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Efficacy of Hexaconazole on *Alternaria* Leaf Spot of Wheat (*Triticum aestivum*)

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A B S T R A C T

A field experiment was carried out to study the efficacy of Hexaconazole (contaf) on *Alternaria* leaf spot of wheat with different doses of treatments in Randomized Block Design. The disease severity was recorded 30 days after infection. Seven treatments including one control treatment on leaf spot disease was allowed to developed Hexaconazole (contaf) @ 200m1/ha, Hexaconazole (contaf) @ 300ml/ha, Hexaconazole (contaf) @ 400ml/ha, Hexaconazole (contaf) @ 500 ml/ha, Hexaconazole (contaf) @ 750 ml/ha and Hexaconazole (contaf) @ l000ml/ha. Observation on disease severity was recorded at 30, 60 and 90 days after sowing.

Introduction

Wheat *(Triticum aestivum* L.) is the world most widely cultivated food crop. It is eaten in various forms by more than 1000 million human beings in the world. In India wheat is second important staple food crop. Wheat is rich source of carbohydrates, dietary fibers, fat, protein and manganese, it also contains minerals like calcium, iron, magnesium, phosphorous, potassium and zinc. Wheat crop has wide adaptability. It can be grown not only in the tropical and sub-tropical zones but also in the temperate zone and the old tracts of the far north. Wheat is grown in a variety of soils of India. Soil with a clay loam or loam texture, good structure and moderate water holding capacity are ideal for wheat cultivation. The major wheat growing countries are United States, China, Morocco, Algeria, Italy, Syria, USSR Iran, Argentina and India. *Alternaria* leaf spots of wheat caused by *Alternaria triticina* has attained importance in north-eastern and north-western plain zone during recent years due to significant losses The loss of yield due to this disease vary upto 29.4- 43.2 per cent beside reduction of 15.2- 30.5 percent in 1000 grain weight. The disease first appears as small, oval, discoloured lesion which are irregularly scattered on the leaves. These spots become irregular in shape with increase in size and appear brown to gray in colour. A bright yellow halo surrounds the spots. Several lesions coalesce to cover large areas and cause death of the entire leaf. In severe cases the leaf starts drying from the tip. Optimum

temperature for growth of the fungus in culture is around 25°C. Host range of the species is confined to wheat varieties only. Thus, the present investigation entitled efficacy of Hexaconazole (Contaf) on *Alternaria* leaf spot of wheat was proposed with the objective to evaluate the efficacy of Hexaconazole (Contaf) treatments on disease intensity.

Materials and Methods

The present experiment was carried out under the field condition at Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad to know the efficacy of the Hexaconazole fungicide against *Alternaria* leaf spot in wheat.

Management

A field experiment was carried out to study the efficacy of Hexaconazole (contaf) on *Alternaria* leaf spot of wheat with different doses of treatments in Randomized Block Design. The disease severity was recorded 30 days after infection. Seven treatments including one control treatments were allowed to developed Hexaconazole (contaf) @ 200 ml/ha, Hexaconazole (contaf) @ 300 ml/ha,Hexaconazole (contaf) @ 400ml/ha, Hexaconazole (contaf) @ 500 ml/ha, Hexaconazole (contaf) @ 750 ml/ha and Hexaconazole (contaf) @ 1000 ml/ha.

Experimental details

The experiment was laid out in randomized block design with three replications. The total number of plot was 21 and plot size was 5 m x 5 m with spacing of 15-18 cm. Sprays were given at 30 DAS, 60 DAS and 90 DAS as per the treatments.

Measurement of disease severity

Disease severity of *Alternarta* leaf spot was recorded on lower leaves; middle and upper leaves. The three plants were randomly selected from each plot and labelled for subsequent evaluations. Leaves of each plant were counted for disease rating.

Disease rating was based on 25 leaves. Disease severity of *Alternaria* leaf spot was recorded on lower, middle, and upper leaves in 0 to 5 disease rating scale suggested by McKinney (1923). Disease severity observations were recorded on three plant selected at random /treatment / replication. The two leaves at lower, middle and upper were rated as per scale to determine the disease severity.

Score	Description	Disease Rating
0	No infection	Immune
1	1-10 % leaf area affected	Resistant
2	11-25 % leaf area affected	Moderately resistant
3	26-50 % leaf area affected	Moderately susceptible
4	51-70% leaf area affected	Susceptible
5	Above 71% leaf area affected	Highly Susceptible

The per cent disease severity (PDS) or (intensity) was calculated on the basis of method adopted by McKinney (1923).

$$PDS = \frac{\text{Sum of observed numerical rating}}{\text{Number of leaves observed x maximum rating}} \times 100$$

Replicated data recorded on disease incidence disease severity is statistically. The data recorded during the investigations were subjected to statistical by analysis of variance technique (Fisher, 1950) for drawing conclusion.

