

EFFECT OF FOLIAR SPRAY OF CERTAIN FUNGICIDES ON THE CONTROL OF SHEATH BLIGHT DISEASE OF RICE

S. KANNAIYAN¹ AND N. N. PRASAD²

The control of sheath blight disease of rice caused by *Rhizoctonia solani* was attempted. Field experiments were conducted for two seasons with susceptible rice variety ADT. 31. The test fungicides viz., Benlate, Dexon, Wettable ceresan, Daconil, Dithane Z-78, Dithane D-14, Kitazin, Hinosan, NF-48, Brassicol, Brestan, EL-273 Thiram and Demosan at 0.2 per cent level were sprayed twice, during maximum tillering phase of the crop. The rice plants were inoculated with *R. Solani* before spraying. All the fungicides sprayed plots have reduced the disease and increased the grain yield. Benlate, Kitazin, Hinosan, Demosan and Daconil were found to be highly effective in controlling the disease and these fungicides have also increased the grain yield significantly in both *Kuruvai* and *Thaladi* seasons.

Sheath blight disease of rice caused by *Rhizoctonia solani* Kuhn (*Thanatephorus cucumeris* (Frank) Donk) is a serious disease in many rice growing tracts of Tamil Nadu. The incidence of this disease was first reported from India by Kohli (1966). The occurrence and severity of sheath blight disease of rice in Tamil Nadu State of India was reported by Venkata Rao and Kannaiyan (1973) and Kannaiyan and Prasad (1976a). With the introduction of high yielding and high fertilizer responsive strains of rice the occurrence of this disease has been found to be severe. The reduction in grain yield due to severity of this disease has been estimated to vary from 5.2 to 25 percent (Lee, 1974). Kannaiyan and Prasad (1978a) have reported the reduction of sheath blight disease due to enhanced potash nutrition of rice crop. The control of sheath blight disease with antibiotics was reported

by Kannaiyan and Prasad (1978b). The fungicidal control of sheath blight disease of rice was attempted by Yamaguchi (1975). In the present study an attempt has been made to study the effect of foliar application of fungicides on the control of sheath blight disease under field conditions and the results are presented here under.

MATERIAL AND METHODS

A field experiment was conducted during *Kuruvai* season (June-September, 1977). The experiment was laid out in randomized block design with four replications with a plot size of 5 x 2 m. ADT. 31 variety susceptible to sheath blight disease was raised in the experiment. The fertilizer was applied at 100:50:50 kg NPK per hectare. Of this fertilizer dose, a quantity of 50:50:50kg NPK was applied for basal dressing as urea, superphosphate and muriate of

1. Department of Agricultural Microbiology, Tamil Nadu Agricultural University, Coimbarore-641 003 Tamil Nadu.

2. Department of Agricultural Microbiology, Agricultural College, Annamalai University, Annamalai Nagar-608 002, Tamil Nadu.

potash respectively. Another 50 kg of N as urea was top dressed on 30th day after transplantation. The test fungicides viz., Benlate (Methyl-1-Buty carbamoyl-2-benzimidazole carbamate) Dexon (P-dimethyl aminobenzene diazodium sulfonate), Wettable cerasan (Methoxy ethyl mercury chloride), Deconil (Chlorothalonil tetrachlorisophthalonitrile), Dithane Z-78 (Zinc ethylene bisdithiocarbamate), Dithane D 14 (Disodium ethylene bisdithiocarbamate) Kitazin (O-O-Disopropyl-s-benzyl-dithiophosphorothiolate), Hinosan (O-ethyl-S-S-dophenyl - dithiophosphorothiolate), NF-48 (1, 2-bis methoxy carbonyl-z-thioureido benzene), Brassicol (Pentachloronitrobenzene), Brestan (Triphenyl tin acetate), EL-273 (L-2-4-dichlorophenyl-L phenyl-5-pyrimidine methanol), Thiram (Tetramethyl thiuram disulphide), and Demosan (1,4-dichloro-dichloro-2-5-demethoxy benzene) were included in this experiment.

