

## 2.4 Oats & Triticale

### 2.4.1 Oats & triticale variety trial - Mininera & Dunkeld, Vic

#### Location:

Mininera and Dunkeld Research Sites.

#### Funding:

This was an SFS Streatham and Hamilton Branch funded trial.

#### Researchers:

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#### Acknowledgements:

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#### Background/Aim:

Oat varieties are grown to suit the milling or feed markets. With a \$40.00/t discount from milling quality for the 2008 harvest, variety choice is important when trying to achieve the best possible gross margin. These trials aim to determine a yield and quality difference between oat varieties grown in the higher rainfall zone of Victoria.

Triticale is grown as a dual purpose crop, where it can be used for forage during the early growth stages and grown for yield by season's end. New varieties Tobruk (2007), Endeavour (2007) and Breakwell (2006) offer choice when selecting for maturity and disease resistance packages.

#### Paddock history:

Dunkeld: 2006: Pasture, 2007: Canola  
Mininera: 2006: Wheat, 2007: Canola

#### Diseases:

**Mininera** – The level of disease was relatively low at this site due to the season and late sowing.

**Dunkeld** – Stripe rust was present in several of the susceptible wheat varieties when untreated, but not visually obvious in the triticale. BYDV was present at various levels across the trial.

#### Take home messages:

- Oats yielded an average of 3.27 t/ha at Mininera and 3.16 t/ha at Dunkeld. The highest yielding variety was Echidna with 3.87 t/ha at Mininera. There were significant differences between varieties at both sites.
- No oat variety at either site was able to make milling grade. Test weights were all determined to be below the 51.0 kg/hl for milling classification as required by NACMA in 2008/2009.
- Triticale averaged 4.26 t/ha at the Dunkeld trial site for the 2008 season. All triticale varieties were unable to make the classification as none achieved the minimum test weight of 65.0 kg/hl as required by NACMA in 2008/2009.

#### Oats:

- Echidna – An old (1984), mid maturity, milling and feed variety, susceptible to foliar disease.
- Mitika – A mid maturity, milling and feed variety, with good resistance to foliar disease.
- Possum – Early to mid maturity, milling variety, with moderated resistance to foliar disease.
- Mannus – A new (2006), mid maturity, milling variety, with good resistance to foliar disease.

#### Triticale:

- Tobruk – A mid maturity, dual purpose variety, with resistance to stripe rust.
- Breakwell – A mid to late maturity, dual purpose variety, with moderate susceptibility to stripe rust.
- Endeavour – A mid to late maturity, dual purpose variety, with resistance to stripe rust.

#### Trial information:

Trial design consisted of a replicated randomised block design using 4 repetitions treated with foliar fungicide. Plot lengths were 12m long and 1.45m wide. Rainfall was highly variable throughout the season, with a wet Winter, then a very dry Spring. Late rainfall in mid December did not contribute to the yield result of this trial.

#### Rainfall:

##### Mininera

Avg. Annual: 612.2mm, 1991-2008, Hamilton Airport  
Avg. G.S.R.: 474.0mm, 1991-2008, Hamilton Airport  
2008 Total: 453.2mm, Dunkeld Research Site  
2008 G.S.R.: April – November = 298.1mm, Dunkeld Research Site.

##### Dunkeld

Avg. Annual: 612.2mm, 1991-2008, Hamilton Airport  
Avg. G.S.R.: 474.0mm, 1991-2008, Hamilton Airport  
2008 Total: 453.2mm, Dunkeld Research Site  
2008 G.S.R.: April – November = 298.1mm, Dunkeld Research Site.

#### Soil characteristics:

##### Mininera

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

##### Dunkeld

Soil Type: Eg. Sandy clay  
Soil Nutrients:  
N = 45mg/kg (0-10cm) + 10.1mg/kg (10-60cm),  
P = 45mg/kg (Colwell),  
K = 0.55 Meq/100g,  
S = 21mg/kg,  
pH (CaCl<sub>2</sub>) = 4.7

**Treatment list:**

Four current varieties of oats were used at the Mininera and Dunkeld trial site. Three current varieties of triticale were used at the Dunkeld trial site.

**Sowing dates:** 20/6/08 Mininera – Oats  
25/7/08 Dunkeld – Oats  
25/7/08 Dunkeld – Triticale

**Fertiliser:** Mininera Oats 100 kg/ha MAP (20/6/08), 50 kg N/ha urea (29/8/08)  
Dunkeld Oats 100 kg/ha MAP (25/7/08), 50 kg N/ha urea (26/9/08)  
Dunkeld Triticale 100 kg/ha MAP (25/7/08), 50 kg N/ha urea (26/9/08)

**Herbicides:** Mininera Oats  
20/6/08 Round Up @ 1.5L/ha + Striker @ 100ml/ha  
14/10/08 Tilt @ 250 ml/ha + Coptrel @ 400 ml/ha  
  
Dunkeld Oats  
14/7/08 Round Up @ 1.5 L/ha + Striker @ 200ml/ha  
29/7/08 Dual Gold @ 250 ml/ha + Diuron @ 500ml/ha  
15/10/08 Tilt @250ml/ha + Coptrel @ 400ml/ha  
5/11/08 Tilt @ 250 ml/ha  
  
