

## Control of net form net blotch in barley – fungicide trials 2011

Rohan Kimber & Hugh Wallwork – SARDI

### Key findings

- Control of net form net blotch using effective fungicides resulted in yield increases of up to 1.0 t/ha compared to nil treatments.
- Two strategic fungicide applications during early-mid growth stages (before end of August) – suppressed disease development and provided control comparable to four applications made every 2-4 weeks from early August.
- Tilt®, Amistar Xtra®, Opera® and Prosaro® were effective for control of net form of net blotch.

### Why do the trials?

To evaluate fungicide efficacy against net form net blotch (NFNB) of barley and investigate application strategies for efficient control of the disease.

### How was it done?

Two field trials were conducted during 2011, one at Port Vincent and one at Arthurton on the Yorke Peninsula. Four fungicide products were evaluated; Tilt® (500 ml/ha), Amistar Xtra® (200 ml/ha), Opera® (500 ml/ha) and Prosaro® (150 ml/ha) and five application strategies based on timings of Aug 9 (T1) at GS32, Aug 21 (T2), Sept 1 (T3) and the final application (T4) made on Sept 14 (Port Vincent) or Sept 29 (Arthurton). Treatments were a single application at T1, two fungicide applications at T1&T2, T2&T3 or T3&T4 and a 'complete' treatment (four fungicide applications at T1-T4). A control treatment; nil (no fungicide) was also included. The Port Vincent trial was conducted as 'in-field plots' within an established crop, whereas the Arthurton trial was sown and managed as trial plots; both were conducted with cv Maritime. Disease was assessed on Sept 16 at both sites, recording % Leaf Area Diseased (LAD) on the mid-canopy foliage, and later on October 12 at the Arthurton site. This assessment was not conducted at Port Vincent due to dry conditions. Yield data was collected for both trials.

### Results

Net form net blotch established at both sites. On Sept 16, moderate levels (>40% LAD) were observed in uncontrolled plots at Arthurton compared to higher levels (>60% LAD) at Port Vincent. Tilt®, Amistar Xtra®, Opera® and Prosaro® all exhibited significantly less disease than the nil control plots at both sites. Analysis showed fungicide treatments with a single application (T1) or two strategic applications later in the season (T3&T4) exhibited the highest disease levels at both sites (>10% LAD at Arthurton and >30% LAD at Port Vincent) compared to other treatments. Strategies consisting of two early applications (T1&T2) or two applications during mid-growth stages (T2&T3) showed the lowest levels of disease, and these were comparable to the 'complete' treatments using four fungicide applications (T1-4).

Final disease assessments and yield data for all treatments at both sites are presented in Table 1. Yields up to 3.6 t/ha were recorded at Port Vincent. The lowest yields were in untreated plots and treatments using a single application of

fungicide, which were significantly lower than all other fungicide treatments evaluated.

Yields up to 4.4 t/ha were recorded at Arthurton but only treatments using Tilt ® applied at T2&T3 and the complete treatment using Opera ® were significantly higher than the nil treatment.

## Summary

Severe net form net blotch can develop on susceptible cultivars of barley when exposed to high inoculum loads (eg. infested residues) and when conditions and frequent rain events favour disease spread. Tilt ®, Amistar Xtra ®, Opera ® and Prosaro ® were effective fungicides for control of the disease in two field trials evaluated in 2011, under moderate to high disease pressure. Control of the disease was most effective when strategic applications were made at the onset of disease and during the mid-stages of crop development. However, later applications may be required in seasons when warm and wet conditions persist in spring. Late season applications of fungicide risk yield loss in crops by allowing early infections to spread and promote high inoculum levels in the crop.

*Table 1: Fungicide treatments evaluated control of net form net blotch on barley (cv Maritime) at two trial sites during 2011. Disease (%LAD) was assessed on mid-canopy foliage after final treatment applications and grain yield (t/ha) at harvest.*

Entry	Treatment <sup>a</sup>	Port Vincent Trial		Arthurton Trial	
		NFNB Sept 16 (%LAD mid-canopy)	Yield (t/ha)	NFNB Oct 12 (%LAD mid-canopy)	Yield (t/ha)
1	Opera T1	38.8	2.54	15.0	3.79
2	Amistar Xtra T1	32.5	2.82	23.3	3.98
3	Prosaro T1	31.3	2.64	25.0	3.63
4	Tilt T1	35.0	2.81	21.7	4.16
5	Opera T1&T2	23.8	2.87	11.7	3.79
6	Amistar Xtra T1&T2	18.8	3.00	11.7	4.08
7	Prosaro T1&T2	18.8	3.06	13.3	3.72
8	Tilt T1&T2	23.8	3.10	5.0	4.07
9	Opera T2&T3	22.5	3.25	8.3	4.00
10	Amistar Xtra T2&T3	26.3	3.39	8.3	4.12
11	Prosaro T2&T3	30.0	3.22	10.0	4.13
12	Tilt T2&T3	21.3	3.26	8.3	4.40
13	Opera T3&T4	35.0	3.33	15.0	3.98
14	Amistar Xtra T3&T4	40.0	3.43	11.7	3.70
15	Prosaro T3&T4	37.5	3.19	18.3	4.09
16	Tilt T3&T4	36.3	3.37	10.0	3.94
17	Opera T1-T4	11.3	3.63	4.0	4.39
18	Amistar Xtra T1-T4	15.0	3.60	8.3	4.08
19	Prosaro T1-T4	13.8	3.25	8.3	3.91
20	Tilt T1-T4	13.8	3.42	5.0	4.16
21	Untreated	63.8	2.59	28.3	3.66
-	<b>LSD (0.05)</b>	<b>9.5</b>	<b>0.38</b>	<b>12.3</b>	<b>0.65</b>

## Acknowledgements

Peracto SA, and their co-operators, for a professional service conducting and managing field trials. The Grains Research Development Corporation provided financial support for this study. The Hart Field-Site Group Inc. and Stuart Sherriff of SARDI (Clare) for the management of a field site located at Hart (data not presented as disease failed to establish).