

## 5.4 TRITICALE

### 5.4.1 TRITICALE VARIETY TRIALS (SYMMONS PLAINS, TAS)

#### Abstract:

Eight triticale varieties and lines were evaluated. A new strain of stripe rust affected nearly all material, some severely eg Kosciusko. In other less susceptible material adult plant resistance ensured that at least the flag leaf was largely functional. Grain yields generally reflected the severity of stripe rust infection. Tahara still remains difficult to beat in terms of grain yield.

#### Researchers:

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#### Acknowledgments:

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**Fertiliser:** basal - 250kg 9:13:17  
topdressing - 46kg N/ha

#### Weed Control:

1.5l/ha MCPA, 750ml/ha Brominil -18 Aug 2004  
- 60ml/ha Affinity -1 Sep 2004

#### Background and Objectives:

Triticale is recognised for its tolerance to waterlogging, better leaf disease resistance and greater tolerance to acid soils compared with wheat. There are also perceived to be fewer difficulties associated with feeding of triticale grain to some livestock compared with wheat. The aim of this trial was to further compare existing triticale varieties and evaluate new breeding material.

#### Methodology:

Tahara	Vic
Tickit, Tx94-98	SA
Kosciusko, W47, AT509	NSW
Breakwell	Waratah Seeds
Monstress	Wrightson Seeds

The trial design was randomised complete block with 3 replicates.

**Growing season rainfall (April-Nov):** 386 mm

**Sowing date:** 27 May 2004

**Harvest date:** 19 January 2005

#### Results and Discussion:

The most significant outcome of this season was the loss of stripe rust resistance in nearly all varieties. The new strain that caused this damage is currently being ascertained at PBI, Cobbitty, NSW. Symptoms ranged from minor (Monstress) to severe (AT509, W47) and very severe (Kosciusko). Tahara, Tickit and Breakwell were ranked at moderately resistant to moderately susceptible.

Final grain yields reflect the severity of the disease with triticale yields being generally significantly lower than those of unsprayed wheat at the same site. Yields from W47, Kosciusko and AT509 were significantly lower than the other varieties as shown in the accompanying table. There was no statistically significant difference between yields of the top 6 lines.

With the lower disease incidence in Monstress it was expected that this variety would have the yield edge over other varieties. The stripe rust infection occurred quickly and early symptoms were severe. However, by mid October there was very little active rust in some of the varieties and the flag leaf of the less affected varieties was only partially infected. This left some leaf area for photosynthesis and allowed higher yields to be produced compared with the more susceptible varieties. Presumably this was a late form of adult plant resistance being activated.

Tahara continues to rank highly and is able to match it with other varieties particularly in the tougher years and when there are no frosts at flowering. In seasons with frosts at the end October/early November, later flowering lines perform relatively well. If in addition there is a reasonable finish to the season some of the later lines have yielded as much as 50% higher than Tahara. Over the last 3 seasons frost damage at flowering has not been a serious problem and so Tahara has yielded relatively well.

Due to the large variation in ranking of cultivars between years, seed from an early maturing (Tahara) and a late maturing cultivar (Tx94-98) was mixed with the idea that if the early line was affected by frosts the later flowering line could (at least partially) compensate for the grain losses. Conversely in a season with no frosts and a dry finish the early line could compensate for the lower yields of the late line. Such composite lines could provide a means of minimising fluctuations between years. In three years of trailing, the yield of the composite line has ranged from 91% to 101% of Tahara. A season with frost damage at flowering and/or a good finish will be necessary to test the theory. The original concept of composite lines overseas was to combat diseases by mixing varieties with different disease resistances. Perhaps this could be employed with different stripe rust resistances if there is limited resistant germplasm.



**Results:**

**Table 1: Grain Yields**

Variety	Yield (t/ha)	% Tahara
Tahara	6.38	100.0
Tickit	6.36	99.8
Tahara + Tx94-98	6.34	99.4
Monstress	6.26	98.2
Tx94-98	6.17	96.8
Breakwell	6.11	95.8
AT509	4.61	72.3
Kosciosko	3.99	62.5
W47	2.80	44.0
<b>LSD</b>	<b>0.52</b>	
<b>CV%</b>	<b>5.5</b>	

**Conclusions:**

If triticale is to continue as a cereal option new germplasm with stripe rust resistance is required. This may prove difficult given the lack of diversity of triticale germplasm in Australia. Fungicides can be used but triticale is generally grown as a low maintenance crop. The susceptible varieties will now be dropped from further evaluation.

It has proven difficult (and frustrating) to select a new triticale variety that is consistently higher yielding than Tahara. This appears to be complicated by greater variety by site interaction as well as variety by year interaction in comparison with wheat trials. With the new strain of stripe rust most of the previous front runners ie Kosciusko, W47 and AT509 have been made obsolete. Only Tickit remains as a serious contender with a long-term average only 2-3% higher than Tahara.

**Further details:**

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**LEE IRRIGATION  
DESIGN**

WHOLE FARM  
PLANS

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DRAINAGE  
DESIGN

**5823 5152  
0419 537 463**

Logos: IAA, ISDG, and contour lines (98, 99, 100).