

Behaviour of rice varieties against leaf blast disease in rainfed upland conditions of West Bengal

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Fourteen rice varieties were screened against Leaf blast disease in 2000, 2001 and 2002 to assess their behavioural pattern. IR-64 and NP 125 were moderately resistant along with Shia-tia-tsao, Tadukan and Tetep, while the other varieties manifested mostly susceptible response.

Key words : Blast, control, varietal resistance

INTRODUCTION

Rice blast is one of the most widely distributed diseases of the world, occurring in almost every region where rice is grown. In India, the damage to rice crop due to this disease has been as high as 75 per cent (Padmanabhan, 1958). Many countries have reported devastating epidemics because of this disease. Heavy nitrogen manuring along with the practice of growing high yielding varieties have augmented disease proneness.

In 2000, 2001 and 2002 kharif season, under the All India Co-ordinated Rice improvement Programme, 14 rice varieties with differential genetic background were evaluated for their response to leaf blast pathogen (*Pyricularia grisea*) at Rice Research Station, Bankura (representing red and lateritic zone of West Bengal). This was done to pave the way for identification of physiological races of blast fungus and to assess the role played by the gene organization of these varieties, in the field of resistance of susceptibility.

MATERIALS AND METHODS

Each variety was sown in single row of 50 cm long with a spacing of 15 cm. × 10 cm. Uniform Blast

Nursery (UBN) pattern was followed and the entire nursery was surrounded on all sides by two rows of local susceptible variety, Pankhe. The plot was fertilized with 130 kg N, 50 kg P and 30 Kg K/Ha. Recommended agronomic practices were followed. To create severe blast incidence, diseased leaf samples were collected, chopped into pieces of 3-6 cm. long and scattered over the plot.

Disease reaction was recorded 25 days after sowing following the Standard Evaluation System (SES) for rice (0-9 scale) of IRRI, 1996.

RESULTS AND DISCUSSION

The varieties Calarø, Dular and HR-12 show uniform susceptibility (S) to the pathogen (Table 1) in all the three years. C-102 PKT, carrying resistant genes from Pai-Kan-Tao also manifested susceptible reactions having scores 7, 9, 7 respectively, IR-50 and Kanto 51 was moderately resistant (MR) in the first two years, but in 2002, there was a break down of resistance and it became susceptible to *Pyricularia grisea*. A change in the type and population of physiologic races for the fungus (Mathur, 1971) is perhaps the most plausible reason for the behavioural change of IR-50 and Kanto 51, Rasi a durable resistant variety along

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with Usen and Zenith were resistant (R) in 2000, but in the subsequent years, it also became susceptible to the pathogen. It might be possible that the resistant genes of these varieties have been nullified by the virulent genes of the pathogen thereby rendering them susceptible (Keen *et al.*, 1993) IR-64 exhibited R reactions in the first two years and MR reaction in the third year. NP-125, Shia-tia-tsao, Tadukan and Tetep also manifested R and MR reactions. The resistant gene(s) of these varieties can be isolated and can be utilized as resistant donors against the pathogen (Li *et al.* 2000; Uchimiye *et al.* 2002). However, for an unequivocal conclusion regarding resistance genes and physiological races, rigorous screening of these varieties under controlled conditions in the glass house is a mandate.

Table 1 : Reaction of different varieties to leaf blast disease, during kharif seasons 2000-2002.

Name of variety	Reaction of leaf blast (0-9 scale)		
	2000	2001	2002
C-102 PKT	7	9	7
Calaro	7	7	7
Dular	7	9	9
IR-50	5	5	7
IR-64	2	4	5
Kanto 51	5	5	7
NP 125	4	5	5
Rasi	3	7	7
Shia-tia-tsao	5	5	5
Tadu Kan	1	4	5
Tetep	1	3	5
Usen	5	9	7
Zenith	2	6	6
HR-12	9	8	9

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