

Original Research Article

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Identification of Resistant Genotype of Barnyard Millet of National Screening Nursery (NSN) against Banded Blight Disease caused by *Rhizoctonia solani* Kuhn

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ABSTRACT

Keywords

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The field experiment was conducted during *Kharif* 2019 at SG College of Agriculture and Research Station, Jagdalpur, IGKV, Raipur (CG), to identify the resistant genotypes for banded blight (*Rhizoctonia solani*). Result revealed that none of the genotype was found free from banded blight disease. Banded blight per cent disease index observed between 12.22 to 34.44%. Genotypes VL-29 (18.15%), VL 181 (12.22%) and VL 264 (19.63%) were found highly resistant against banded blight. Whereas, genotypes VL 263 (20.37%), LRB-2 (29.20%), LRB -10 (25.93%), LRB-13 (25.19%), LRB-14 (25.19%), LRB-15 (28.52%) and LRB -17 (24.44%) were found resistant for banded blight. However, genotypes LRB-17 (34.44%) and LDR-1 (Local Check 30.74%) were observed moderately susceptible for banded blight.

Introduction

Small millets are the traditional crops, agronomically more adapted to less fertile soils. The important small millets grown in India are finger millet, kodo millet, little millet, foxtail millet, barnyard millet and proso millets (Netam R.S. *et al.* 2014). Barnyard millet (*Echinochloa frumentacea*) is one of the hardiest millet, which is called by several names viz., Japanese barnyard millet, ooda, oaalu, sawan, sanwa and sanwank (Patro *et al.*, 2018). In India

barnyard millet is the second important small millet after finger millet having production and productivity 87 thousand tones and 857 kg/ha, respectively (Padulosi *et al.*, 2009). The pathogen is capable of causing various diseases on a variety of susceptible agriculturally important crops (Nagaraj *et al.* 2010). During *Kharif*, 2007 thirteen entries were screened against banded blight in barnyard millet. All the entries of barnyard millet showed resistant to moderately susceptible reaction (Jain and Gupta, 2010).

Materials and Methods

Eleven genotypes with one local check (LDR-1) and one resistant check (PRB 903) under national screening nursery (NSN) were tested at New Upland Research Station cum Instructional (NURI) Farm, Lamker under SG College of Agriculture and Research Station, Jagdalpur, Bastar (CG) during *Kharif* season 2019. These entries were sown in two rows of 3 meter length and 22.5 cm × 10 cm spacing to find out resistant sources against banded blight disease of barnyard millet.

The recommended agronomic practices were adopted at the time of crop growth period. Infected plants were examined for lesion development and disease severity was assessed on the basis of lesion length by using 0 to 5 scale (Anonymous, 1996) and presented in Table 1. Per cent Disease index (PDI) was calculated by using the following formula:

$$PDI = \frac{\text{Sum of all disease rating}}{\text{Total no.of rating} \times \text{Maximum disease grade}} \times 100$$

Results and Discussion

Eleven barnyard genotypes were tested for banded blight during *Kharif* 2019 with one local check (LDR 1) and one resistant check (PRB 903). None of the genotypes were

found tolerance for banded blight.

The Per cent disease index was recorded between 12.22 to 34.44%. Genotypes, VL-29 (18.15%), VL 181 (12.22%), VL 264 (19.63%) were found highly resistant for banded blight. Whereas, genotypes VL 263 (20.37%), LRB-2 (29.20%), LRB -10 (25.93%), LRB-13 (25.19%), LRB-14 (25.19%), LRB-15 (28.52%) and LRB -17 (24.44%) were found resistant for banded blight. However, genotype LDR-1 (Local Check 30.74%) and LRB-17 (34.44%) observed moderately resistant for banded blight.

Patro *et al.*, (2017) evaluated ten varieties where the disease intensity ranges from 85.33% (VL 207) to 97.33% (DHBM 18-6, VL 249 and DHBM 99-6) while it was 98.67% in the local check. Divya *et al.*, (2016) evaluated thirteen varieties the percentage disease intensity ranged from 27.9% (ACM 10-082) to 92.5% (RBM7-2) whereas it was 93.7% in susceptible check. Patro *et al.* (2014) and Nagraja *et al.*, (2016) reported that all the small millet crops were found infected with *R. solani*. Whereas in the screening of little millet LAVT 19 and LAVT 14 were found as resistant genotypes (Table 2).

Table.1 Standard Evaluation System (SES) scale for banded blight disease

Score	Description	Reaction
0	No incidence	Immune
1	Vertical spread of the lesions up to 20% of plant height	HR
2	Vertical spread of the lesions up to 21 -30% of plant height	R
3	Vertical spread of the lesions up to 30-45% of plant height	MR/MS
4	Vertical spread of the lesions up to 46-65% of plant height	S
5	Vertical spread of the lesions up to 66-100% of plant height	HS

Table.2 Reaction of barnyard millet genotype in national screening nursery (NSN) against Banded blight

S.No.	Genotypes	Jagdapur (PDI)
1	VL -29	18.15%
2	VL -181	12.22%
3	VL-263	20.37%
4	VL -264	19.63%
5	LRB-2	29.26%
6	LRB-10	25.93%
7	LRB-13	25.19%
8	LRB-14	25.19%
9	LRB-15	28.52%
10	LRB-16	24.44%
11	LRB-17	34.44%
12	PRB 903(Res)	8.52%
13	LDR 1(Sus)	30.7%
	SEm±	2.68
	C.D. (5%)	7.88

In conclusion during the screening of eleven genotypes of barnyard millet in national screening nursery (NSN) with one resistant and one susceptible check. None of the genotype found to be immune against banded blight. Genotypes VL-29, VL 181 and VL 264 were found highly resistant for banded blight. VL 263, LRB-2, LRB -10, LRB-13, LRB-14, LRB-15 and LRB -17 was promising for banded blight resistant during the one year experimentation.

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