

Management of *Alternaria* leaf blight of rapeseed-mustard by chemicals

A. K. CHATTOPADHYAY AND C. K. BHUNIA

Pulses and Oil Seeds Research Station, Berhampore 742101, West Bengal

Seven fungicides viz ; mancozeb, captan, metalaxyl m.z, iprodione, bayletan, copper oxychloride and antracol were tested against *Alternaria*-leaf blight of rapeseed-mustard caused by *Alternaria brassicae*. Best control of disease was observed by iprodione followed by mancozeb. Highest seed yield and significant increase of 1000 seed weight were also recorded from single spray of iprodione at post flowering stage. But maximum economic return was obtained from two spraying of mancozeb at 45 DAS and 60 DAS.

Key words : *Alternaria* blight, rapeseed-mustard, chemicals, economic return

INTRODUCTION

Alternaria-leaf blight of rapeseed-mustard caused by *Alternaria brassicae* (Berk.) Sacc. is an economically important disease and occurs regularly during crop season in West Bengal. An average per cent loss in yield of 35.38 and 46.57 in mustard and rapeseed respectively was reported by Kolte *et al.* (1987). Severity of *Alternaria*-blight is negatively correlated to seed yield and the maximum benefit is recorded by three sprayings of mancozeb at 45, 60 and 75 days after sowing (Chattopadhyay and Bagchi, 1994). Efficacy of different fungicides against the disease have been reported by various authors (Kaushik *et al.*, 1983; Kolte and Twari, 1978; Shivpuri *et al.*, 1988; Singh and Bhowmik, 1983). In this study the efficacy of some new chemicals are tested both on leaf and siliqua under field condition.

MATERIALS AND METHODS

Growing of plants and field layout

Field experiments were conducted during *rabi* seasons in 1995-96, 1996-97 and 1998-99 at the Pulses and Oilseeds Research Station, Berhampore (W.B.). Benoy (*Brassica campestris* L var. yellow

sarson prain), a highly susceptible variety to *Alternaria*-blight was grown under prevailing epiphytotic condition for the disease in randomized block design with three replications. Nitrogen, phosphate and potash were applied @ 80 : 40 : 40 kg/ha. Two irrigations were given at 30 and 60 DAS.

Spray of fungicides

Altogether seven fungicides viz; mancozeb (0.2%), ridomil MZ (0.25%), iprodione (0.2%), bayletan (0.05%), copper oxychloride (0.3%) were tested for three years, captan (0.2%) for two years and antracol for one year under study. Control plots were sprayed with water. Among the fungicides, spraying of mancozeb, captan, bayletan, copper oxychloride and antracol were given twice at 45 and 60 DAS. Spraying of iprodione and ridomil MZ were given only at 45 DAS.

Recording disease severity and yield

The disease severity of *Alternaria*-blight was recorded separately from leaf at post flowering stage and from siliqua at pod maturity stage. Twentyfive leaves/siliqua were selected randomly from each plot and observation was recorded by

rating 0-5 scale and the severity of disease was calculated by using the following formula :

$$DI(\%) = \frac{\text{Sum of all numerical ratings}}{25 \times 5} \times 100$$

The weight of 1000 seeds and yield of seeds each plot were recorded. Cost of spraying included the labour charges, prices of fungicides and charges for hiring spray machine. Selling rate of mustard was calculated as per marketing schedule of 1998.

RESULTS AND DISCUSSION

The initial appearance of the disease was noted between third week and fourth week of December in all the years under study. The data (Table 1) revealed that the disease index in all the treatments was significantly reduced over control in both leaf and siliquae at flowering and maturity stage respectively. Maximum reduction of disease was observed by spraying with iprodione followed by mancozeb. Similar observation was recorded by Shivpuri *et al.*, (1988). control of *Alternaria*-blight by mancozeb was next to difolatan (Kaushik *et al.*, 1983). However, iprodione was not included in that experiment.

It was reported that weight of 1000 seed (test

weight) was reduced in *Alternaria*-blight affected plant (Kolte *et al.*,1987). Similar results (Table 2) was recorded in this experiment. Maximum test weight was found in iprodione treated plots which was significantly higher than the control plots. Test weight of mancozeb treated plots was significantly higher in the year 1998-99. Test weights of other fungicide treated plots were more or less same with the control. It might be due to partial control of the disease by less number of spraying of fungicides. Highest seed yield (average of three years) was obtained from plots treated with iprodione followed by mancozeb (Table 2). Two sprayings of captan or one spraying of ridomil MZ could not increase the seed yield significantly.

