

EFFECTS OF CLIMATIC CONDITIONS ON THE OCCURRENCE OF BLAST DISEASE ON DIFFERENT PADDY VARIETIES

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Blast disease caused by the fungus *Pyricularia oryzae* is one of the major diseases affecting paddy. This fungus attacks all aerial parts of paddy plants. However, the size, colour and the shape of the lesions depend on the degree of resistance of the paddy variety. On resistant varieties lesions are small, brown and narrow. Typical large, spindle shaped lesions occur on susceptible varieties. This disease is more severe on seedlings in the nursery (Pans Manual No. 3).

The severity of the disease also depends on the climatic conditions. The favourable climatic conditions are the presence of rain or mist condition, humid atmosphere and absence of sunshine. The critical temperature for spore germination is 26 °C. Low wind velocity, high plant density, cool irrigation water and cool night temperatures also promote the disease level (Pans Manual No.3).

Use of resistant varieties provides a more attractive means

for blast control. However, as different pathogenic races of this fungus are present in different locations, varieties resistant in one locality may not be resistant to the same degree in another locality. Therefore, screening tests should be done in each locality to select resistant varieties (Pans Manual No.3).

This study was undertaken to identify resistant varieties and to find out relationship between varietal resistance and climatic conditions on the severity of this disease at Aralaganwila.

MATERIALS AND METHODS

This experiment was conducted at RARC, Aralaganwila during 1989/90 *Maha* and 1990 *Yala* seasons. Sixteen paddy varieties were screened to find out their response against the blast using susceptible check variety Pachchaiperumal and resistant check variety Tetep. Pachchaiperumal was sown in infector blocks. Test blocks were 1.5 m broad and 10. m long.

Spacing between two plant rows was 5 cm. Each variety was represented by two 80 cm long rows, and one variety was separated from the other by one row of standard susceptible variety to provide a uniform inoculum density. Three rows of Pachchaiperumal were sown around the test varieties as border rows.

N:P:K Mixture (3:13.2:8.3) was applied as basal fertilizer at the rate of 185 kg/ha and urea at the rate of 97.5 kg/ha as top dressing. The beds were watered 3 times a day.

The natural infestation occurred in *Maha* 89/90, but, not in *Yala* 1990. Therefore, finely chopped blast affected paddy straw was sprayed on the tested seedlings to induce the disease.

Disease assessments were made using the Standard Assessment Scale (Peires and Marks, 1988) and the results of this experiment are presented in Table 1.

Meteorological observations at Aralaganwila are illustrated in fig. 1.

RESULTS AND DISCUSSIONS

In *Maha* season rainfall, and relative humidity were high; temperature and wind velocity were low (Fig.1). The severity of blast was therefore, higher in *Maha* than in *Yala*.

Some cultivars which were susceptible in *Maha*, were moderately susceptible or showed resistance in *Yala* (Table 1).

The varieties Bg. 1222 , Bg.1112 and Bg. 1203 were highly resistant in both seasons (Table 1) and their degree of resistance was comparable to that of the resistant check variety Tetep. Varieties 62 - 355 and Bg. 11 -11 showed resistance in both seasons. Of the remainder, Bg. 379-2, Bg. 380 and Bg. 350 were highly susceptible in the *Maha* season and their degree of susceptibility was similar to that of the susceptible check variety. However, in *Yala*, only three varieties (Bg. 379-2, Bg. 380 and Pachchaiperumal) showed moderate susceptibility to this disease (Table 1).

Therefore, it can be concluded that the disease is severe during *Maha* than during *Yala* and selection of resistant varieties will reduce the incidence of paddy blast in *Maha*.

REFERENCES

1. Pest control in Rice - Pans Manual No.3:43-51.
2. Peiris, J.W.L. and Marks, G.C., 1958. Studies on paddy blast caused by *Pyricularis oryzae* . Trop. Agric. Vol.CXIV No. 4:237 - 244.

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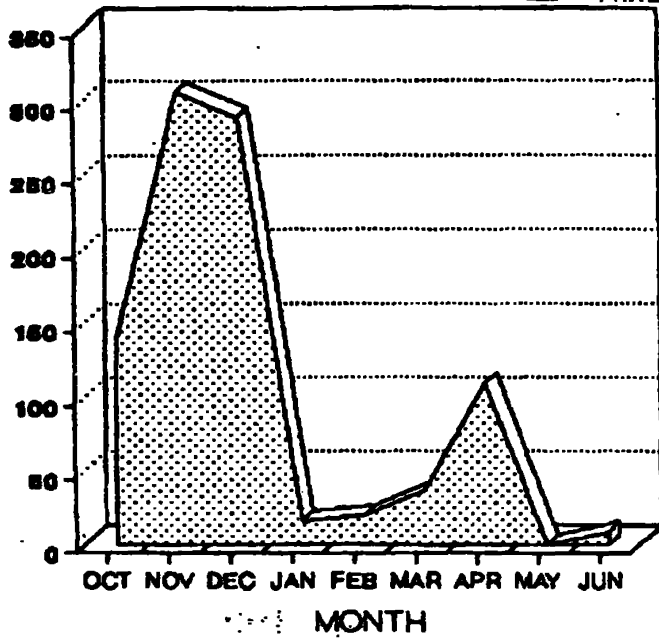
Table 1: Performances of rice varieties against paddy blast during Maha 1989/90 and Yala 1990 at Aralaganwila