Dunkeld – Triticale  
14/7/08 Round Up @ 1.5 L/ha + Striker @ 200ml/ha + Triflur @ 1.5 L/ha  
29/7/08 Dual Gold @ 250 ml/ha + Diuron @ 500ml/ha  
15/10/08 Opus @250ml/ha + Coptrel @ 400ml/ha  
9/9/08 Axial @ 300ml/ha + Adigor @ 500ml/ha + Precept @ 1.0 L/ha  
5/11/08 Opus @ 250 ml/ha

**Harvest date:** 24/12/08 Mininera – Oats  
6/1/09 Dunkeld – Oats  
6/1/09 Dunkeld – Triticale

**Results and discussion:**

Mininera trial site achieved an average yield of 3.27 t/ha for oats in 2008. This was 60% of the 5.54 t/ha yield achieved in 2007. Echidna (3.87 t/ha), Mitika (3.31 t/ha) and Possum (3.36 t/ha) all produced statistically similar yields, while Mannus yielded significantly less than the site mean at 2.47 t/ha. All varieties had a test weight below the minimum 51.0 kg/hl for milling grade oats (NACMA 2008/2009). Echidna had the highest screenings, a possible result from an inability to fill the grain for the higher yielding treatment.

**Table 1:** Mininera oats yield (t/ha), test weight (kg/hl) and screenings (%)

Variety	Yield (t/ha)	<sup>1</sup> Sig. Dif.	Test Weigh (kg/hl)	Screenings (%)	Untreated Yield (t/ha)
<b>Mininera</b>					
Echidna	3.87	a	46.70	12.33	4.11
Possum	3.36	a	46.53	4.33	3.56
Mitika	3.31	a	46.73	5.67	3.90
Mannus	2.54	b	41.70	5.67	2.28
<b>Mean</b>	<b>3.27</b>		<b>45.42</b>	<b>7.00</b>	<b>3.46</b>
<b>LSD</b>					
<b>P=0.05</b>	<b>0.728</b>		<b>2.445</b>	<b>1.451</b>	
<b>CV</b>	<b>11.14</b>		<b>2.69</b>	<b>10.38</b>	

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

**Table 2:** Dunkeld oats yield (t/ha), test weight (kg/hl) and screenings (%)

Variety	Yield (t/ha)	<sup>1</sup> Sig. Dif.	Test Weigh (kg/hl)	Screenings (%)	Untreated Yield (t/ha)
<b>Dunkeld</b>					
Echidna	3.81	ab	45.00	14.00	3.40
Possum	3.35	ab	47.50	8.00	3.40
Mannus	2.94	ab	44.10	7.33	2.60
Mitika	2.55	b	45.60	9.33	2.80
<b>Mean</b>	<b>3.16</b>		<b>45.53</b>	<b>9.67</b>	<b>3.05</b>
<b>LSD</b>					
<b>P=0.05</b>	<b>0.782</b>		<b>2.36</b>	<b>2.026</b>	
<b>CV</b>	<b>11.77</b>		<b>2.59</b>	<b>10.49</b>	

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

At the Dunkeld trial site, the oat trial achieved an average yield of 3.02 t/ha. Possum (3.35 t/ha) and Echidna (3.81 t/ha) were the highest yielding varieties for 2008 at Dunkeld; Mitika yielded significantly less with a treatment output of 2.55 t/ha. Again, all varieties had a test weight below the minimum 51.0 kg/hl for milling grade oats (NACMA 2008/2009). Echidna again had the highest screenings, possibly a function of variety and season.

The Dunkeld trial site achieved an average yield of 4.21 t/ha for Triticale in 2008. This is 61% of the average yield of 6.95 t/ha of the Hamilton NVT triticale trial in 2007. The highest yielding variety was Tobruk, however, this was not significantly different to the other varieties. All varieties had a test weight below the minimum 65.0 kg/hl for triticale classifications (NACMA 2008/2009) and all achieve a low screening percentage.

**Table 3:** Dunkeld triticale yield (t/ha), test weight (kg/hl) and screenings (%).

Variety	Yield (t/ha)	<sup>1</sup> Sig. Dif.	Test Weigh (kg/hl)	Screenings (%)	Untreated Yield (t/ha)
<b>Dunkeld</b>					
Tobruk	4.41	a	63.43	1.67	4.47
Breakwell	4.26	a	58.23	1.00	3.82
Endeavour	4.12	a	57.23	2.00	3.84
<b>Mean</b>	<b>4.26</b>		<b>59.63</b>	<b>1.56</b>	<b>4.04</b>
<b>LSD P=0.05</b>	<b>N.S</b>		<b>N.S</b>	<b>0.756</b>	
<b>CV</b>	<b>5.18</b>		<b>4.96</b>	<b>21.43</b>	
<b>Trt Prob (F)</b>	<b>0.362</b>		<b>0.119</b>	<b>0.049</b>	

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

#### Conclusion:

Moderate average yields of 3.27 t/ha at Mininera and 3.16 t/ha at Dunkeld were achieved for oat trials in the 2008 season. These may be attributed to the late sowing and dry finish to the season. Milling quality was not achieved due to poor test weights across both sites and all varieties.

Triticale achieved an average yield of 4.21 t/ha at the Dunkeld trial site.. The data was not significantly different for yield with grain quality was not achieved due to below classification test weighs in the 2008 season.