The most important matter to the farmers is the economic return by spraying the chemicals. Though one spray of iprodione gave the best control of the chemicals. Though one spray of iprodione gave the best control of the disease as well as highest yield, but highest benefit was obtained by two sprayings of mancozeb at 45 and 60 DAS. At present the market price of iprodione is much higher than mancozeb. So, iprodione can be used for getting good quality of seeds but for commercial use mancozeb is better.

Table 1 : Performance of some fungicides against *Alternaria* blight of Rapeseed-Mustard (cv. YSB-9).

Treatments	D. I. (%) on leaf at flowering stage				% reduction of disease	D. I. (%) on leaf at flowering stage				% reduction of disease
	95-96	96-97	98-99	Mean		95-96	96-97	98-99	Mean	
Mancozeb (Indofil M-45 0.2%)	22.8 (28.55)	19.5 (26.22)	25.4 (30.22)	22.5 (28.33)	34.7	19.1 (25.95)	15.6 (25.95)	23.4 (23.24)	19.3 (26.03)	33.7
Captan (Captaf 0.2%)	30.5 (33.55)	30.1 (33.29)	—	30.3 (33.42)	23.0	23.4 (28.96)	22.3 (28.96)	—	22.8 (28.58)	27.2
Ridomil MZ (0.25%)	30.6 (33.58)	31.0 (33.87)	42.6 (40.75)	34.7 (36.06)	16.9	25.2 (30.16)	25.2 (30.17)	40.1 (39.3)	30.1 (33.21)	15.4
Iprodione (Rovral 0.2%)	10.0 (18.38)	9.9 (18.33)	15.0 (22.76)	11.6 (19.82)	54.3	6.2 (14.45)	6.1 (14.16)	18.8 (25.69)	10.3 (18.1)	53.9
Bayletan (0.05%)	25.2 (30.13)	21.0 (27.29)	40.9 (39.77)	29.03 (32.39)	25.4	20.5 (26.91)	18.2 (25.23)	37.3 (37.6)	25.3 (29.91)	23.8
Copper exychloride (Blitox-50 0.3%)	28.6 (32.34)	22.9 (28.61)	37.8 (37.93)	29.7 (32.96)	24.0	22.3 (28.16)	19.5 (26.18)	30.8 (33.73)	24.2 (29.35)	25.2
Antracol (0.2%)	—	—	25.6 (30.43)	25.6 (30.43)	29.91	—	—	23.7 (29.13)	23.7 (29.13)	25.8
Control	43.8 (41.44)	43.8 (41.45)	54.2 (47.4)	47.2 (43.42)	—	35.0 (36.26)	35.1 (36.32)	50.5 (45.28)	40.2 (39.28)	—
C. D. at 5%	2.2	2.16	2.88	—	—	2.12	2.38	2.74	—	—

Table 2 : Effect of some fungicides on test weight, seed yield and benefit ratio of rapessed-mustard (C. V. YSB-9) affected by *Alternaria* blight.

Treatments	Test weight (gm)				Yield (kg/ha) Average of 3 years	Benefit ratio*
	95-96	96-97	98-99	Mean		
Mancozeb (Indofil M-45 0.2%)	2.97	3.02	3.01	3.00	1125	3.56
Captan (Captaf 0.2%)	2.8	2.94	—	2.87	935	1.08
Ridomil MZ+ (0.25%)	2.85	3.00	2.82	2.89	903	0.43
Iprodione + (Rovral 0.2%)	3.19	3.25	3.19	3.21	1305	3.26
Bayletan (0.05%)	2.86	2.96	2.92	2.91	1028	1.44
Copper oxychloride (Blitox-50 0.3%)	2.87	3.00	2.94	2.93	1018	1.84
Antracol (0.2%)	—	—	2.85	2.85	1119	2.52
Control	2.87	2.95	2.88	2.9	825	—
C.D. at 5%	0.21	0.1	0.12	—	126.4	—

* The cost of treatment was considered as 1.

+ One spray at 45 DAS.

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