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Short Communication

RESISTANCE IN TRADITIONAL RAINFED RICE CULTIVARS FOR BACTERIAL LEAF BLIGHT (*XANTHOMONAS COMPESTRIES PV. ORYZAE*)

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Key words : Bacterial leaf blight, traditional cultivars, rainfed rice, resistance.

Increasing use of modern rice varieties with high fertilizer inputs has necessitated suitable management of disease to achieve high returns. Bacterial leaf blight (BLP) caused by *Zanthomonas compestries* pv. *Oryzae* have been reported to be one of the major disease of shallow rainfed agroecology of plateau region. (Variar et al 1990) causing estimated yield loss to the extent of (20-30%) in eastern India (Widawsky and O'Toole, 1990). This necessitated the development of resistant cultivars. Therefore, there is a need of donor genotypes for resistance with a view to incorporate them in improved cultivars. In this context vast and untapped potential of locally adopted traditional cultivars offers great promise. The present paper reports bacterial leaf blight resistant accessions identified from a collection of traditional cultivars.

One hundred and eighty three accessions collected from plateau region of Bihar and adjoining parts of West Bengal were evaluated for bacterial blight (*Xanthomonas compestries pv Oryzae* (Uyeda & Ishiyama) during 1990-93. Each accession was tested atleast for two seasons. The accessions were transplanted using single seedling/hill with spacing 20 × 15 cm and high fertility 120 N, 18 P and 17 K kg/ha. Seedlings were clip inoculated 45 days after transplanting following Kauffman et. al. 1973. The scoring was done when the susceptible check T(N)1 was completely damaged, following standard evaluation system (SES) for rice (Anonymous 1988). The agromorphological characters and phenol reaction of resistant accessions were also recorded using 10 plants per accession.

Fifty seven accessions (31.1%) had score of 2 and 3 and the rest were either moderately resistant or susceptible (Fig. 1). None of the accessions showed score of 0 to 1. Accessions showing consistently high levels of resistance were Sikkinanhiya (HRC 701), 42-34 (HRC 702), Kalamdani (HRC 706), Jugadi (HRC 733), Azamdulla (NIC 105735), Majhidhan (NIC 105724), Radha Kanka (NIC 105730), Bilaiti Bhogna (NIC 105737) and Maghidhan (NIC 105752).

