

## SEED BORNE FUNGI ASSOCIATED WITH SEED LOTS OF DIFFERENT PADDY CULTIVARS IN PAKISTAN

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### Abstract

Using ISTA techniques, 198 seed samples of rice collected from various localities of Pakistan were tested. Important pathogens isolated were *Drechslera oryzae*, *Fusarium moniliforme*, *Pyricularia oryzae*, *Trichoconiella padwickii*, *Curvularia lunata*. Presence of *Alternaria* spp., *Drechslera hawaiiensis*, *Fusarium culmorum*, *F. semitectum*, *Nigrospora oryzae* as saprophytes in high number necessitates proper storage of rice seeds.

### Introduction

Rice (*Oryza sativa*) an important cereal crop and is cultivated over 1.9 m hectares in Pakistan with an average yield of 2918 Kg/ha. (Anon., 1986). Kamal & Moghal (1968) isolated *Alternaria* spp., *Aspergillus* spp., *Chaetomium* spp., *Cochliobolus* spp., *Curvularia verruculosa*, *Fusarium* spp., *Nigrospora siate*, *Tricholibolus padwickii* whereas Nayeemullah & Kafi (1978) isolated *Alternaria tenuis*, *A. tenuissima*, *Curvularia lunata*, *C. geniculata*, *C. oryzae*, *Drechslera oryzae*, *Fusarium equiseti*, *F. graminearum*, *F. moniliforme*, *Nigrospora oryzae*, *Trichoconis padwickii* from rice seeds. Keeping in view the importance of seed borne pathogens in producing seed and seedling rot, leaf spots, seedling blight, wilt disease, seed health testing was carried out for seed certification purposes. The results are reported in this paper.

### Material and Methods

A total of 198 seed samples collected from 9 different localities were tested during 1984-88 at the Federal Seeds Certification Department, Islamabad. Standard blotter method described by ISTA (1976) was used where 200 seeds distributed @ 25 seeds per plate were incubated at 20°C ± 2 for 7 days. Fungi were identified on the basis of habit characters under stereoscopic microscope after reference to Ellis (1971).

### Results and Discussion

Of the seed borne fungi isolated from seed lots 91.41% of the sample were infected by *Trichoconiella padwickii* (Av = 25.08), *Drechslera oryzae* (Av = 2.89) in 78.28% *Fusarium moniliforme* (Av = 2.41) in 57.07%, *Curvularia lunata* (Av = 8.86) in 59.09%,

Table 1. Fungi isolated from seed lots of different paddy cultivars during 1984-88.

Cultivars	No. of samples tested	<i>Drechslera oryzae</i>		<i>Trichoconiella padwickii</i>		<i>Pyricularia oryzae</i>		<i>Fusarium moniliforme</i>		<i>Curvularia lunata</i>	
		A	B	A	B	A	B	A	B	A	B
Irri-6	72	53	1.78 (0.5-16.5)	63	18.33 (0.5-86.0)	-	-	40	1.50 (0.5-8.5)	54	9.74 (0.5-33)
Latifee	6	3	1.33 (0.5-2.5)	6	30.17 (0.3-36.0)	-	-	4	1.30 (1.0-2.0)	6	24.25 (9.0-47.0)
DR-82	9	4	0.87 (0.5-2.0)	9	14.28 (0.5-33.0)	-	-	4	3.25 (0.5-5.5)	8	5.81 (0.5-24.5)
DR-83	5	3	1.17 (0.5-2.0)	5	15.90 (1.0-29.5)	-	-	1	4.50 (4.5)	4	11.50 (8.5-13.5)
KS-282	20	13	1.85 (0.5-5)	16	33.38 (0.5-75.5)	-	-	12	2.42 (0.5-7.0)	8	5.62 (0.5-10.5)
BS-385	55	50	3.56 (0.5-12.5)	55	48.92 (7.0-93.5)	3	0.5 (0.5)	25	1.98 (0.5-6.0)	21	2.98 (0.5-7.0)
B-198	22	21	10.05 (0.5-28.0)	19	25.80 (0.5-70.0)	4	0.86 (0.5-1.5)	18	1.25 (0.5-4.0)	8	3.56 (1.5-7.0)
B-370	9	8	2.5 (0.5-4.0)	8	13.87 (2.5-48.5)	-	-	9	3.06 (0.5-6.5)	8	7.44 (0.5-20.5)
X	-	-	2.89	-	25.08	-	0.68	-	2.41	-	8.86

A = No. of infected samples. B = Infection percentage  
Numbers in parentheses indicate infection range.

*Pyricularia oryzae* ( $Av = 0.68$ ) in 3.53% of the sample tested (Table 1). *Trichoconiella padwickii* the cause of stack burn disease was the most predominant fungus isolated in high frequency on all the cultivars tested with a maximum of 93.5% recorded on BS-385, *Drechslera oryzae* the cause of seedling blight and brown spot disease showed a maximum infection of 28.0% on B-198, *Fusarium moniliforme* causal agent of bakanae disease and foot rot was isolated from IRRI-6 with maximum infection of 8.5%. *Curvularia lunata* causal agent of black kernel was predominantly recorded on Latifee with maximum infection of 47.0%. Besides *Alternaria* spp., *Drechslera hawaiiensis*, *Fusarium culmorum*, *Fusarium semitectum*, *Nigrospora oryzae* were also isolated from the samples tested. Damage done by these pathogens in Pakistan is not known which needs investigation.

The importance of seed testing to control plant diseases which are seed borne, has been emphasized (Agarwal, 1981; Mathur, 1983). The use of chemical seed treatment to improve seed quality and planting value has been reported (Kausar & Ghaffar, 1955; Nawaz & Kausar, 1967; Wallace & Bateman, 1978). Keeping in view the presence of fungal pathogens in rice seed lots, there is therefore need to treat the seed with chemical fungicides at pre-basic, basic and certified level for control of plant diseases. Presence of saprophytes in fungi in high number would suggest the need for proper storage for maintaining good quality seed.

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