Variety	Degree of Resistance	
	Maha 1989/90	Yala 1990
Tetep	RR	RR
Bg.1222	RR	RR
Bg.1112	RR	RR
Bg.1203	RR	RR
62-355	R	RR
Bg.11-11	R	RR
Bg.301	MR	RR
Bg.450	MS	RR
Bg.94-1	MS	RR
Bg.34-8	S	RR
Bg.400-1	S	RR
Bg.276-5	S	RR
Bg.379-2	SS	MS
Bg.380	SS	MS
Bg.350	SS	RR
Pachchaiperumal	SS	MS

RR - Highly resistant
 MR - Moderately resistant
 S - Susceptible

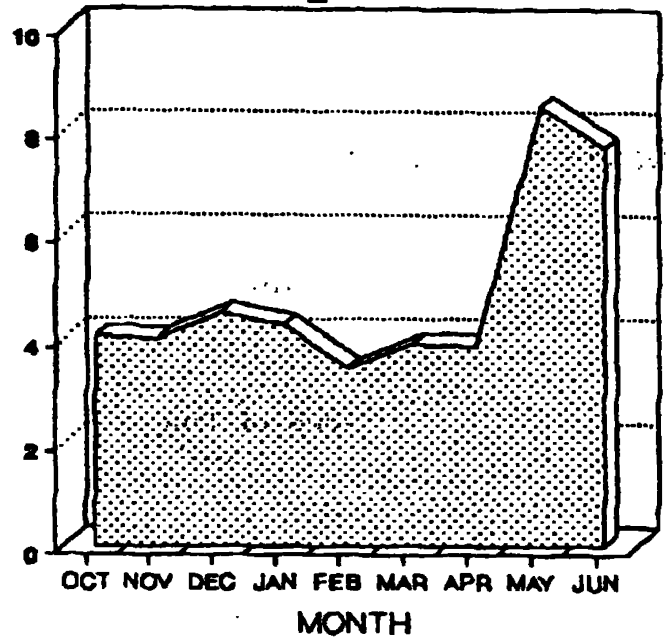
R - Resistant
 MS - Moderately susceptible
 SS - Highly susceptible

RAIN FALL



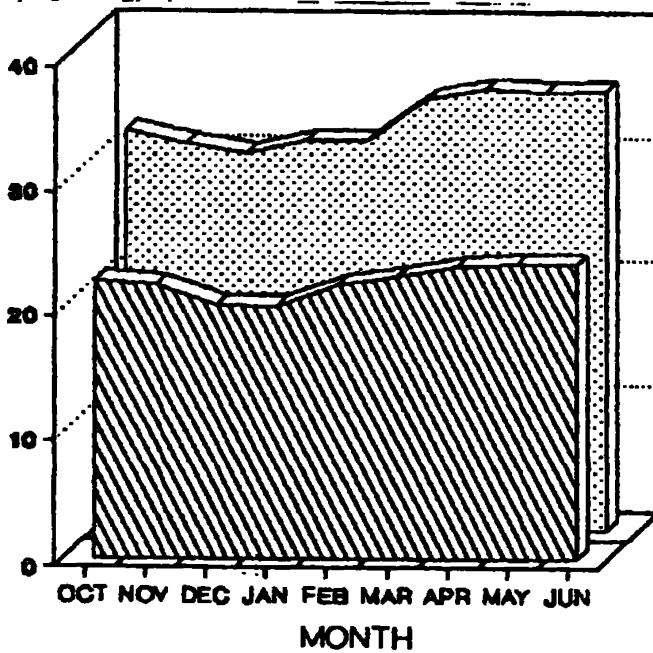
☐ Rain Fall (mm)

WIND VELOCITY



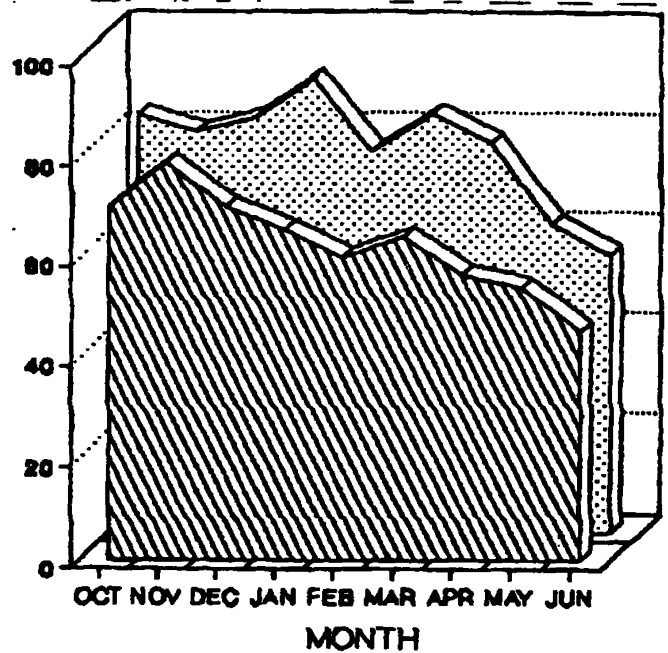
☐ Wind Velocity (Kmph)

TEMPERATURE



▨ Min Temp (C) ☐ Max Temp (C)

RH



▨ RH (%) Even. ☐ RH (%) Morn.

Maha: 15th October - 15th February *Yala*: 15th March - 15th July

Fig. 1: Meteorological data at RARC Aralaganvila during Maha 1989/90 and Yala 1990