

3. DISEASE MANAGEMENT TRIALS

3.1 WHEAT

3.1.1 OPTIMISING FUNGICIDE STRATEGIES FOR MORE DISEASE RESISTANT WHEAT CULTIVARS (INVERLEIGH, VIC)

Abstract:

Whilst MacKellar broke down to stripe rust in the Tasmanian trial and leaf rust in parts of Victoria, there was no sign of disease in trials at the SFS site at Inverleigh. Against this background and recorded yields in the 3 – 3.5 t/ha range, there were no visible benefits from fungicides in this trial. As a consequence, at present until disease issues become more widespread with MacKellar, any expenditure on fungicides should be monitored extremely closely and linked to the presence of disease in the key growth stage period of GS32–59 (second node to ear emergence).

With one exception (Hamilton in 2002) there have been no significant yield responses to fungicide in MacKellar unless disease was present (as was the case in Tasmania in 2003 when stripe rust was found at low levels in the untreated).

Over 2 years it is noticeable that most of the treatment yields have been higher than the untreated control rather than equally spread either side of the untreated yield. This suggests that there is a trend for a very small (non significant) and at this stage uneconomic yield response being produced by spraying MacKellar. This may relate to extremely low levels of a number of diseases that have never become significant to register as a major yield robber.

Methodology:

MacKellar wheat was sown on 11th June 2004 at the main Inverleigh trial site. The planting population target was 200 plants/m². The crop was top dressed with 56 kg/ha N (10 kg/ha N at sowing and 46 kg/ha N GS30/31 on the 1st October). Fungicides were targeted at one of 2 different timings, GS32 (second node) and GS39 (flag leaf emergence). The actual dates of application were 5th October (GS32) and 22nd October (GS39). The treatments are listed in Table 1.

Researchers:

Nick Poole, Foundation for Arable Research, New Zealand;
Col Hacking and Dominic Bolton, Southern Farming Systems Ltd.

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Funding Organization:

GRDC Project Code SFS00006

Location: Inverleigh, Victoria

Growing Season Rainfall: (April–Nov): 388mm

Background/Objectives:

In Hamilton in 2002 a single high yielding trial suggested that strobilurin addition gave yield increases in the absence of disease (a phenomenon that is experienced in some seasons in the rainfall zones of Europe and New Zealand). To date this trial result has not been repeated in the project. These trials taking place in southern Victoria and Tasmania were conducted to examine the response of more disease resistant varieties to triazole and strobilurin fungicides in the near absence of disease. With MacKellar having been affected by stripe rust for 2 seasons in Tasmania, yield responses in those trials are starting to resemble patterns experienced with more disease susceptible cultivars.

Thus it is the Inverleigh trials on MacKellar that have examined fungicide effect in the absence of disease. The 2002 and 2003 results at Gnarwarre gave no statistically significant benefits from fungicide application on MacKellar.

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Table 1: Products (ml/ha) and Timings for Foliar Fungicide Evaluation

Trt No.	Fungicide Timing (ml/ha)	
	GS32 (second node, flag minus 2 emerging)	GS39 (Flag leaf emerging)
1.	----	Folicur 145
2.	----	Folicur 145 +Az 250
3.	----	Folicur 145 +Az 500
4.	----	Folicur 145 +Az 1000
5.	----	Amistar Xtra 625
6.	Folicur 145	Folicur 72.5

Trt No.	Fungicide Timing (ml/ha)	
	GS32 (second node, flag minus 2 emerging)	GS39 (Flag leaf emerging)
7.	Folicur 72.5 +Az 125	Folicur 72.5 +Az 125
8.	Folicur 72.5 +Az 250	Folicur 72.5 +Az 250
9.	Folicur 72.5 +Az 500	Folicur 72.5 +Az 500
10.	Amistar Xtra 312.5	Amistar Xtra 312.5
11.	Untreated	

Explanatory notes on new fungicides:

Az = Amistar[®] 250 SC contains 250 g/l azoxystrobin, thus 500ml/ha applies 125g/ha active ingredient.

Folicur[®] contains 430g/l tebuconazole, thus 145 ml/ha applies 62.5g/ha active ingredient.

Opus[®] contains 125g/l epoxiconazole, thus 250ml/ha applies 31g/ha active ingredient.

Amistar Xtra[®] contains 200g/l azoxystrobin and 80g/l cyproconazole thus at 625 ml/ha applies 125g/ha azoxystrobin and 50g/ha cyproconazole active ingredient.

Results and Discussion:

There were no visible effects of the fungicide applications in this trial.

