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Screening for Identification of Kodomillet varieties against banded blight (BB) disease incited by *Rhizoctonia solani* Kuhn

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Abstract
A total of 15 kodo millet varieties including check were evaluated for resistance to banded blight at Agricultural Research Station, Vizianagaram during *kharif*, 2019-20. The experiment was conducted under field condition. The screening revealed that none of the test lines or varieties was immune or highly resistant. RPS 1005 (57.7) and RPS 1007 (59.7) which were recorded as susceptible. Varieties BK 6 (85.3) and GPLM 273 (85.0) recorded highest disease severity, JK-76 (95.7) (local) as highly susceptible. Percent disease severity ranged from 57.7% (RPS 1005) to 85.3% (BK 6) whereas it was 95.7% in susceptible check and it was 23.7% in resistant check.

Keywords: Kodo millet, screening, resistant, susceptible, banded blight

Introduction
Kodo millet (*Paspalum scrobiculatum*) is one of the hardiest crops grown in Madhya Pradesh, Maharashtra, and Uttar Pradesh and various other parts of India. Minor millets like kodo is also described as nutritious millet and has received far less research and development attention than other crops with regard to crop improvement and utilization. It is the main source of protein and minerals in the daily diets of tribal and weaker section living in remote rural areas. Millets are nutritionally superior to other cereals. The millet contains a high proportion of complex carbohydrate and dietary fiber which helps in prevention of constipation and slow release of glucose to the blood stream. Glycemic index is an important tool used in treating people with diabetes, cardiovascular disease management and weight regulation programs. Millets including Kodo contain water soluble fiber and this property may be utilized for maintaining or lowering blood glucose response among diabetic and CVD patients. Glycemic load (GL) representing both quality and quantity of carbohydrate in a food and allows comparison of the likely glycemic effect of realistic portion of the different foods (Neelam, *et al.* 2013) [3].
As it is a low value crop doesn't offer much scope for additional cash inputs like fungicides and chemical methods of control are generally not advisable, hence growing resistant varieties is the best option. Very little efforts have been made to identify the resistant sources of foxtail millet against banded leaf blight disease. So an attempt was made to identify the sheath blight resistant lines.

Material and Methods
15 entries of kodo millet varieties were evaluated at Agricultural Research Station, Vizianagaram. These entries were evaluated in two rows of 3 m length sown at 22.5×10cm spacing in infector row method using JK-76 as a susceptible check so as to ensure the availability of sufficient inoculum during *kharif* 2019-20. Banded blight (BB) was recorded by using 0 to 9 scale (Anon, 1996) [1].

Table 1: Standard Evaluation System (SES) scale for sheath blight disease

Score	Description	Reaction
0	No incidence	No disease/HR
1	Vertical spread of the lesions up to 20% of plant height	R
3	Vertical spread of the lesions up to 21-30% of plant height	MR
5	Vertical spread of the lesions up to 31-45% of plant height	MS
7	Vertical spread of the lesions up to 46-65% of plant height	S
9	Vertical spread of the lesions up to 66-100% of plant height	HS

Data was taken and expressed in percentage. The Percent Disease Index (PDI) was calculated by using the following formula:

$$PDI = \frac{\text{Sum of individual disease ratings}}{\text{No. of observations assessed X maximum disease rating}} X\ 100$$

Results and Discussion

15 kodo millet varieties including check were evaluated for resistance to banded blight. The screening revealed that none of the test lines or varieties was immune or highly resistant. RPS 1005 (57.7) and RPS 1007 (59.7) which were recorded as susceptible. Varieties BK 6 (85.3) and GPLM 273 (85.0) recorded highest disease severity, JK-76 (95.7) (local) as highly susceptible. Percent disease severity ranged from 57.7% (RPS 1005) to 85.3% (BK 6) whereas it was 95.7% in susceptible check and it was 23.7% in resistant check (Table 2).

Patro *et al.* (2017) [10] screened 10 kodo millet entries and the disease intensity ranged from 78.00% (DPS-118) to 98.67% (RK-64) in which it was 97.33% in the check. However, kodo millet varieties KAVT 5, KAVT 20 and KAVT 22 were found as resistant genotype. Patro *et al.* (2016) [9] screened six varieties in which RK 390-25 (20.5) was found to be highly resistant. However, DPS 118 (21.7) was recorded as resistant, TNAU 86 (63.6) and RK 153 (64.4) as susceptible, GPUK 3 (70.2) and TNAU 26 (87.4) was found to be highly susceptible. The mean performance of six centres as revealed that RK 390-25 (8.8), DPS 118 (17.1) as highly resistant, GPUK 3 (21.0), RK 156 (23.0) and TNAU 86 (30.0) as resistant varieties. Patro *et al.* (2016) [9] evaluated 27 genotypes DHKM 3 (24.0) and BK 20 (25.5) showed less severity of banded blight as compared to control TNAU 26, where hundred percent disease severity was recorded in similar way hundred percent disease severity was recorded in DHKM 3-3, BK 10 and DHKM 3 genotypes. Patro *et al.* (2014) [16] and Nagaraja *et al.* (2016) [2] reported that all the small millet crops were found infected with *R. solani*. Similar research was also done in other small millet crops by Neeraja *et al*. 2016 [4], Patro *et al*. 2013 [5] and Patro *et al*. 2016 [9]. Eleven entries were evaluated against banded blight and reported that TNAU 86 (53.33) and BK 48(53.33) was recorded as moderately susceptible varieties by Patro *et al*. 2018 [11]. These genotypes would be of immense value to the breeders involved in developing high yielding resistant genotypes of kodo millet.

