Leaf Rust in Barley 2011

Individual Trial Results

GRDC
Grains
Research &
Development
Corporation
Your GRDC working with you

Trial: RD1117

Location: "Waronga", ~3 km north east of Macalister, Qld

Planting date: 9/6/2011

Plot size: 12 x 4m on 25cm row spacings

Trial design: Randomised complete block with four replicates

Spray parameters: AIXR110015 at 70 L/ha (300 kPa and 10.1 km/hr)

Variety: Grout

		Crop stage	Leaf rust level
Spray timing 1:	6/8/2011	~GS31 (first node)	Trace
Spray timing 2:	24/8/2011	~GS44-49 (mid boot to awn peep)	Nil

Leaf rust comments:

At Timing 1, leaf rust was found at trace levels only with no leaf rust apparent at timing 2. Leaf rust levels increased most rapidly in the Untreated at the end of September with levels on Flag-2 increasing from ~5% on the 23rd of September to ~18% on the 4th of October. The graph below shows the level of leaf rust diseased leaf area on the 4th of October (59DAT1, 41DAT2).
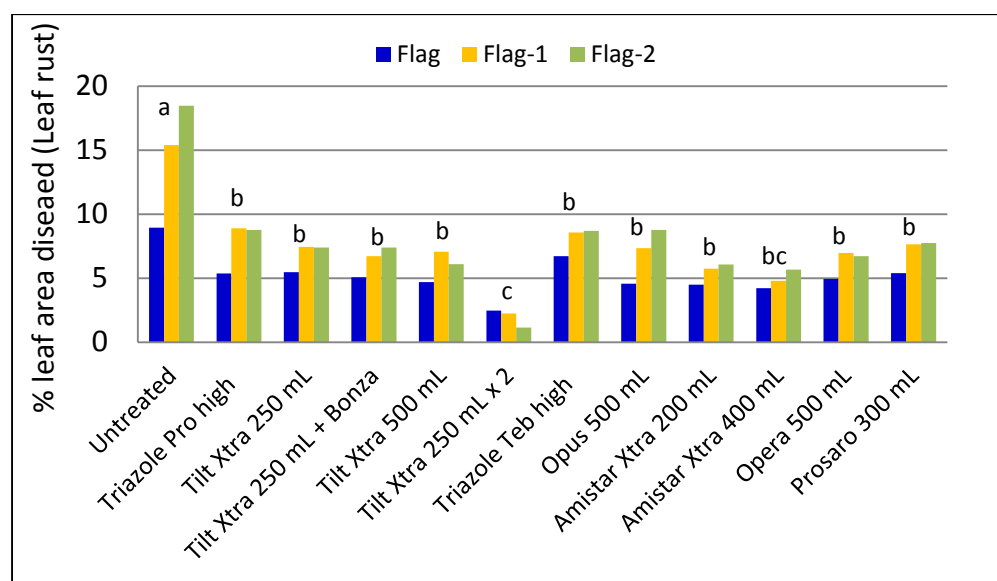

Letters of comparison are for the mean of the top 3 leaves, p=0.05. Treatments sharing the same letter are not significantly different

Key messages – leaf rust disease severity:

- Disease levels were moderate with significant levels of suppression from all fungicides
- It would appear that timing 1 applications were made at least 4 weeks prior to active disease development with most rapid leaf rust build-up from ~mid-September onwards
- Two fungicide applications of Tilt Xtra 250 mL provided the highest level of control with the second application still ~1-2 weeks prior to active disease development

