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### PATHOTYPE GROUPING OF *XANTHOMONAS CAMPESTRIS* PV. *ORYZAE* ISOLATES OF MADHYA PRADESH

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Bacterial blight (BB) of rice caused by *Xanthomonas campestris* pv. *oryzae* (Dya *et. al.*, 1980) produces leaf blight and kresek. Blight form is more serious in rice growing districts of Madhya Pradesh (M. P.). Weather conditions *viz.*, average monthly, maximum temperature (31°C); minimum temperature (22°C) and relative humidity (92%) favour BB during the panicle initiation stage of the crop. Pathogenic variability of the organism from country to country and from location to location within a country has been fully recognised (Buddenhagen and Reddy, 1972 and Mew *et. al.*, 1982). Earlier Mohiuddin and Kauffman (1975) classified the Indian isolates in to eight groups, but later studies at All India CO-ordinated Rice Improvement Project, Hyderabad (1979) (presently Directorate of Rice Research) suggested only two pathotypes. Later studies at Punjab, Haryana, North West India and Tamilnadu indicated the prevalence of pathotype 1 only (Reddy, 1980, Mariappan *et. al.*, 1981, Durgapal, 1985 and Ahuja *et. al.*, 1986). Pathotypes of M. P. have been studied for the first time through this note.

Naturally occurring BB inoculum from five locations, representing major rice growing area of M.P. was used for the study. The differential varieties used for BB were inoculated at 50 days

after seeding following clip inoculation method as suggested by Kauffman *et al.*, (1973). The tips of rice leaves are clipped off with scissors which have bacterial blight suspension on

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Table 1. Disease reaction <sup>∞</sup> of the rice varieties to strains of *xanthomonas campestris* *nv oryzae* of M. P.

BB Differential varieties	Place of collection				
	Dhamatri (Raipur)	Labhandi (Raipur)	Lorami (Bilaspur)	Janjgir (Bilaspur)	Bhilai (Durg)
IR 8	9	9	9	9	9
TKM 6	7	7	7	5	7
IR 20	7	7	5	7	7
IR 1545-339-2-2	5	5	5	7	5
CAS 209	9	9	9	9	9
Java 14	7	9	7	7	7
DV 85	1	1	1	1	1
Chugoku 45	7	7	9	9	9
Cempo selac	7	9	7	7	9
M. Sungsong	7	7	9	9	7

<sup>∞</sup> Disease reaction on BB was evaluated following standard

Evaluation system for rice (0-9) scale on the basis of % leaf area infected (lesion %).

their blades. Disease reaction was recorded 14 days after inoculation using the standard evaluation system (0-9 scale) followed at IRRI.

Differential reaction between rice varieties and strains of BB, from different locations were observed to be about the same (Table 1). The differential varieties TKM 6, IR 20, IR 1545-339-2-2, CAS 209, Java 14, Chugoku45, Cempo-selac and M.Sungsong and the susceptible check IR 8 were all susceptible whereas variety DV 85 was resistant to the M. P. strains. The comparative differential reactions (Table 2) suggested that the dominant strains prevalent in M. P. thus belong to the group pathotype 1.

The known gene in TKM 6 and IR

20 is *Xa* 4 and in IR 1545-339-2-2 is *Xa* 5, CAS 209 possess *Xa* 10 and Java 14 have *Xa* 1, *Xa* *kg* and *Xa* 3 genes in (Khush and Virmani, 1985). There is no known gene in IR 8 and the resistant gene of Cempo-selac has not been designated, whereas M. Sungsong possess *Xa* 6 gene for BB resistance (Reddy, 1980). But all these differentials were found to be susceptible to the prevalent pathotype 1. Only DV 85 possessing *Xa* 5 and *Xa* 7 (Khush and Virmani, 1985) was found to be resistant to the M. P. strains of BB. This differentiates pathotype 1 reaction from the reaction of pathotype 2. The present study thus suggests that out of many resistant genes; only resistant gene *Xa* 7 is useful to combat M. P. strains of BB.

Table 2. Comparison of the pathotypes of *Xanthomonas campestris* pv. *oryzae*

Differential varieties	Known resistant gene	Reaction to pathotype*		Reaction to M. P. isolates
		1	2	
IR 8	no gene	S	S	S
TKM 6	Xa 4	S	S	S
IR 20	Xa 4	S	S	S
IR 1545-339-2-2	Xa 5	S	S	S
CAS 209	Xa 10	S	S	S
Java 14	Xa 1, Xa kg, Xa 3	S	S	S
DV 85	Xa 5, Xa 7	R	S	R
Chugoku 45	Xa 3	S	R	S
M. Sungsong	Xa 6	S	R	S
Cemposelac	?	S	R	S

\* R resistant, S ; susceptible. ? : not studied

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