Table 2: Reaction of Kodo millet varieties to banded blight

S. No.	Entry	Banded blight (%)	Reaction
1	BK 6	85.3	HS
2	BK 28	77.7	HS
3	GPLM 254	79.0	HS
4	GPLM 273	85.0	HS
5	GPLM 276	81.3	HS
6	GPLM 316	82.3	HS
7	RPS 716	83.3	HS
8	RPS 1005	57.7	S
9	RPS 1007	59.7	S
10	RPS 1008	74.3	HS
11	RPS 1009	75.0	HS
12	RPS 1011	77.3	HS
13	TNPsc 176	74.0	HS
14	R(RK 390-25)	23.7	MR
15	S(JK-76)	95.7	HS
	Mean	74.1	
	C.D. (5%)	11.7	
	C.D. (1%)	15.9	
	C.V. (%)	9.5	

References

1. Anonymous. Standard evaluation system for rice. International Rice Testing programme. International Rice Research Institute Report, Philippines, 1996.
2. Nagaraja A, Bijendra Kumar, Jain AK, Patro TSSK, Nageswar Rao TG. Diseases of small millets. Diseases of field crops and their management. Indian Phytopathological Society. New Delhi, 2016, 295-371.
3. Neelam Yadav, Chaudhary Kanchan, Singh Alka, Gupta Alka. Evaluation of hypoglycemic properties of Kodo millet based food products in healthy subjects. Iosr Journal of Pharmacy. 2013; 3(2):14-20.
4. Neeraja B, Patro TSSK, Rani YS, Triveni U, Geethanjali K. Studies on three forms of blast (leaf, neck and finger) in finger millet (*Eleusine coracana* Gaertn.) incited by *Magnaporthe grisea* [Hebert]. Barr. *In vivo*. 6th International Conference "Plant, Pathogens and People".February 23-27, New Delhi, India, 2016, 269.
5. Patro TSSK, Anuradha N, Madhuri J, Suma Y, Soujanya. Identification of resistant sources for blast disease in finger millet (*Eleusine coracana* Gaertn.).Varietal Improvement of Small Millets. National seminar on Recent Advances of Varietal Improvement in Small Millets, 2013, 5-6.
6. Patro TSSK, Madhuri J. Identification of resistant sources for sheath blight in foxtail millet incited by *Rhizoctonia solani*. Khun. International Journal of Plant Sciences. 2014; 3(2):159-162.
7. Patro TSSK, Neearja B, Rani SY, Keerthi S, Jyothsna S. Banded blight-An emerging malady in small millets. National conference on emerging challenges and opportunities in biotic and abiotic stress management. Society for scientific development in agriculture and technology, Meerut, India, 2014, 120.
8. Patro TSSK, Neeraja B, Sandhya Rani Y, Jyothsna S. Studies on kodo millet (*Paspalum scrobiculatum*) genotypes against emerging malady banded sheath blight

incited by *Rhizoctonia solani*. Kuhn under in-vivo. Conference proceedings of International Conference on Innovative Approach in Applied sciences and Technology, 2016.
9. Patro TSSK, Divya M, Ashok S. Sreening of Kodo millet (*Paspalum scrobiculatum*) varieties against *Rhizoctonia solani* the incitant of banded blight. Progressive Research- An International Journal. 2016; 11(4):297-298.
10. Patro TSSK, Divya M, Sandhya Rani Y, Triveni U, Anuradha N. Resistance of Kodo millet (*Paspalum scrobiculatum*) varieties against *Rhizoctonia solani* the incitant of banded blight disease. Frontiers in Crop Improvement. 2017; 5(1):78-79.
11. Patro TSSK, Meena A, Divya M, Anuradha N. Evaluation of Kodo millet varieties resistant sources against banded blight (BB) disease incited by *Rhizoctonia solani* Kuhn. Journal of Pharmacognosy and Phytochemistry. 2018; 7(4):3172-3173.