron @ 0.50L/ha
- 14/7/08 Hussar 0.20kg/ha + Lontrel @ 0.15L/ha + Hasten @ 1%
- 29/8/08 Axial @ 0.30L/ha + Precept @ 1.00L/ha + Adigor @ 0.5%

### Diseases:

Stripe rust activity was moderately low in the untreated section of the trial.

**Harvest date:** 9<sup>th</sup> January 2009

**Results and discussion:**

Overall, the yields achieved in this trial were somewhat disappointing; with a significant yield penalty incurred due to the lack of spring rain and a resultant dry finish. Of note, 95102.1 adapted well to conditions, yielding the highest at 5.11t/ha or 111% of the site mean. Conversely, Naparoo yielded significantly ( $P<0.05$ ) lower than all of the varieties except Brennan. Naparoo also appeared to shake a significant amount of grain onto the ground prior to harvest.

**Table 1:** Grain yield, corrected to 12.5% moisture, sprayed with fungicide and compared to unsprayed check. A percent of the site mean calculation, WUE calculation and quality classification potential is also included.

Variety	Yield (t/ha)	<sup>1</sup> Sig. Diff.	% of Site Mean	<sup>2</sup> WUE % of 6.03t/ha	Untreated Check (t/ha)
95102.1	5.11	a	111	85	3.96
Frelon	5.05	a	110	84	4.97
Beaufort	4.94	a	107	82	4.95
Einstein	4.69	ab	102	78	3.94
Mackellar	4.59	ab	100	76	4.57
Amarok	4.56	ab	99	76	5.03
Brennan	4.16	bc	90	69	3.94
Naparoo	3.68	c	80	61	3.36
<b>Mean</b>	<b>4.60</b>				<b>4.34</b>
<b>LSD <math>P=0.05</math></b>	<b>0.561</b>				
<b>CV</b>	<b>6.96</b>				

<sup>1</sup> Means followed by the same letter do not significantly differ ( $P<0.05$ , LSD).

<sup>2</sup> Water Use Efficiency percentages are calculated based on the water limited potential yield of Wheat at Mininera for the 2008 growing season; being 301.5mm x 20kg/mm/ha, or 6.03t/ha.

The one spray fungicide program resulted in an overall 0.26t/ha yield response, when averaged across all varieties, with 5 varieties achieving a 15% or more yield increase (when compared to the single unsprayed plot). Consequently, this shows value in the fungicide program, for the potential benefits in relation to disease control and green leaf retention. Therefore, fungicide programs should be treated like an insurance policy against disease with the potential bonus of increasing yield via green leaf retention.

**Table 2:** Grain quality analysis, including protein, test weight & screenings that contributes to final economic analysis of variety performance on a GM/ha basis (using standard inputs across all treatments of \$450/ha).

Variety	Protein % <sup>1</sup>	Test Weight kg/hl <sup>1</sup>	Screenings below 2.0mm <sup>1</sup>	Resultant Quality Classification	<sup>2</sup> GM \$/ha
<b>F1 Specs</b>		<b>62.0</b>	<b>15.0</b>		
SQP 95102.1	10.0	76.0	11.3	F1	<b>\$ 776.40</b>
Frelon	10.9	76.3	8.0	F1	\$ 762.00
Beaufort	10.3	74.7	10.0	F1	\$ 735.60
Einstein	10.5	75.4	12.0	F1	\$ 675.60
Mackellar	11.6	75.1	10.7	F1	\$ 651.60
Amarok	11.3	76.2	10.3	F1	\$ 644.40
Brennan	11.1	77.6	8.3	F1	\$ 548.40
Naparoo	10.5	75.3	10.7	F1	\$ 433.20
<b>Mean</b>	<b>10.79</b>	<b>75.81</b>	<b>10.17</b>		
<b>LSD <math>P=0.05</math></b>	<b>1.605</b>	<b>3.114</b>	<b>5.014</b>		
<b>CV</b>	<b>8.49</b>	<b>2.35</b>	<b>28.16</b>		

<sup>1</sup> Quality parameterisation is based on 2008-2009 NACMA Wheat Standards and should be used as a guide only.

<sup>2</sup> Prices for grain were taken as a spot price on the day of harvest and supplied by Riordan Grains; F1 = \$240/t.

Grain quality was not an issue for any of the varieties, with all varieties achieving Feed 1 (F1) specifications. Test weights were all 20% or more above the required 62.0kg/hl. A similar story in relation to screenings was exhibited, with all varieties well below the 15% requirement for F1. Therefore, 95102.1 achieved the highest yield and gross margin per ha, as the grain quality classification did not differ between varieties.

**Summary:**

Overall, only yield was significantly difference in relation to the 8 winter wheat varieties tested, as grain quality had no bearing on overall profitability for this trial. Therefore, SQP 95102.1 was the pick of the winter wheat in 2008 at Mininera, as it was the highest yielding and most profitable variety.

This winter wheat variety trial programme will continue annually with the support of both industry and researchers to constantly evaluate new varieties, as well as the disease susceptibility of current varieties on the market.