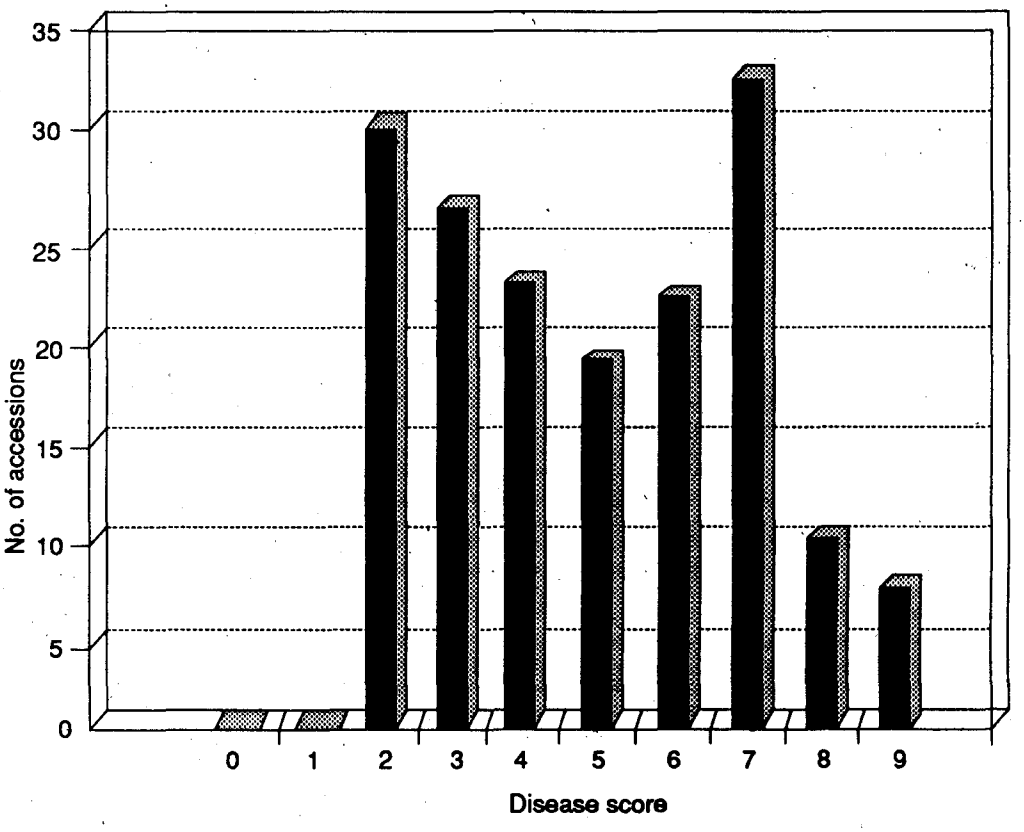

Fig. 1. Frequency distribution of rice accessions for BLB (n=183)

The present collection comprised accessions mostly from medium and lowlands and thus indicated prevalence of resistance to bacterial blight, because bacterial blight in such agroecology leading to adequate differentiation of suspectible and resistant accessions is followed by human and natural selection. Several accessions has desirable agromorphological characters in addition to BLB resistance (Table 1) and hence may serve as useful donors for varietal improvement programmes.

Table 1. Morphoagronomic characters of some selected bacterial leaf blight resistant accessions.

Accessions	Source	Plant height (cm)	50% flowering (days)	Panicle length (cm)	Spikelets/ panicle (No.)	Fertility (%)	200 grain wt(g)	Grain length (mm)	L/B ratio	Phenol reaction
HRC 701	Sikkinanhiya	106	105	24.7	106.0	90.1	5.0	6.4	3.0	+
HRC 716	Sikkinanhiya	117	108	23.2	115.8	78.0	4.0	5.0	2.9	+
HRC 733	Gopalbhog	120	104	25.6	59.0	84.8	6.3	6.6	2.6	-
HRC 735	Jugadi	115	97	26.5	55.0	80.0	53	6.2	2.5	+++
NIC105687	Lau	133	111	27.7	155.0	66.1	5.8	6.0	2.4	+++
NIC 105703	Ajondholi	110	105	24.9	122.5	80.0	5.0	6.4	2.9	+++
NIC105735	Majhidhan	103	105	23,3	113.5	73.6	5.8	6.2	2.7	+
NIC105735	Azamdulla	120	104	21.3	109.0	86.7	4.9	6.3	2.8	+++
NIC105737	Bilaitibhogna	110	99	22.8	168.8	82.1	4.2	5.9	2.8	+++
NIC105750	Samundardhan	108	93	24.2	127.8	71.6	5.7	5.9	2.3	+++
NIC105752	Maghidhan	98	109	22.0	86.0	88.6	5.1	6.7	3.2	+++
NIC105810	Jhingasar	126	101	25.2	117.8	83.6	5.8	7.2	3.1	+

HRC - Hazaribad Rice Collections

NIC - National Indeginous Collections (NBPGR, Ranchi)

REFERENCES

Anonymous 1988. Standard Evaluation System for Rice. International Rice Research Institute, Los Banos, Philippines, pp 54.

Kauffman H.E., A.P.K. Reddy, S.P.Y. Hsieh and S.D. Merca. 1973. An improved technique for evaluating rice varieties to Xanthomonas oryzae. Plant Disease Reporter, 56: 537-41.

Variar M., D. Maiti and V.D. Shukla. 1990. Rice disease and their management in Bihar. Status paper presented in the Annual Rice Workshop, Directorate of Rice Res., Hydrabad, 23-24 March, 1990.

Widawsky D.A. and J.C. O'Toole 1990. Estimation of crop losses *In* : Prioritizing the rice biotechnology research agenda for Eastern India, Publn. of the Rockefeller Found. New York, USA, 34-47