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## Screening of rice entries for sheath blight disease resistance in West Bengal, India

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During 2002 wet season, 156 selected entries of NSN - 1 were screened for their reaction to sheath blight disease under artificial inoculated condition. None of the entries recorded resistant reaction; only two showed moderate reaction while rest 154 reacted as susceptible.

**Key words :** Rice, sheath blight, resistance

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Sheath blight caused by *Rhizoctonia solani*. Kuhn was first recorded as a minor disease of rice in West Bengal (Roy, 1949). Later on the disease was referred (Sharma and Mukherjee, 1978; Sharma, 1980) as a major one and presently it has become a serious chronic disease of rice in the state due to widespread cultivation of high yielding but highly susceptible semi-dwarf cultivars and unbalanced indiscriminate use of nitrogenous fertilizers (Biswas, 2000). This is entailing substantial economic loss in yield of rice (Kannaiyan and Prasad, 1978; Rajan, 1987). Most effective and economic method to avoid losses due to sheath blight is by growing resistant cultivars.

During 2002 wet season, under the All India Coordinated Rice Improvement Programme (AICRIP), 156 rice entries of National Screening Nursery (NSN) I were screened at Rice Research Station, Chinsurah (elevation- 8.62 m above mean sea level, latitude -22°52' N, longitude -88°24' E), West Bengal for resistance to sheath blight disease under artificial inoculated condition. Each entry was planted in two 2m rows spaced in 20 cm x 15 cm and the plot was fertilized with basal and split doses of 120 kg N, 50 kg P<sub>2</sub>O<sub>5</sub> and 30 kg K<sub>2</sub>O ha<sup>-1</sup> and recommended agronomic practices were followed. During maximum (active) tillering stage, randomly selected ten hills (except the border ones) per entry

were inoculated with ten days old highly virulent isolate of the pathogen by the 'straw bit' method (Rao and Kannaiyan, 1973). The pathogen was isolated from the infected leaf sheaths of the susceptible high yielding cultivar swarna (MTU 7029).

Disease reaction was recorded on ten and forty days after inoculation. Entries were scored according to the SES (0—9) scale (IRRI, 1996).

None of the entries was found to be field resistant (R); only two entries were moderately resistant (MR) while rest 154 entries were susceptible (S) (Table 1). The MR entries were IET 17296 (Irrigated, medium duration) and IET 17676 (Rainfed lowland, deep-water, long duration). Location severity index (LSI) was also high (8.2). Disease incidence was high in very early, early and mid-early entries of rainfed upland/irrigated ecosystem where all plants inoculated with the pathogen died; thus no R/MR entries were found among them. On the contrary, only two MR entries were found among medium and long duration groups particularly in irrigated and rainfed lowland deepwater ecosystem respectively. IET 17296 was also tested during wet season 2001 and 2002 in NSN II and I at 6 and 14 locations all over India under AICRIP, mean score was 5.0 and 4.7

respectively (Anonymous, 2001). IET 17676 was tested during wet season 2002 in NSN I at 14 locations all over India under AICRIP, mean score was 5.5 (Anonymous, 2002). During wet season 2003, this entry, again tested in NSN I at Chinsurah, scored 5 (Biswas, unpublished data). These entries may be utilized for further breeding programme.

**Table 1** : Reaction of NSN I entries to sheath blight disease

Rice Ecosystems	Duration (days)	Total entries (no)	Entries (no)					
			0	1	3	5	7	9
Rainfed upland /irrigated	VE (<90)	14	0	0	0	0	2	12
	E (90-110)	40	0	0	0	0	6	34
Irrigated	ME (115-125)	23	0	0	0	0	7	16
	M (130-140)	58	0	0	0	1	23	34
Rainfed SDW	L (>150)	07	0	0	0	0	7	0
lowland DW	L (>150)	14	0	0	0	1	13	0
Total		156	0	0	0	2	58	96
LSI			8.2					

R = 0 - 3 ; MR = 5 ; S = 7 - 9

VE = Very early ; E = Early ; ME = Mid-early ; M = Medium ; L = Late/Long

SDW = Semi-deep water (30—50 cm water depth)

DW = Deep water (above 50 cm water depth)

Susceptible checks : Swarna, TN 1

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