

EFFECT OF FUNGICIDES AND WEEDICIDES ON THE SEVERITY OF RICE COLLAR ROT IN RICE FIELD

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The efficacy of five fungicides on the *in vitro* growth and sporulation of collar rot fungus, *Pestalotiopsis versicolor* and two weedicides on the high yielding rice cultivar, Leima phou (KD, 2-6-3) was studied. There observed visible response on the severity of rice collar rot with the application of fungicides and weedicides.

Keywords : Fungicides; Leima phou (KD, 2-6-3); *Pestalotiopsis versicolor*; Weedicides.

Introduction

Rice crops are often damaged by the collar rot disease fungi *Pestalotiopsis versicolor*. Different methods are used by the scientists/farmers to control and eradicate these destructive fungi. Two methods well responded in the controlling of collar rot fungi are the application of fungicides and weedicides. Five fungicides, viz., Blitox-50, Foltaf Diathane M-45, Bavistin and Topsin-M, and two weedicides, viz., Pretilachlor and 2-4 D, were used in the present investigation. It was observed that the application of these chemicals showed good responses in controlling the rice collar rot diseases.

Materials and Methods

The efficacy of five fungicides, viz., Blitox-50 @ 0.2, 0.05, 0.025%; Foltaf, @ 0.1, 0.05, 0.025%; Diathane - M - 45, @ 0.2, 0.05, 0.025%; Bavistin @ 0.1, 0.05, 0.025 %; Topsin - M, @ 0.1, 0.05, 0.025%, incorporated with 50 ml of Potato dextrose broth (after autoclaving) on the *in vitro* growth and sporulation of collar rot was studied using poisoned food technique of Sharville¹. A 5 mm mycelial plug, taken from 3-day-old actively growing in each culture, was aseptically transferred to each conical flask. Each treatment was replicated 8 times. The inoculated flasks were incubated at $25 \pm 1^\circ\text{C}$ for 7 days. The medium without fungicides served as control. The mycelial dry weight was determined. To confirm the fungicidal and fungistic effect of each fungicide under study, the mycelial plug showing no growth

in the fungicides treated media was taken out and washed in sterilized distilled water (three chances) and transferred aseptically to Potato Dextrose Agar slants. These slants were then incubated at $26 \pm 1^\circ\text{C}$ for 3-4 days. The fungal growth was then recorded.

Leima phou (KD, 2-6-3) was used for the experiment. Two types of weedicides, viz., Rifit (Pretilachlor) and 2-4 D were used for the experiment. The rice plant after 25 days of transplantation in the pots were applied with these weedicides separately. After 10 days of application of fungicides rice plants were inoculated by spraying mycelial fragments along with conidia of *P. versicolor* with the help of an atomiser at the collar region of rice. The inoculated rice plants were covered with polythene sheet to increase the humidity inside the crop canopy.

Each treatment was replicated for 6 times. The inoculated rice plants without weedicides application was taken as control. The length of disease lesions produced by the pathogen were recorded and the production of the yield were also recorded.

Results and Discussions

Of the 5 fungicides tested *in vitro* *P. versicolor* failed to grow in Bavistin, Diathane, M-45, Foltaf and Topsin-M at all concentrations, but the fungus could grow well at 0.05 and 0.025% concentration of Blitox-50 and the percentages of inhibition over the control were 68.77 and 54.94 at 0.05 and 0.025% concentration respectively. But Blitox-50 at

Table 1. Effect of different fungicides on growth of collar rot fungi.

Sl. No.	Fungicide	Concentration (%)	Growth (mg) of <i>P. versicolor</i>	Inhibition on growth (%) <i>P. versicolor</i>
1.	Bavistin	0.1	0.00	100
		0.05	0.00	100
		0.025	0.00	100
2.	Blitox-50	0.2	0.00	68.77
		0.05	174.60	58.94
		0.025	251.75	100
3.	Diathane M-45	0.2	0.00	100
		0.05	0.00	100
		0.025	0.00	100
4.	Foltaf	0.1	0.00	100
		0.05	0.00	100
		0.025	0.00	100
5.	Topsin-M	0.1	0.00	100
		0.05	0.00	100
		0.025	0.00	100
6.	Control	0.00	368.685	0.00

Table 2. Fungistatic and fungicidal effect of different fungicides on growth of collar rot fungi.

Sl. No.	Fungicide	Concentration (%)	Growth	
			Fungistatic on <i>P. versicolor</i>	Fungicidal on <i>P. versicolor</i>
1.	Bavistin	0.1	0.00	+
		0.05	0.00	+
		0.025	0.00	+
2.	Blitox-50	0.2	+	0.00
3.	Diathane M-45	0.2	0.00	+
		0.05	0.00	+
		0.025	0.00	+
4.	Topsin-M	0.1	0.00	+
		0.05	0.00	+
		0.025	0.00	+
5.	Foltaf	0.1	0.00	+
		0.05	0.00	+
		0.025	0.00	+

Table 3. Effect of weedicides commonly used in rice field on the severity of rice collar rot.

Weedicides	Pathogen	Rice variety	State	Lesion length	Yield grain weight (g)
RIFIT (Pretilachlor)	<i>P. versicolor</i>	KD, 2-6-3	PANICLE EMERGENCE	Leaf blade 4.25 mm + Leaf sheath 8.90 mm 13.15 mm	20.25
2 - 4 D	<i>P. versicolor</i>	KD, 2-6-3	PANICLE EMERGENCE	Leaf blade 10.00 mm + Leaf sheath 11.00 mm 21.00 mm	18.31
CONTROL (without weedicides)	<i>P. versicolor</i>	KD, 2-6-3	PANICLE EMERGENCE	Leaf blade 8.00 mm + Leaf sheath 10.00 mm 18.00 mm	19.50

Table 4. Effect of fungicides on disease intensity and rice yield.

Sl. No.	Fungicide	Concentration (%)	Disease intensity (%) of <i>P. versicolor</i>	Yield 1000 grain (g)
1.	Bavistin	0.1	0.00	30.63
2.	Blitox-50	0.2	80.00	15.75
3.	Diathane M-45	0.2	0.00	26.50
4.	Foltaf	0.1	0.00	27.25
5.	Topsin-M	0.1	0.00	28.35
6.	Control	0.00	100.00	8.45

0.2% could inhibit completely the fungal growth (Table 1,2). These findings are supported with the works of Reddy *et al.*², Devi³, Akbari *et al.*⁴ and Upadhyay⁵ while working with different fungi. Bavistin, Diathane, M-45, Foltaf and Topsin M could control the disease under field condition with increase of grain yield. However, Blitox-50 failed to check the disease caused by *P. versicolor* which produced 80% of disease intensity and gave lower yield. These findings are well supported with the findings of Sugha and Singh⁶ and Devi and Singh⁷.

The maximum lesion length (21.00 mm) was produced (Table 3) on rice which received 2-4 D after inoculation with *P. versicolor* and the yield recorded was the least (18.31g/ 1000 grains). The rice plants without application of weedicides showed lesser lesion length with 18.00 mm and yield recorded were 19.5 g/1000 grains. However, the rice plants treated with Rifit showed least lesion length of 13.15 mm and the yield recorded was maximum (20.25 g/1000 grain, Table 4). It further showed that application of 2-4 D enhanced disease

development.

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