

Field Screening of Maize Genotypes Against Maydis Leaf Blight Caused by *Helminthosporium maydis* Nisicado and Miyake

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SUMMARY

Fifty one maize genotypes screened against *Helminthosporium maydis* Nisicado and Miyake under artificial inoculated conditions of full season maturity group. Significant variability in the severity of this disease was observed among genotypes. The per cent disease severity ranged 1.5 – 4.5 at leaf stage. Out of 51 genotypes rated as 26 resistant, 8 moderately resistant, 13 moderately susceptible, 2 susceptible and 2 highly susceptible against maydis leaf blight.

Key words :

Helminthosporium maydis, Maize, Resistance, Screening

Maize (*Zea mays* L.) is an important food, fodder and feed crop of Bihar. It is grown throughout the year *i.e.* in all the seasons *viz.*, *rabi*, spring, summer and *kharif*. The crop suffers much due to biotic and abiotic factors. Among them most important disease maydis leaf blight caused by *Helminthosporium maydis* Nisicado and Miyake stands as a major factor. For the first time the incidence of disease was reported by (Drechsler, 1923) from United States. Subsequently, this disease was reported from Japan (Nisicado and Miyake, 1926). From India, Manjul and Kapoor (1960) gave first report of its presence and isolated it from Maldah (West Bengal). In India, the disease is present in almost all the major maize growing states. The disease has a potential to reduce grain yield up to the extent of 41% in susceptible cultivar (Sharma and Rai, 2000). Little efforts have been made so far to find out the sources of resistance against these important diseases in different species of maize except fungicidal treatment.

MATERIALS AND METHODS

Maize disease resistance screening work was conducted at Tirhut college of Agriculture, Dholi, Muzaffarpur, Bihar, to identify resistant lines and genotypes against maydis leaf blight under artificial inoculated conditions during *kharif*, 2008. Fifty one genotypes belonging to full maturity groups were screened. The

screening were carried out in two row plots of 5 m long with a spacing of 75cm x 25cm along with one check row of a susceptible CML 186 at beginning and end of the rest entries to facilitate recording of comparative disease reaction and also to provide sufficient inoculum pressure with the help of susceptible infector row. Recommended agronomic practices were followed to raised a normal crops.

The inoculum of pathogen for field inoculation was multiplied on sorghum seeds as suggested by (Joshi *et al.*, 1969). Inoculations were carried out twice when crop attained the age of 30 and 40 days old. Disease intensity was recorded using 1-5 rating scale suggested by Payak and Sharma (1983). The disease reaction between the ratings 0.1-2.0 was considered as resistant (R), 2.1-2.5 as moderately resistant (MR), 2.6-3.0 as moderately susceptible (MS) 3.1-4.0 as susceptible (S) and between 4.1-5.0 as highly susceptible (HS).

RESULTS AND DISCUSSION

Altogether 51 genotypes of full season maturity group were screened against *Helminthosporium maydis* under artificially inoculated conditions and the resistant source obtain from full maturity group. Significant variability in the severity of this disease was observed among genotypes. The per cent disease severity ranged 1.5 – 4.5 at leaf stage

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Table 1 : Reaction of different genotypes to maydis leaf blight (*Helminthosporium maydis*) of maize

Rating scale (1-5)	Disease reaction	Entries
0	Highly resistant	0
0.1-2.0	Resistant (26)	JH-11662, 11652, 11858, 11925, EHK-40108, BH-407138, 407139, 408004, X7B-401, 403, LAXMI-9495, GK-3057, 3059, PAC-745, IMH-111, M-05008, PHS-620214, PRO-374, 375, BISCO-777, 4564, KMH-3669, BL-2801, MLM-38, BIO-9681
2.1-2.5	Moderate resistant (8)	GH-0727, BH- 407135, 408001, PAC- 7416, SMH-4500, SMH-4502, HTCH-5401, EKH- 40008
2.6-3.0	Moderate susceptible (13)	JH1-2046, GH-0704, KMH-40876, BH-408002, PFMH- 9733, 9733, KDMH- 104, JKMH- 8001, HTCH- 5102, POLO, 2000M, SEEDTEC- 2324, PARBHAT
3.1-4.0	Susceptible (2)	GK-3636, 115-08-01
4.1-5.0	Highly susceptible (2)	PHS-520247, JKMH-8003

(Table 1). Out of 51 genotypes 26 genotypes viz., JH-11662, 11652, 11858, 11925, EHK-40108, BH-407138, 407139, 408004, X7B 403, LAXMI-9495, GK-3057, 3059, PAC-745, IMH-111, M-05008, PHS-620214, PRO-374, 375, BISCO-777, 4564, KMH-3669, BL-2801, MLM-38, BIO-9681 found resistant against maydis leaf blight. Eight genotypes gave moderately resistant, 13 moderately susceptible, 2 susceptible, and 2 highly susceptible to maydis leaf blight. The resistant reaction in these entries might be attributed either due to the dominant resistant gene conferring resistance from the parental lines or presence of certain physiological as well as the chemical barriers against the pathogen or combination of all above trials in these genotypes. These findings are in close conformity of reports of Jha,1996 and Kar (1998). Thus, the maize lines from resistant and moderately resistant categories can be well utilized successfully for developing hybrids and composites in future breeding programme.

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