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Fungicidal Management of Sheath Rot Disease of Rice Caused by *Sarocladium oryzae*

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A B S T R A C T

Four fungicides *i.e.* Carbendazim 50% wp (Bavistin), Tricyclazole 75% wp (Beam), Mancozeb 63% + Carbendazim12%wp (Saaf) and Tricyclazole18%wp + Mancozeb 62% wp (Merger) were evaluated against Sheath rot disease of Rice under field condition during Kharif, 2017-18. Among the fungicides two sprays of Tricyclazole 18% wp + Mancozeb 62% wp (Merger) @ 2 g/liter of water (1st spray at boot leaf stage and 2nd at 10 days after 1st spray) recorded least Sheath rot disease severity i.e. 9.05%, maximum grain yield (39.50 q/ha) and B:C ratio 1:1.92

Introduction

Sheath rot caused by *Sarocladium oryzae* (Sawada) Games and Hawksworth has become a serious problem in most of the rice growing area of the country. In India this disease was first time reported by Agnihothrudu (1973). Densely planted field are more susceptible to *Sarocladium oryzae* infection. The fungus tends to attack the leaf sheaths enclosing young panicles, which retards or aborts the emergence of panicles. Seed from infected panicles becomes discolored and sterile, thereby reducing in grain yield and yield losses varied from 9.6 to 85% depending on the weather conditions during the crop growth period (Phookhan and Hazarika, 1992).

The fungus is detected frequently during routine seed health testing and causes empty grain production (Kulwanth and Mathur, 1992) and glume discolouration (Sachan and Agarwal, 1995) and also seed diclouration (Reddy *et al.*, 2000). It also causes poor grain filling and reduction in seed germination (Vidhyasekaran *et al.*, 1984). Seeds from infected panicles became discoloured and

sterile (Mew and Gonzales, 2002). Fungicides are playing pivotal role in reducing crop losses. Therefore, in this study, the work was done to identify potential fungicides that may be cost effective to manage sheath rot of rice caused by *S. oryzae* at farmer's field.

Materials and Methods

On Farm Trial (OFT) was conducted during *Kharif*, 2017-18 crop seasons at ten different locations (villages- Ajagari, Singhiyasagar, RamkaranPakari, Baltharwa, Jhanjhara, Saraugar, Gangapiper, Padumker, Surajpur and Khairimal) of East Champaran district of Bihar state. The trials were laid out in randomized block design(RBD) with four treatments including farmers practice viz. Farmer's Practice: one spray of Carbendazim 50% wp (Bavistin) @1 g/ liter of water, T_1 : Two sprays of Tricyclazole 75% wp (Beam)@ 0.6 g/ liter of water, T_2 : two sprays of Mancozeb 63% + Carbendazim 12% wp (Saaf) @1.5g/ liter of water, T_3 : two sprays of Tricyclazole18%wp + Mancozeb62% wp (Merger) @ 2 g/ liter of water. (1st spray at boot leaf stage and 2nd at 10 days after 1st spray). Rice variety RajendraMahsuri was used, recommended dose of fertilizers and routine agronomical practices were followed. Disease intensity was recorded at maturity of the crop in 0-9 scales by following the procedure of Standard Evaluation System of IRRI. Randomly 20 panicles of each treatment plot were selected for taking the observations. The observations for percent disease intensity, yield q /ha and benefit: cost ratio was also worked out.

Results and Discussion

The results indicated that the two sprays of Tricyclazole 18% wp + Mancozeb 62% wp (Merger) @ 2 g/liter of water (1st spray at boot leaf stage and 2nd at 10 days after 1st spray) was found to be most effective treatment in regards to minimum disease intensity (9.05 %) with maximum grain yield (39.50 q/ha) and cost benefit ratio (1:1.92) followed by two foliar sprays with Mancozeb 63% + Carbendazim 12% wp (Saaf) @1.5 g/liter of water (1st spray at boot leaf stage and 2nd at 10 days after 1st spray) which recorded 12.11% disease intensity, 38.50 q/h grain yield and cost benefit ratio 1:1.88. whereas in case of farmers management practice (FP) one spray of Carbendazim 50% wp @ 1g/ liter of water recorded maximum disease severity (18.78%), minimum grain yield (35.74 q/h) and cost benefit ratio 1:1.79. (Table 1).

Table.1 Effect of different fungicides on Sheath rot disease of Rice under field conditions

Treatments No.	Treatments	Dose (g/liter of water)	Disease Intensity* (%)	Yield (q/ha)*	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	C:B ratio
Farmer's Practice	Carbendazim50wp (Bavistin)	1.0	18.78	35.74	29900.00	53610.00	23710.00	1:1.79
T_1	Tricyclazole 75% wp (Beam)	0.6	14.64	36.45	30400.00	54675.00	24275.00	1:1.79
T_2	Mancozeb 63% + Carbendazim 12% wp (Saaf)	1.5	12.11	38.50	30700.00	57750.00	27050.00	1:1.88
T_3	Tricyclazole 18% wp + Mancozeb62%wp (Merger)	2.0	9.05	39.50	30800.00	59250.00	28450.00	1:1.92
	SEm(±)		1.05	1.20				
	CD at 5%		3.15	2.96				

*Average of ten replications

This result emphasize the need to spread the adoption of two foliar sprays of Tricyclazole 18% wp + Mancozeb 62% wp (Merger) @ 2 g/liter of water among rice grower against this disease. (Venkateswarlu and Venkateswarlu, 2004; Karamkar *et al.*, 1992; Vidhyasekaran and Lewin, 1987; Anonymus, 2009).

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