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Survey of northern Madhya Pradesh pearl millet growing districts to find out the blast severity

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Abstract

Pearl millet (*Pennisetum glaucum*) is an important nutri-cereal for human as well as a forage/fodder crop for livestock. It is the only cereal crop that is capable for adopting harsh climate condition and marginal soil. Blast incited by *Pyricularia grisea* (Cooke) Sacc. Has occupied a key position among the pearl millet diseases resulting severe losses in high yield potential hybrids/ varieties particularly cultivated for fodder purpose. The disease survey was carried out in Morena, Bhind and Gwalior as these three districts jointly contribute more than 70% in area and production of the state. The survey result reveals that blast is a serious problem in the Northern region of M.P. As its severity in the above three district was 12.6%, 11.10% and 11.73% respectively.

Keywords: Survey, Pearl millet, *Pyricularia grisea*

Introduction

Pearl millet (*Pennisetum glaucum*) is an important Nutri-cereal for human as well as a forage/fodder crop for livestock. It is the only cereal crop that is capable for adopting harsh climate condition and marginal soil. In India it is popularly known as bajra grown in the area having an average rainfall of 150-1000 mm. Our country is the largest producer of this crop in Asia occupies an area of 6983 thousand ha with the production of 8057 million tones and the productivity is 1154 kg/ha during 2015-16. (Anon.2015-16) [1]. Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, Uttar Pradesh, Haryana, Karnataka, Andhra Pradesh and Telangana are the major Pearl millet growing states of the country. In Madhya Pradesh during 2015-16 the crop was cultivated in an area of 267 thousand ha with an annual production 618 million tones and productivity is 2315 kg/ha. (Anon. 2015-16) [1]. Northern region of Madhya Pradesh comprising Morena, Bhind and Gwalior is the major Pearl millet growing area of the state; as these three districts jointly contribute more than 70 % share in area and production of this crop in the state. Blast incited by *Pyricularia grisea* (Cooke) Sacc. Has occupied a key position among the pearl millet diseases resulting severe losses in high yield potential hybrids/varieties particularly cultivated for fodder purpose.

Materials and Methods

Pearl millet fields of Gwalior, Morena and Bhind were surveyed to find out the severity of blast during Kharif season 2017- 18. For such survey five villages from each district were randomly selected and from each village five fields were randomly selected. The blast severity was recorded at dough stage of the crop. In each selected field the disease severity was recorded on four randomly selected patches of 1 m². The mean disease severity of all the four patches of the field represents the severity of the field. The mean of all the five fields of the village will represent the severity of the village. The district severity was calculated by taking the mean of all the blocks of the district. Blast severity was recorded using 0 – 100% severity area on leaves.

Results and Discussion

A planned survey of Pearl millet blast was carried out in Morena, Bhind and Gwalior districts. The data presented in the table 1 reveals that blast is a commonly occurring foliar disease of Pearl millet and its severity across the villages was in the range of 9.8 % to 15.04 %. In Morena district the maximum severity of blast was recorded in Morena village 15.04% followed by Chhera (13.32%), Kharagpur (12.28%) and Tighra (11.8 %) while the minimum blast severity of 10.92 % was recorded in Jigani village. The maximum blast severity in Bhind district was recorded in Singarpur village (13.8%) followed by Mauch (11.12%), Barua (10.6%) and Aatiri (10.2%) while minimum blast severity of 9.8% was recorded in Badagaon village.

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Adokhar village of Gwalior district showed maximum severity (12.88%) of blast followed by Babedi (12.44%), Ahroli ghat (11.48%) and Amlada (11.16%) while minimum blast severity was recorded on the Akoun (10.72%). It is also obvious from the table 1 that the maximum blast severity (12.67%) was recorded in Morena district followed by Gwalior and Bhind where 11.73% and 11.10% blast severity was recorded respectively.

Table 1: Village wise severity of Pearl millet blast in Morena, Bhind and Gwalior districts.

District	Village	Percent blast severity					Mean
		F1	F2	F3	F4	F5	
D1. Morena	V1. Kharagpur	12.2	17.4	7.6	13.4	10.8	12.28
	V2. Jigani	9.6	7.2	11.4	14	12.4	10.92
	V3. Tighra	15.4	8.8	14.8	12.4	7.6	11.80
	V4. Chhera	9.4	12	11.8	16.2	17.2	13.32
	V6. Morena	20.2	13.2	16.4	10.8	14.6	15.04
D1. Mean %						12.67	
D2. Bhind	V1. Badagaon	6.8	11.2	12.4	10.2	8.4	9.80
	V2. Barua	13.4	10.6	11.8	7.4	9.8	10.60
	V3. Mauch	12	14.6	10.2	8.2	10.6	11.12
	V4. Aatiri	9.2	8.6	7.4	11.2	14.6	10.20
	V5. Singarpura	13.8	14	12.8	15.4	13	13.80
D2. Mean %						11.10	
D3. Gwalior	V1. Ahroli ghat	7.6	13.4	17.8	7.8	10.8	11.48
	V2. Adokhar	14.2	11.6	10.2	13.6	14.8	12.88
	V3. Akoun	8.4	10	14.2	9.8	11.2	10.72
	V4. Amlada	9.8	13.8	11.2	7.6	13.4	11.16
	V5. Babedi	14.6	9.6	11.4	14.4	12.2	12.44
D3. Mean %						11.73	
All District Mean %						11.84	

D- District, V- Village, F-Field

The results of the disease survey reveals that blast is one of the most important biotic constraints in the cultivation of pearl millet in Northern region of Madhya Pradesh. The farmers of the region usually normally grows dual purpose hybrids and varieties. The maximum blast severity was recorded in Morena district followed by Gwalior. While the severity of the disease was low in Bhind district. The higher severity of blast in Morena district. The possible reason of the higher severity of blast in Morena district might be due to soil fertility, monoculture, Continuous cultivation of hybrids in large areas.

The present finding is supported by the work of Devda (2009)^[2] who surveyed the pearl millet fields of Morena, Bhind and Gwalior and reported 5.5, 3.8 and 5.4 per cent severity of blast respectively. The severity of Pearl millet blast in Morena, Bhind and Gwalior was 11.53, 13.40 and 11.28 percent respectively. Yadav *et al.*, (2012)^[3].

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