

4.2.3 BARLEY FOLIAR DISEASE TRIAL - HAMILTON (DPI)

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Location: Hamilton

Aim:

To assess the timing of fungicide application to determine the optimal time of application to minimise disease pressure and to assess the role of triticonazole as a seed dressing to minimise the affect of foliar diseases on Barley.

Trial Design: 10 treatments * 3 reps

Variety: Gairdner Barley

Sowing Rate: 100 kg/ha

Sowing Date: 23rd May

Fertiliser: 100 kg/ha DAP

Seed Dressing:

Triticonazole @ 150ml per 100 kg of seed

Fungicide:

Propiconazole @ 500 ml/ha

Fungicide Timing:

GS 31 (first node) 8th September

GS 37 (flag leaf just visible) 30th September

GS 55 (ear half emerged) 15th October

Background:

In many seasons in the Western Districts foliar diseases are responsible for limiting both high barley yields and acceptable quality standards necessary to achieve malting. The climate and the dense crop canopies we produce result in high disease pressures and are conducive for the disease to modify its strain to attack previously resistant varieties. For example Gairdner is no longer considered resistant to scald due to new races of the disease being identified in both commercial crops and breeding trials.

Over the last couple of seasons, significant levels of scald have been observed in hot spots in south western Victoria and the southern Wimmera showing that a Gairdner virulent strain is becoming more widespread. Hence the use of seed treatments incorporating a systemic fungicide are recommended to assist in the control of scald and other foliar diseases.

Results:

Table 53: The Yield of Gairdner Barley for Different Fungicide Timings

Fungicide Timing	Yield (t/ha)	
	Seed Dressing	
	Nil	Triticonazole
Nil	6.54	6.69
GS 31	7.08	6.67
GS 37	6.76	7.14
GS 55	7.01	6.87
GS 31, 37 & 55	7.39	7.35
Least significant difference	0.41	
CV %	3.40	

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Table 54: The Yield Of Gairdner Barley Versus Levels of Leaf Disease

Treatment	Yield (t/ha)	% Leaf Area Affected Due to Scald	% Leaf Area Affected Due to Leaf Rust	% Green Leaf Area
Nil	6.54	29.40	31.14	25.78
GS 31	7.08	14.22	28.14	35.93
GS 37	6.76	1.33	20.83	64.17
GS 55	7.01	7.22	10.73	73.90
GS 31 +37 + 55	7.39	0.38	4.32	83.42
Seed dressing	6.69	32.32	30.33	23.45
Seed dressing + GS 31	6.67	19.14	25.74	38.92
Seed dressing + GS 37	7.14	1.83	18.17	67.58
Seed dressing + GS 55	6.87	3.50	13.10	69.30
Seed dressing + GS 31 +37 + 55	7.35	0.38	7.82	83.62
LSD (5%)	0.41	5.51	11.15	9.37

The analysis of Leaf Area Affected (LAA) and Green Leaf Area (GLA) were taken for the flag leaf and the second leaf. These readings were taken in early November after flowering.

Discussion:

Both Barley Scald and Leaf Rust were observed at high levels in the trial this year.

There were significant differences between the treatments with the best results obtained from the treatments with three separate applications. This equated with the levels of leaf disease in the plots. The plots with the highest levels of disease (and the lowest percentage of green leaf area) were generally the treatments with the lowest yield.

The barley plots that were sprayed at growth stage 31 (first node), had significantly lower levels of scald than the plots that had no fungicide applied, however it did not have a significant effect on the level of leaf rust. The later applications of propiconazole (GS 37 flag leaf just visible) and GS 55 (ear half emerged)) resulted in significantly lower levels of infection of both scald and leaf rust.

Although it did not automatically result in a significant yield increase, the three applications of fungicide had the higher yields as well as the lower levels of disease infection, although economically it was not much better than a single application.

The use of triticonazole as a seed dressing did not result in a significant difference between treatments. Generally it is recognised that seed treatments that suppress early scald infection should be an essential part of effective scald management especially when susceptible varieties are grown. Seed treatments are available that will give 6 to 8 weeks protection. As the triticonazole did not appear to have any effect on the scald it is possible that the infection occurred later in the season with the spores blown in from infected crops or barley grass elsewhere in the district.