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Evaluation of maize genotypes for immunity against Banded Leaf and sheath blight disease

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Abstract

Twenty-eight genotypes of maize were screened against Banded Leaf and Sheath blight disease of maize.Four accessions were found resistant viz.,Pragati,KH-94,Proagro-4212,MH117, three were found highly susceptible viz., Amar, Sweety, Suguna and remaining twenty one were found susceptible. None were found highly resistant.

Keywords: Genotypes,Maize,resistance,Banded leaf and sheath blight.

Introduction

Maize (*Zea mays* **L.**) is also known as "Queen of Cereals". Like any other crop maize is also damaged by several other biotic factors. Banded leaf and sheath blight (BLSB) is one of its important disease incitant by *Rhizoctonia solani* (Kuhn).BLSB severly reduce the yield of crop.*R.solani* is dynamic and dreaded Pathogen infecting more than 500 plants.Pathogen and crop both are important,therefore,present investigation was undertaken to find out resistant genetic resources for its sustainable and ecofriendly management.

Materials and Method

Twenty eight accessions were received from G.B. Pant University of Agriculture &Technology, Pantnagar,Uttrakhand.All accessions were evaluated under artificial epiphytotic conditions in two consecutive 2008-2009 in Kharif crop season.Seeds were swon in 3.0x1.2 m2 plot replicated twice each.Each plot consist of 2 rows 3 meter long of each genotype.Field inoculations were carried out on 40 days old plants by inserting 4 barley grains as described by Ahuja &Payak (1978).Disease severity was recorded following (1-9) disease score rating scale after 20 days of inoculations (Ahuja &Payak,1983);Muis and Quimio(2006).Percent Disease incidence (PDI) and Percent Disease Index(PDIE) was calculated by formula as suggested by McKinney(1923).

$$\text{Percent Disease Incidence} = \frac{\text{No. of infected plants } X\ 100}{\text{Total no. of plants}}$$

$$\%\ \text{Disease Index (PDIE)} = \frac{\text{Sum of all disease ratings } X\ 100}{\text{Total no. of observations (sample) } X \text{ Maximum disease rating grade}}$$

Result and Discussion

The Perusal of Table-1 reveals that out of twenty-eight accessions,four were found resistant,twenty-one were susceptible and three were found highly susceptible.None were found highly resistant on disease rating scale.Pragati,KH-94,Proagro-4212,and MH-117 showed high degree of tolerance.Germplasm evaluation has been done by several workers using number of varities,hybrids and inbred lines to find out resistant gentic resources against BLSB,Ahuja and Payak (1981);Sharma et.al., (2003);Biswas,et.al., (2007)and Garg,et.al.,(2007);Madhvi,et.al., (2011). Identification of diverse and suitable field resistance to BLSB is imperative and prerequisite to a resistance breeding programme.Hence,lines which showed constant tolerance or resistance reaction must be utilized for systemic breeding programme to develop resistant commercial varieties to avoid loss.

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Table-1:Screening of various accessions against Banded leaf and sheath blight of maize

S.No.	Name of Genotypes	PDI(%)	PDIE(%)	Remark
1.	3765	35.30	25.00	S
2.	HiShell	35.40	23.10	S
3.	NK-Sawarna	37.50	41.90	S
4.	GK-3101	45.80	46.50	S
5.	GSS-2	43.70	44.00	S
6.	S-589	33.30	54.60	S
7.	K-99	51.70	57.20	S
8.	Gaurav	33.00	54.60	S
9.	Pragati	29.40	35.13	R
10.	NS-1133	42.30	45.40	S
11.	Sweety	65.00	45.80	HS
12	Surya	50.40	39.10	S
13	Sujata	41.70	51.62	S
14.	Amar	80.90	76.50	HS
15.	KHNR	35.20	44.61	S
16.	KH-94	25.90	39.10	R
17.	SMH-3758	46.50	49.12	S
18.	BisBP	43.70	44.00	S
19.	Proagro-4212	29.71	41.50	R
20.	GKS-2	33.33	29.60	S
21.	Kanchan	40.00	28.70	S
22.	GK-3017	31.20	38.24	S
23.	GK-3015	50.00	29.96	S
24.	MH-117	29.26	47.20	R
25.	31T15	45.00	36.30	S
26.	K-101	41.70	44.20	S
27.	K-25	35.40	43.30	S
28.	Suguna	65.00	45.80	HS

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