The rice plants were inoculated with *R. solani* during maximum tillering stage of the crop (65 days of age) by straw bit method developed by Venkata Rao and Kannaiyan (1973). Twenty plants were marked in each plot and inoculated. The fungicides were sprayed at 0.2 per cent level after 12 hr of inoculation. Two rounds of spraying with hand operated knapsack sprayer were given during maximum tillering stage of the crop at 10 days interval (65 and 75 days of age). The intensity of disease was assessed in each plot for 20 plants. The grain yield per plot was recorded. Similarly the experiment was repeated during *Thaladai* season (October January 1977-78) with the same ADT, 31 rice variety.

RESULTS AND DISCUSSION

The results are given in Table 1. All the fungicides tested have reduced the disease and increased grain yield compared to control. Among the fungicides used Benlate, Kitazin, Hinosan, Demosan and Deconil were found to be highly effective in controlling the disease and these fungicides have also increased the grain yield significantly in both *Kuruvai* and *Thaladai* seasons. All the other fungicides behaved moderately in controlling the disease. The reduction in disease increase in grain yield due to fungicidal treatments were more or less on the same trend in both the seasons.

Application of Benlate was effective in controlling the sheath blight disease of rice was earlier reported by Kannaiyan and Prasad (1976). The present observations with Benlate in minimising the disease are in conformity with the above findings. In the present investigation Demosan was also effective in controlling the disease. The effective control of *R. solani* with Demosan was earlier reported by Darrag and Sinclair (1968). The results of the present observations with Demosan against *R. Solani* are also in accordance with the above findings.

The results of the present study lucidly indicated the effectiveness of Hinosan and Kitazin against sheath blight fungus. The fungicidal control of sheath blight disease with Hinosan and Kitazin was suggested by Umeda (1972). The results of the present

study are in line with the above findings. The application of Hinosan was also effective in controlling blast (Venkata Rao *et al.*, 1974), Stem rot (Kasirajan, 1975), Brown spot (Kannaiyan and Venkata Rao, 1973) and sheath rot (Vijayaraghavan, 1976) diseases of rice crop. So the fungicides Hinosan, Kitazin and Bonlate may be used not only to check the sheath blight disease but also several other rice diseases. These fungicides therefore have a great scope to control the major diseases of rice.

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Table 1 Effect of certain fungicides on the control of sheath blight disease of rice

Fungicides	Kuruvai season (June Sept.)			Thaladi season (Oct Jan)		
	Disease index		Yield	Disease index		Yield
	Mean index %	decrease over control	increase over control	Mean index %	decrease over control	increase over control
Benlate	9.4	86.9	41.5	6.5	90.2	39.9
Dexon	28.5	60.5	28.7	19.3	70.8	30.6
Wettable ceresan	41.8	42.0	24.2	35.0	45.9	22.6
Daconil	14.8	79.5	37.4	8.9	86.5	24.7
Dithane Z 78	30.6	57.6	27.3	21.6	67.3	23.9
Dithane D-14	36.7	49.1	23.3	27.1	59.0	6.9
Kitazin	6.0	91.7	41.8	4.1	93.8	37.7
Hinosan	5.8	91.9	40.0	6.2	90.6	39.9
NF-48	16.9	76.5	33.3	13.5	79.6	18.3
Brassicol	20.8	71.1	29.4	17.4	73.7	30.2
Brestan	39.1	45.8	20.8	31.9	51.7	21.7
EL - 273	27.8	61.4	23.4	26.2	60.4	23.0
Thiram	24.7	65.7	18.2	21.9	66.8	17.8
Demosan	6.8	90.6	41.5	7.6	88.5	33.3
Control	72.1	—	—	66.1	—	—
C D	2.27	0.415	3.77	0.351		

Significant at 1% level.