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RESEARCH NOTE

Management of Corynespora blight of sesame through fungicides and antagonists

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ABSTRACT

Seed treatment with a mixture of Carbendazim 50 WP (0.1%) and Thiram 75 WP (0.15%) recorded minimum PDI of 11.15 per cent, respectively and 9.91 per cent and highest seed yield of 637kg and 646kg/ha during 2002-03 and 2003-04 crop seasons. First spraying of Carbendazim 50 WP (0.05%) and second spraying of *Trichoderma viride* formulation (10^7 spores/g) proved to be the most economical.

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Sesame (*Sesamum indicum* L.) is an important edible *Kharif* oilseed crop grown in hotter and drier part of Jharkhand state. Blight of sesame caused by *Corynespora cassiicola* (Berk. and Curt.) Wei. has aggravated during recent years in this state. Regular occurrence of the disease has been recorded in Ranchi, Garhwa, Palamu, Latehar, Gumla, and Dumka districts of the state. Disease incidence ranged from 25.5 to 38.4 per cent and 21.0 to 36.0 per cent during *Kharif* 2002-03 and 2003-04 crop seasons, respectively.

Field trials were undertaken at Experimental Farm of Birsa Agricultural University, Ranchi, during *Kharif*, 2002-2003 and 2003-2004 crop seasons. Seed dressing fungicides and fungal antagonists were evaluated against the disease. Antagonists were grown on soaked and sterilized sorghum grains for twenty days in sterilized bottles. After full growth and sporulation, the grains were taken out from the bottle, dried in shade and ground. The powder was sieved and used for seed treatment @ 4g/kg seed (18.8×10^{13} spores/g). Rice gruel was used as Natural sticker/ nutrient. Treated seeds were kept in shade for 30 minutes and sown afterwards. Talc based formulation of the rhizobacterium, *Pseudomonas fluorescens* pf-1 (TNAU isolate) was used @ 1 per cent (2×10^8 cells/g).

To evaluate the efficacy of fungicides and fungal antagonists for management of Corynespora blight, trials were conducted in Randomized Block Design with 10 treatment and three replications, plot sizes of 3 m × 2 m and spacings of 60 cm × 15 cm. The sesame variety, Kanke safed was used and sprays were given from initial appearance of the disease *i.e.*, 10 days after sowing. Per cent disease index (PDI) was recorded at 60 DAS.

Seed treatment with Carbendazim 50 WP (0.15) + Thiram (0.15%) recorded minimum PDI of Corynespora blight with 11.15 per cent and 9.91per cent followed by 17.09 per cent and 15.03 per cent with Ridomil MZ (0.2%), respectively, during the crop seasons. The maximum PDI (38.69 % and 36.53 %) was recorded in control. Seed treatment with Carbendazim 50 WP (0.1%) + Thiram (0.15%) recorded the maximum seed yield of 637 kg/ha and 646 kg/ha followed by Ridomil MZ (588.0 kg/ha and 597.0 kg/ha) (Table 1).

All the fungicides under evaluation reduced the incidence of Corynespora blight significantly over control. Two sprays of Hexaconazole 5 EC (0.1%) recorded minimum PDI-13.8 per cent which was at par with 1st spraying of Carbendazim + 2nd spraying of *T. viride* (PDI-14.15%) followed by 1st spraying with Carbendazim + 2nd spraying of Mancozeb which recorded PDI of 15.0 per cent. The unsprayed control

plots recorded highest PDI of 33.85 per cent. Two sprays of Hexaconazole (0.1%) recorded highest yield of 647.5 kg/ha. The above treatment was followed by 1st spraying of Carbendazim + 2nd spraying of *T. viride* (632.5 kg/ha) and 1st spraying of Carbendazim + 2nd spraying of Mancozeb (624.5 kg/ha). Minimum yield of 392.5 kg/ha was recorded in control plots. Considering cost: benefit ratio, 1st spraying of Carbendazim + 2nd spraying of *T. viride* was found to be superior (1:3.89) which was followed by two spraying of *T. viride* (1:3.45) and 1st spraying of Carbendazim + 2nd spraying of Mancozeb (1: 2.85) (Table2).