- Amistar Xtra trended to provide the best control from a single application at timing 1 and resulted in ~65% suppression on the top 3 leaves
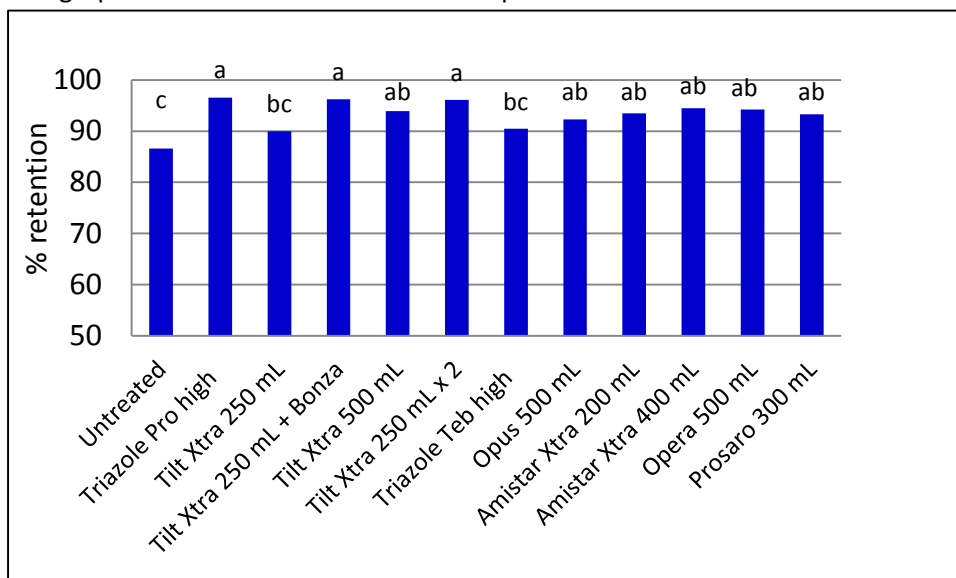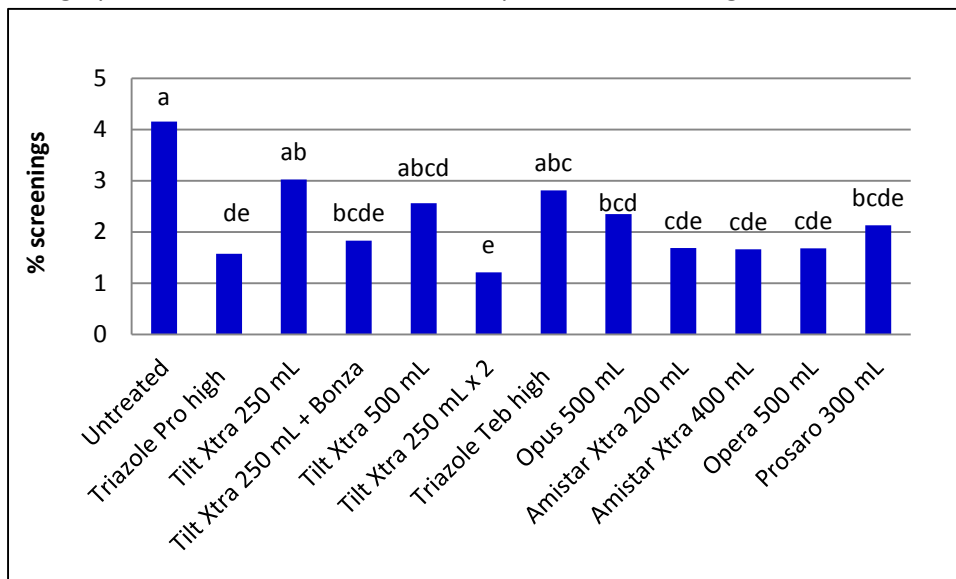
Yield:
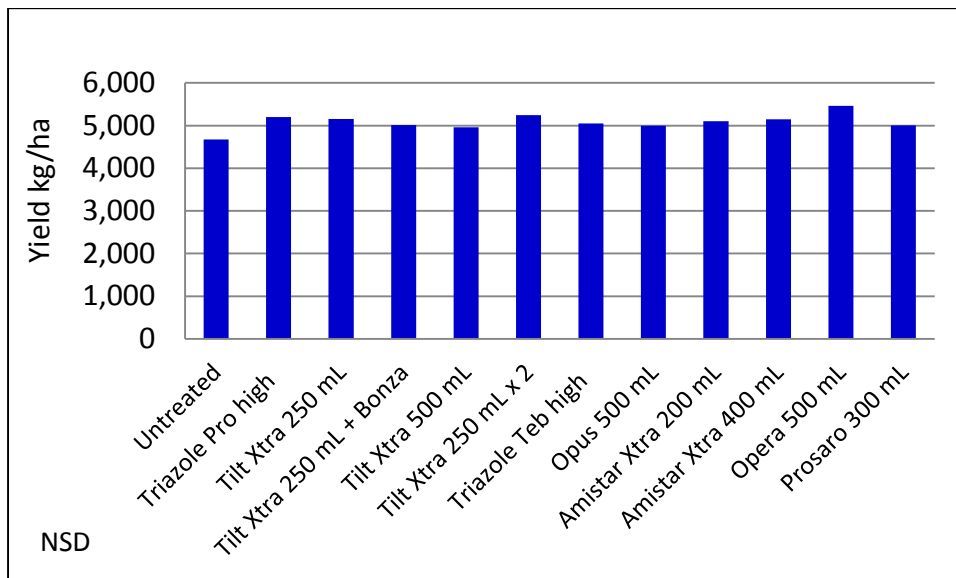
Harvested 4th November, cv 6%

Grain quality:

Grain analysis showed no significant difference in test weight (mean 61 kg/hL) or protein (mean 11%). However there were significant differences in retention and screening. Untreated retention was ~87% and significantly lower than 9 of the 11 fungicide treatments. Untreated screenings were ~4% and significantly higher than 8 of the 11 fungicide treatments.

The graph below shows the treatment impact on % retention.

The graph below shows the treatment impact on % screenings.

Key messages – yield and grain quality:

- There was no significant impact from any fungicide treatment on yield. However the mean yield of all fungicide treatments was 9% higher than the Untreated with a range from 6-17% higher.
- There were significant differences in both retention and screenings. Tilt Xtra 250 mL (timing 1 only) and Triazole Teb provided the least benefit and were not significantly different from the Untreated for either assessment.

Conclusion:

This trial was sprayed on first sign of leaf rust but under conditions where the disease did not develop rapidly until at least 4 weeks later. Under that situation, the performance from all single application fungicide treatments in providing ~45-65% leaf rust suppression was encouraging. The standout disease control was achieved from two applications of Tilt Xtra 250 mL with the second application still applied ~1-2 weeks before active disease development. Of the single application treatments, Amistar Xtra 400 mL provided the highest level of leaf rust suppression (~65%) on the top 3 leaves, more than 8 weeks after application. This trial design unfortunately did not include a timing 2 application alone. It is expected that a single fungicide application at this timing alone would have provided a high level of control.

Acknowledgments: Thanks to Jason Schelberg (trial co-operator) and Rob Duncan (NGA) for field activity