CONTROL OF STRAWBERRY LEAF SPOT

R.W. PRINCE

Bayer New Zealand Limited, P.O. Box 2825, Auckland

SUMMARY

The fungicide bitertanol was evaluated for the control of strawberry leaf spot (*Mycosphaerella fragariae*). In field trials over three seasons a programme of bitertanol alone or in combination with an experimental blend of oil and surfactant gave high levels of disease control under heavy infection pressure.

INTRODUCTION

Strawberry leaf spot can be a serious problem in strawberry beds. The disease flourishes under cool wet conditions which occur in early spring. In New Zealand the main cultivar for commercial strawberry production is 'Tioga' which is particularly susceptible. It has been shown by Beever (1973) that when strawberries are protected by suitable fungicides an increase in both plant size and yield may occur. In recent seasons the level of disease control achieved by applications of the standard fungicides has not been commercially acceptable (Jardine pers com).

Bitertanol is a new fungicide of the biphenyloxy triazolyl methane group. It has a broad spectrum of activity and has been shown to have a protectant, curative and eradivative action. Bitertanol is very effective in controlling *Mycosphaerella* sp in a range of crops (Brandes *et al* 1979.)

This paper reports on field trials over three seasons to evaluate bitertanol for control of strawberry leaf spot.

METHODS

The three trials were on second year crops of "Tioga" on a strawberry property at Albany.

Completely randomised designs with 3-4 replicates were used. Each plot consisted of 1 row, 10 m long. Applications were made using a CO₂ powered precision sprayer fitted with Spraying System Disc and Core nozzles delivering 766 litres/ha at 300 kPa.

Application dates for the three trials are in Table 1.

Leaf spot severity was assessed by picking 10-15 leaves at random from each plot and classifying according to the number of spots per leaf as follows: 0 = no infection, 1 = 1-5, 2 = 6-25, 3 = 25 +. The degree of infection was then calculated according to the method of Kremer and Unterstenhofer (1967) and percent control calculated after Abbott (1925). The data was then analysed using the standard analysis of variance. Means were separated using Duncan's new multiple range test.

RESULTS AND DISCUSSION

The results are shown in Table 1.

As the trials were on second year crops the inoculum levels each year were high. Commercial crops receive fungicide applications after planting in May/June and these continue throughout the season. However, in the trials, applications did not begin until September/October which coincided with the production of new foliage from established plants. This technique was used in order to ensure disease occurrence.

Trial A shows that applications of dichlofluanid, propineb, triadimefon and bitertanol at 125 g ai/ha were ineffective in controlling the disease. Bitertanol at 250 g ai/ha and at 125 g ai/ha in combination with the oil/surfactant blend gave a reasonable level of control. Bitertanol at 125 g ai/ha in combination with oil (1) gave excellent control.

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TABLE 1: Details of trials and percent leaf spot control.

Trials			
	A	B	C
Replications	4	3	3
Application dates	13-10-80 28-10-80 11-11-80 25-11-80	13-10-81 28-10-81 12-11-81 24-11-81	16-9-82 30-9-82 14-10-82 29-10-82 10-11-82 30-11-82 21-12-82
Assessment date	25-11-80	9-12-81	
Treatment and Rate g ai/ha			
untreated*	0 (73.8)	0 (56.6)	0 (95.7)
bitertanol** 125	21.8 c	49.0	
+ oil***	76.7 a		
+ oil/surfactant blend	52.6 b		
bitertanol 250	52.6 b	80.4	
bitertanol 120			71.0 b
+ oil			97.7 a
+ oil/surfactant blend		80.3	97.7 a
bitertanol 180			89.6 a
+ oil			97.7a
+ oil/surfactant blend			97.7 a
bitertanol 240		74.5	92.9 a
+ oil			97.7 a
+ oil/surfactant blend			96.6 a
triadimefon 50	3.6c		
dichlofluanid 1000	14.3 c		
propineb 1400	9.0 c		
triforine 190		35.2	
CV%	37.8	54.5	51.3
LSD	18.5	N.S	11.5

* Figures in brackets represent level of infection (Kremer and Unterstenhofer 1967), untreated data were excluded from analysis.

** Bitertanol was evaluated as a 25WP in Trial A; 50WP, 300EC in Trial B; and 300EC in Trial C.

*** Oil (1) was used in Trials A and B. Oil (2) in Trial C. Oil was used at a rate of 0.5% spray mix; oil/surfactant blend used at a rate of 1 litre/ha.

In Trial B bitertanol was to be evaluated at 125 g ai/ha plus oil (1) but due to phytotoxicity resulting from the first application the oil was discontinued. The emulsifiable concentrate formulation of bitertanol used alone or in combination with the oil/surfactant blend resulted in excellent disease control.

In Trial C the emulsifiable concentrate formulation of bitertanol was evaluated alone and in combination with oil (2) or the oil/surfactant blend. Although disease pressure was high, all treatments gave excellent control of the disease. Bitertanol alone at 120 g ai/ha was significantly less effective than the other treatments. In this trial there were no phytotoxicity problems associated with the application of oil (2).

TABLE 2: Chemicals and formulations used.

Common Name	
propineb	Antracol 70WP
bitertanol	Baycor 25WP; 50WP; 300EC
triadimefon	Bayleton 5WP
dichlofluanid	Euparen 50WP
triforine	Saprol 19EC
oil ₁	Shell Universal Spray Oil
oil ₂	Shell Sunspray
oil/surfactant	Agri-dex

CONCLUSIONS

Strawberry leaf spot can be effectively controlled with applications of bitertanol. The rate of bitertanol can be reduced if used in combination with a blend of oil and surfactant.

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