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Chemical Control of Sheath Blight of Rice Caused by *Rhizoctonia solani*

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The efficacy of some commercial fungicides against sheath blight of rice, caused by *Rhizoctonia solani*, was studied under field condition All the fungicides tested resulted in significant reduction in disease incidence as compared to the untreated control. Best results were obtained with Bavistin and Rhizolex, followed by Captef, Topsin and Dithane M-45. A positive correlation between reduction in disease incidence and increase in yield was observed.

Key words : Sheath blight, Rice, *Rhizoctonia solani*, Fungicidal control

INTRODUCTION

Sheath blight of rice, caused by *Rhizoctonia solani* Kuhn, is one of the major diseases of rice, particularly in high yielding varieties, causing considerable damage to the crop under favourable conditions. Fungicidal control of the disease has been reported by several workers (Roy and Saikia, 1976 ; Kannaiyan and Prasad, 1976 ; Verma and Menon, 1977 ; Mathai and Nair, 1977 ; Dev and Satyaranjan, 1980 ; Mathai *et al.*, 1981) from different parts of India. Efficacy of a fungicide, however, depends upon several factors including agroclimatic conditions of the locality and strains of the fungus. So far no report on studies on chemical control of sheath blight of rice is available from West Bengal. Studies were, therefore, undertaken on the efficacy of some fungicides in controlling sheath blight of rice under West Bengal conditions, the results of which is reported in this paper.

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MATERIALS AND METHODS

The fungicides used were : Cuman L (Zinc dimethyl dithiocarbamate), Dithane M-45 (Zinc and Manganese ethylan bisdithocarbamate), Bavistin (2-methoxy-carbamoyl - benzimidazole), Foltaf (Cis-N-1,2,2-tetrachloroethyl thio)-4 cyclohexane-1, 2-bicarbaroximide), Captaf (n-trichloromethyl-thio 4 cyclohexane 1, 2 dicarbanimide), Rhizolex (O, O di-methyl-0 2, 6 dichloro 4 methyl phenyl-phosphorthioate), Topsin (1, 2-bis 3 methoxy carbonyl-2-triencidobenezone).

The experiment was carried out during the Kharif of 1984 at the Rice Research Station, Chinsurah, Dist. Hooghly using 25 day old seedlings of the cultivar "Ratna" in randomized blocks with three raplications, the size of the plots being 3 m x 2 m. A plant spacing of 15 x 20 cm was given. The plants were artificially inoculated at the maximum tillering stage with infected rice straw pieces (Ou, 1972). The test fungicides, prepared in their recommended field doses in tap water, were applied twice through a Khapsack sprayer. The first application was made two days after plant inoculation and the second one two weeks afterwards. The control plots were sprayed with water only. Disease assessment was made 10 days after second application of the fungicides on 20 randomly selected plants per plot following the method described by Yoshimura (1954) and expressed as percent disease incidence.

Table 1. *Effect of some fungicides in controlling sheath blight of rice*

Fungicides	Disease incidence (%)	Av. yield/5 hills (gm**)
Cuman L	17.37 (24.58)*	54.00
Dithane M-45	14.61 (22.46)	58.75
Bavistin	10.17 (18.53)	63.50
Foltaf	20.39 (26.78)	52.37
Captaf	13.28 (21.20)	59.67
Rhizolex	11.45 (19.73)	60.12
Topsin	14.15 (22.06)	58.50
Control	29.20 (32.71)	48.25
C.D. (P=0.05)	(5.99)	10.25

* Figures in parenthesis are transformed angular values

** Average of 4 replications per plot

RESULTS AND DISCUSSION

All the fungicides tested gave significant reduction in disease incidence (Table 1). Earlier different workers reported Hinosan, Dithane M-45, Kitazin and Bavistin to be most effective in controlling sheath blight of rice (Roy and Saikia, 1976 ;

Kannaiyan and Prasad, 1976 ; Verma and Menon, 1977 ; Mathai and Nair, 1977 ; Dev and Satyaranjan, 1980 ; Mathai *et al.*, 1981). In the present study also treatment with Bavistin gave best control of the disease. Equally good result was obtained with Rhizolex. Fairly good control was obtained by treatment with Captaf, Topsin and Dithane M-45.

A positive correlation was observed between reduction in disease incidence and increase in yield. The fungicidal treatments giving higher control of the disease also resulted in higher yield of the crop.

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