Results and Discussion

The results of the experiment are presented in Table 1, 2 and 3. The effect of various doses of the fungicide on disease intensity was recorded at 30, 60 and 90 days after sowing. All the different doses of treatment were found significantly superior to control in reducing the disease intensity. Among them Hexaconazole @ 1000 ml/ha was found most effective against the leaf spot disease in wheat followed by Hexaconazole 750m1/ha, Hexaconazole @ 500 ml/ha, Hexaconazole @ 400 ml/ha, Hexaconazole @ 300 ml/ ha, Hexaconazole @ 200 ml/ha. The observation also proved by Subrahmanyam *et al*., (1990). They reported that Hexaconazole is the most effective fungicide for the management of leaf spot of wheat. Similar findings reported by Rao *et al*., (2007) that the effect of foliar spray of 0.1% Hexaconazole under field conditions against *Alternaria* blight disease intensity. The 0.1% Hexaconazole recorded the least percentage disease index with the highest yield (15.09 q/ha) followed by Carboxin+Thiram. Reddy *et al*., (2002) found that the six different fungicides reduced the severity of leaf spots and increased pod yield. Difenoconazole (0.1%) was most effective followed by Hexaconazole (0.1%) and Chlorothalonil (0.2%). Singh *et al*., (2000) studied the fungicides, the maximum disease control (99.8%) was achieved by two sprays of Propiconazole (0.1%) whereas a single spray controlled (97.68%) disease, followed by Hexaconazole (94.40%) in the post-inoculation treatment.

Table.1 Effect of different doses of Hexaconazole (Contaf) treatment on disease intensity of *Alternaria* leaf spot of wheat at 30 DAS

Treatment Code	Treatments	R1	R2	R3	Mean
T0	Control	30.95	32.80	35.97	33.24
T1	Hexaconazole(Contaf) @200ml/ha	25.66	27.24	28.83	27.24
T2	Hexaconazole(Contaf) @300ml/ha	23.24	21.95	24.33	23.19
T3	Hexaconazole(Contaf) @400ml/ha	20.89	18.78	19.57	19.75
T4	Hexaconazole(Contaf) @500ml/ha	17.72	15.07	16.13	16.31
T5	Hexaconazole(Contaf) @750ml/ha	12.96	14.28	13.49	13.58
T6	Hexaconazole(Contaf) @1000ml/ha	11.64	10.58	11.11	11.11
F test		S			
SEd		1.11			
C.D. (5%)		2.42			

Table.2 Effect of different doses of Hexaconazole (Contaf) treatment on disease intensity of *Alternaria* leaf spot of wheat at 60 DAS

Treatment Code	Treatments	R1	R2	R3	Mean
T0	Control	41.26	44.17	48.64	44.69
T1	Hexaconazole(Contaf) @200ml/ha	36.94	37.83	38.35	37.71
T2	Hexaconazole(Contaf) @300ml/ha	34.39	32.27	33.33	33.33
T3	Hexaconazole(Contaf) @400ml/ha	31.48	30.15	29.10	30.24
T4	Hexaconazole(Contaf) @500ml/ha	26.45	24.60	23.54	24.87
T5	Hexaconazole(Contaf) @750ml/ha	18.78	20.63	21.42	20.28
T6	Hexaconazole(Contaf) @1000ml/ha	16.66	16.13	13.22	15.34
F test		S			
SEd		1.63			
C.D. (5%)		3.57			

Table.3 Effect of different doses of Hexaconazole (Contaf) treatment on disease intensity of *Alternaria* leaf spot of wheat at 90 DAS

Treatment Code	Treatments	R1	R2	R3	Mean
T0	Control	60.84	62.43	65.87	63.05
T1	Hexaconazole(Contaf) @200ml/ha	57.99	55.82	53.17	55.66
T2	Hexaconazole(Contaf) @300ml/ha	48.94	46.03	47.35	47.44
T3	Hexaconazole(Contaf) @400ml/ha	42.59	44.17	40.21	42.32
T4	Hexaconazole(Contaf) @500ml/ha	38.35	35.18	36.77	36.77
T5	Hexaconazole(Contaf) @750ml/ha	29.89	28.83	26.19	28.30
T6	Hexaconazole(Contaf) @1000ml/ha	20.63	19.31	17.19	19.04
F test		S			
SEd		1.56			
C.D. (5%)		3.41			

None of the fungicides resulted in a complete control of the disease. Johnson and Subramanyam (2003) reported that the field experiments were conducted during the 1998 and 1999 kharif seasons in Anantapur, Andhra Pradesh, India, on groundnut cv. TMV 2 to determine the efficacy of against late leaf spot. The treatments comprised foliar spraying of Hexaconazole and control, at 60 and 75 days after sowing. The lowest disease index for LLS (18.8%) and rust (18.5%) was obtained with Hexaconazole treatments which support the present findings. Hence Hexaconazole @ 1000ml/ha can be recommended to the farmers for the efficient management of *Alternaria* leaf spot of wheat and better returns.

References

Subrahmanyam *et al*.,1990**.** Comparative efficacy of four fungicides against rust and late leaf spot of groundnuts. *International Arachis Newsletter. 7: 21-23.*

Reddy *et al.*, 2002. Bio-efficacy of fungicides for control of leaf spots of groundnut in north-eastern Dry Zone of Karnataka, India. *International Arachis Newletter*. 22: 44-46.

Johnson, M and Subramanyam, K., 2003**.** Management of groundnut leaf spot and rust through triazole fungicides. *Annals of Plant Protection Science,* ll (2): 395-397.

Rao *et al*., 2007**.** Efficacy of seed dressing fungicides and bio agents on *Alteraria* blight and other seed quality parameters of sunflower. *Journal of Plant Disease Sciences.* 2 (I): 34-36.

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