Yadav *et al.* (1988) tested eight fungicidal sprays in field and concluded that the best control of *C. cassiicola* on sesame was afforded by Benlate (Benomyl) at 1000 ppm, followed by Dithane M–45 (Mancozeb) at 2500 ppm. Benomyl was also the most suitable for seed treatment.

Excellent control of target leaf spot (*C. cassiicola*) has been obtained by weekly application of Benomyl to cucumber foliage which had proved rather difficult to control with chlorothalonil or Zn + Maneb (Jones,1974).

Table 1: Effect of seed treatment with chemicals/bioagents on incidence of Corynespora blight and yield of sesame

Treatments	Dose (%)	2002-03		2003-04	
		*PDI	*Yield (kg/ha)	*PDI	*Yield (kg/ha)
Thiram 75 WP	0.30	31.05 (33.86)	464	29.51 (32.90)	476
Carbendazim 50 WP	0.2	23.06 (28.71)	556	21.01 (27.25)	573
Carbendazim 50 WP+ Thiram 75 WP	0.1 + 0.15	11.15 (19.50)	637	9.91 (18.31)	646
Ridomil MZ 72 WP	0.2	17.09 (24.42)	588	15.03 (22.85)	597
Mancozeb 75 WP	0.25	28.45 (32.26)	480	26.10 (30.70)	491
Trichoderma viride	0.4	23.61 (29.01)	562	21.75 (27.80)	567
Trichoderma harzianum	0.4	24.67 (29.82)	551	22.88 (28.55)	563
Pseudomonas fluorescens – pf 1	1.0	26.45 (30.95)	524	24.34 (29.51)	533
Neem oil	1.0	33.49 (35.38)	434	31.19 (33.94)	443
Control	-	38.69 (38.42)	381	36.53 (37.18)	392
SEm ±		0.24	8.02	0.95	2.58
C.D. (P=0.05)		0.32	23.14	2.99	7.53

* Mean of three replications. Values in parentheses are angular transformed values

Table 2 : Efficacy and economics of fungicides and antagonists on Corynespora blight and grain yield of sesame

Treatments	*Kharif* 2002-03 & 2003-04 (Pooled)			
	Dose (%)	*PDI	*Yield (Kg/ha)	C: B ratio
2 Sprays of Carbendazim	0.05	16.75 (24.14)	607.0	1:2.77
2 Sprays of Hexaconazole	0.1	13.80 (21.80)	647.5	1:1.55
2 Sprays of Mancozeb	0.2	23.55 (29.02)	545.5	1:1.29
2 Sprays of *Trichoderma viride*	10^7spores/g	19.50 (26.22)	592.5	1:3.45
2 Sprays of *Pseudomonas fluorescens*– pf 1	0.2	22.35 (28.21)	560.0	1:2.05
2 Sprays of Achook	0.2	26.55 (31.02)	530.5	1:1.00
1st Spraying of Carbendazim+2nd spraying of *T. viride*	0.05+ 10^7spores/g	14.15 (22.06)	632.5	1:3.89
1st Spraying of Carbendazim+2nd spraying of Achook	0.05+0.2	16.15 (23.71)	618.0	1:2.69
1st Spraying of Carbendazim+2nd spraying of Mancozeb	0.05+0.2	15.00 (22.77)	624.5	1:2.85
Control	–	33.85 (35.55)	392.5	–
SEm ±		0.48	2.80	
C.D. (P=0.05)		1.30	10.07	

* Mean of three replications
Values in parentheses are angular transformed values
Cost of fungicides etc. (Rs. kg^{-1}/ L^{-1}):
Carbendazim- 770/-, Hexaconazole- 800/-, Mancozeb- 260/-, *Trichoderma viride*- 150/-, *Pseudomonas fluorescens*- 200/-, Achook- 270/-
Cost of application – Rs. 150/- per spray, Cost of sesame seed- Rs. 20/- per kg.

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