

5.4 TRITICALE VARIETY TRIALS - SYMMONS PLAINS AND RICCARTON TASMANIA

Location:

Symmons Plains,
Riccarton (Campbell Town) Tasmania

Researchers: Geoff Dean (SFS Ltd)
Simon Munford (DPIWE)

Growing season rainfall (April-Nov):

Symmons Plains	489 mm
Riccarton	324 mm

Background:

With the release of new varieties, greater awareness of potential yields and improved management practices, there has been a large increase in the area sown to wheat and triticale in Tasmania. Triticale plantings have increased due to awareness of tolerance to waterlogging, better leaf disease resistance and greater tolerance to acid soils compared with wheat.

Aim:

To further compare existing triticale varieties and evaluate new breeding material.

Results and Discussion:

Results are presented in the Table 58. The Symmons Plains site, usually reliable for relatively high yields, was inundated with water for over 3 months and waterlogging damage was severe (decile 7 rainfall over winter). In contrast, Riccarton experienced very little waterlogging. Both sites suffered from a very dry finish but Riccarton benefited from a 30mm rainfall event in mid-November.

Tickit yielded better than Tahara at both sites but this was not statistically different at Riccarton. However the long term average of Tickit is still only marginally better than Tahara. Tahara continued to rank highly and appears to be able to match it with other varieties in the tougher years and also when there are no frosts at flowering. In seasons with frosts at the end October/early November, later flowering lines such as AT509 and Tx94-98 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 2 seasons frost damage at flowering has not been a 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.

Treatments:

Main entries and their origin are listed below:

Tahara, Vic
Treat, Tickit, Tx94-98 SA
Kosciosko, Everest, W47, W83, AT509, NSW
Breakwell, Sun prime Seeds

Sowing date: Symmons Plains - 12 May 2003
Riccarton - 12 May 2003

Harvest date: Symmons Plains - 19 Jan 2004
Riccarton - 15 January 2004

Fertiliser: *Symmons Plains*
basal - 250kg 9:13:17
topdressing - 60kg N/ha
Riccarton
basal - 150kg 9:13:17
topdressing - 50kg N/ha

Weed Control: *Symmons Plains*
1.5l/ha MCPA, 750ml/ha Dicamba,
Riccarton
3l/ha 2, 4-D amine + 700ml/ha
Dicamba

Conversely in a season with no frosts and a dry finish the early line could compensate for the lower yields of the late line. While one particular farmer has called this "giving up on breeding" composite lines could provide a means of minimising fluctuations between years. In two years of trialing 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.

Statistically, the yields of Tickit and Tahara were only significantly higher than that of W47 and Treat at Riccarton. At Symmons Plains both Breakwell and Tickit were significantly higher yielding than Tahara.

The results from Symmons Plains to some degree reflect differences in waterlogging tolerance. Breakwell was clearly more waterlogging tolerant than other lines. This partly relates to being later maturing, growing less vigorously during the waterlogging stress and consequently requiring less oxygen. However AT509 is also relatively late maturing and did not rank well at Symmons Plains. W47 showed less stress symptoms than other early lines and yielded relatively well. In contrast Treat exhibited extensive waterlogging damage and was very low yielding. There is some question over the self-fertility of Treat and if it is reliant on some cross pollination, grain set will be more reliant on environmental conditions that can affect pollen viability.

Table 58: Triticale Trial Results - Grain Yields From Campbell Town and Symmons Plains

Riccarton			
	Variety	Yield (t/ha)	% Tahara
<u>Replicated plots</u>	Tickit	5.04	103.7
	Tahara	4.86	100.0
	Tx94-98+Tahara	4.73	97.3
	W83	4.69	96.5
	Everest	4.47	92.0
	AT509	4.47	92.0
	Kosciosko	4.51	92.7
	W47	4.41	90.7
	Treat	4.16	85.5
<u>Observation plots</u>	Tx94-98		94.4

Symmons Plains			
	Variety	Yield (t/ha)	%Tahara
<u>Replicated plots</u>	Breakwell	1.70	117.5
	Tickit	1.61	111.5
	W47	1.48	102.5
	Tahara	1.44	100.0
	Tx94-98+Tah	1.44	99.9
	Kosciosko	1.38	95.7
	AT509	1.30	90.0
	Treat	1.18	81.7
<u>Observation plots</u>	W83		98.5
	Tx94-98		88.3
	Everest		86.4

The yield of AT509 was disappointing at both sites. Being relatively late maturing it could be expected to avoid some of the waterlogging damage at Symmons Plains and capitalise on the late rain at Riccarton. This line has yielded well in more favourable seasons.

Kosciosko is slightly earlier than Tahara and was probably disadvantaged by the conditions at both sites. It has a long term average 3% higher than Tahara in Tasmania.

Conclusions:

It was disappointing to experience so much waterlogging damage at Symmons Plains – it was however the wettest winter in that area for over 50 years. Sowing on raised beds would overcome the problem but our harvesting facilities on raised beds are such that we cannot maintain pure seed. Wheat yields from the same site have not been analysed yet but were overall probably 10-20% lower. However some wheat varieties were able to match the triticale germplasm.

In the first year of trialing, Breakwell performed exceptionally well but requires further testing over more sites. It is possible that without a major waterlogging stress, Breakwell may have no yield advantage. It was noted that this variety grew taller than other lines and so lodging could be a problem in a good season.

It has been difficult 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. The front runners after six years of trials are Kosciosko, W47, Tickit and AT509.