CONTROL OF SPOT AND NET TYPE NET BLOTCH OF BARLEY

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SUMMARY

Four commercially available fungicides were compared for control of 'spot' and 'net' type net blotch of barley caused by *Pyrenophora teres* in field trials in the Wairarapa during 1986-87. One spray application of propiconazole or prochloraz following emergence of the flag leaf gave good control of both types of net blotch. A significant yield increase was obtained with propiconazole on Zephyr ('net' type).

INTRODUCTION

Net blotch of barley is caused by *Pyrenophora teres* Drechsler (anamorph *Drechslera teres* (Sacc.) Shoemaker). Outbreaks of the disease result from inefficient seed treatment or from infected debris and volunteer plants from previous crops. In most seasons in the North Island early infections result in an epidemic unless an effective fungicide is applied. Good control of net blotch has been obtained with the ergosterol biosynthesis inhibitor (EBI) fungicides propiconazole and prochloraz and economic yield increases have been obtained (Sheridan *et al* 1983).

In the 1985-86 season a new type of net blotch, known as the 'spot' type (*Pyrenophora teres* f. *maculata*), distinct from the common 'net' type (*Pyrenophora teres* f. *teres*) was identified in New Zealand. Currently used foliar fungicides did not appear to give adequate control (Sheridan, Grbavac unpub.). Trials were set up in the 1986-87 season to investigate the effectiveness of propiconazole and prochloraz for control of 'spot' and 'net' type net blotch. Flutriafol and a mixture of triadimenol + tridemorph were included for comparison.

MATERIALS AND METHODS

Seeds of cv Kym and Zephyr barley, naturally infected with 'spot' and 'net' type of net blotch respectively, were sown at 150 kg/ha on 8 November 1986 in two blocks separated by a block of wheat (20m) at Ahiahu in the Wairarapa district of the North Island. Following emergence, plots (20 x 2m) were marked out, separated by a 1m strip made by rotary hoeing. Fungicides (Table 1) were applied to five replicates using a knapsack sprayer, at 200 kPa fitted with three Allman "O" nozzles and applying 300 litres/ha on 27 December 1986 (Feekes G.S. 10.2 for Kym and 10.3 for Zephyr). "Citowett" was added at 1 ml/10 litres water.

Severity of net blotch was assessed as percent area occupied by lesions on 1 and 21 January and 24 February 1987 on the upper three leaves of 10 plants collected at

TABLE 1: Fungicides and rate of application.

Common name	Rate of application g ai/ha	Product name and Supplier	
propiconazole	125	Tilt 250 EC	Ciba-Geigy
prochloraz	450	Sportak 45 EC	NZFF
triadimenol + tridemorph	125 + 375	Bayfidan M	Bayer
flutriafol	62.5	Impact*	ICI

* The recommended application rate is 125 g ai/ha

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random along a diagonal within each plot. Plots were harvested on 1 March 1987 using a Massey-Ferguson header with a 1.6 m swath.

RESULTS

Incidence of net blotch on plants assessed 4 days before spray applications were made ranged from 42-50% for the 'net' type (cv Zephyr) and 42-62% for the 'spot' type (cv Kym). Mean severity on the top three leaves ranged from 0.05% to 0.10% for both cultivars. Disease development was slow due to unusually dry weather. The 'net' type on cv Zephyr had developed more by 25 days after spray application than the 'spot' type on cv Kym (Table 2). Propiconazole and prochloraz gave significantly better control on both cultivars than did the other fungicides: 62% and 61% respectively on cv Zephyr and 92% and 89% respectively on cv Kym.

Net blotch continued to develop slowly on the unsprayed plots of cv Kym. By 59 days after spray application control was still good with propiconazole (86%) and prochloraz (80%). A significant increase in yield was obtained with propiconazole on cv Zephyr.

TABLE 2: Effect of fungicides on severity of net blotch and yield of grain.

	Mean % leaf area diseased*				Yield of grain	
	Leaf 1	Leaf 2	Leaf 3	mean	kg/ha	increase %
Zephyr 'Net' Type						
propiconazole	1.7	6.2	26.7	11.5a**	5600a	111
prochloraz	2.1	6.9	26.1	11.7a	5275b	105
triadimenol + tridemorph	3.4	14.6	43.1	20.4b	5431b	108
flutriafol	3.7	15.2	44.6	21.2b	5256b	104
unsprayed	4.0	25.3	61.6	30.1b	5044b	100
Kym 'Spot' Type						
propiconazole	0.0	0.4	1.6	0.7a	6169a	104
prochloraz	0.1	1.8	2.1	1.3a	5894a	99
triadimenol + tridemorph	1.1	5.0	7.6	4.6b	5813a	98
flutriafol	0.2	3.4	10.0	4.5b	5975a	101
unsprayed	1.3	8.7	14.7	8.2b	5931a	100

* assessed on 21 January 1987 at G.S. 11.1

** means within columns followed by common letters are not significantly different ($P < 0.05$). Student T test.

DISCUSSION

Good control of both 'net' and 'spot' type net blotch was obtained with propiconazole and prochloraz. The lower level of control of the 'net' type is possibly associated with its more rapid spread on cv Zephyr compared with the 'spot' type on cv Kym. Further work is desirable to determine whether these fungicides would still give good control in a season more favourable to the spread of the 'spot' type. Neither triadimenol + tridemorph nor flutriafol (applied at half the recommended rate) gave acceptable control of either type of net blotch. This is probably due to insensitivity of the pathogens to triadimenol and flutriafol and to the low application rate of flutriafol (Sheridan and Nendick 1987). The only significant increase in yield was obtained with propiconazole on cv Zephyr.

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