Table 2: The Influence of Fungicide Application on Yield (t/ha and % Control) and Quality (% Protein, % Screenings 2.2mm, Test Weight kg/hl and TSW (Thousand Seed Weight - Selected Treatments Only)) - Inverleigh, MacKellar

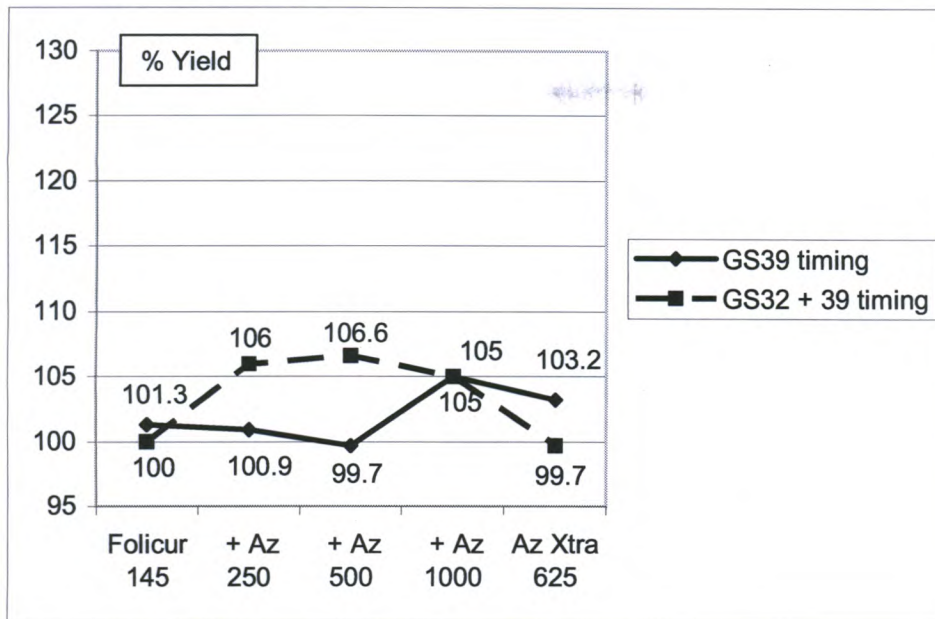
Product	Timing of applic'n	Rate (ml/ha)	Yield (t/ha and % control)			Quality data		
			t/ha	%	% Pr.	% Sc	Kg/hl	T.G.W
Folicur [®]	GS39	145	3.21	101.3	9.8	8.2	78.8	40.1
Folicur [®] + Amistar [®]	GS39	145 + 250	3.20	100.9	9.6	7.4	78.5	*
Folicur [®] + Amistar [®]	GS39	145 + 500	3.16	99.7	9.9	8.7	79.1	*
Folicur [®] + Amistar [®]	GS39	145 + 1000	3.33	105.0	10.3	7.5	78.3	39.8
Amistar Xtra [®]	GS439	625	3.27	103.2	10.1	7.8	79.0	*
Folicur [®]	GS32 +39	72.5 x2	3.17	100.0	9.5	7.1	78.5	40.6
Folicur [®] + Amistar [®]	GS32 +39	(72.5 + 125) x2	3.36	106.0	10.0	6.4	78.8	*
Folicur [®] + Amistar [®]	GS32 +39	(72.5 + 250) x2	3.38	106.6	10.3	7.2	79.2	*
Folicur [®] + Amistar [®]	GS32 +39	72.5 + 250) x2	3.33	105.0	10.4	8.7	78.4	40.1
Amistar Xtra [®]	GS32 +39	312.5 x2	3.16	99.7	10.1	10.7	78.1	*
Untreated			3.17	100.0	10.0	7.6	78.4	39.1
LSD (5%)	CV 8.5%		0.40		0.7	2.6	1.3	1.4

Fungicides created no statistically significant yield responses in this trial (Table 2.) There were no significant effects on grain quality. The results are similar to last season in that most of those plots receiving fungicide were higher yielding than the untreated, but the difference was not consistent enough or large enough for it to be deemed significant (p=0.05).

In terms of absolute figures, there was a mean yield increase of 2% from the GS39 timed applications and 3.5% from the GS32/39 two spray applications applying the same amount of active ingredient. (Graph 1)

Particularly with the split application, there appeared to be small benefits to strobilurin over and above the straight Folicur (triazole) application, but these are not significant.

Graph 1: Influence of Strobilurin Addition to Folicur (Az = Amistar) on % Yield Relative to Untreated Yield Equal To 100



Az = Amistar

Conclusions:

Last season there were small yield increases of 6% to the Folicur treatment at GS39, with no benefit of the split application over the single dose. However though positive, these yield effects were not significantly different to the untreated.

Strobilurins created no positive effects other than at the very highest rate and again these were not significant.

Other than keeping a watching brief for the further spread of stripe and leaf rust strains affecting MacKellar, it does not appear to be a candidate for fungicide input.

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