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Screening of Little Millet Germplasm against Grain Smut Caused by *Macalpinomyces sharmae*

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Three field trials were conducted during Kharif 2014 at experimental area of AICRP on Small millet, College of Agriculture, Rewa (M.P.) to screen the little millet germplasm against grain smut under field conditions. Six pre- released and released cultivars namely DhLTMV 36-3, Kadiri 1, OLM 203, KOPLM 53, GPUL 1 and GPUL 2 were free from grain smut and seven namely BL 8, TNPSU 171, TNPSU 170, BL 6, DhLTMV 10-2, TNAU 160 & BL 41-3 were found resistant. Four entries namely OLM 203, TNAU 163, TNAU 176 and TNAU 178 were free and RLM 208 was resistant to grain smut in Donor Screening Nursery. Fourteen landraces namely RLM 175, RLM 177, RLM 179, RLM 182, RLM 186, RLM 189, RLM RLM 203, RLM 204, RLM 211, RLM 225, RLM 226, RLM 228, RLM 231 & RLM 232 were free from grain smut and 28 were resistant having up to 5.0 susceptibility index. Among, 100 landraces of little millet, 13.9% landraces were highly resistant, 27.7% were resistant, 41.6% moderately resistant, 11.9% susceptible and 4.9% highly susceptible to grain smut. Fourteen landraces namely RLM 175, RLM 177, RLM 179, RLM 182, RLM 186, RLM 189, RLM RLM 203, RLM 204, RLM 211, RLM 225, RLM 226,RLM 228, RLM 231 & RLM 232 were completely free from grain smut.

Introduction

Little millet (*Panicum sumatrense* Roth ex Roemer and Schultes), locally known as kutki, mejhari, medois one of the hardiest minor cereal crop belonging to the family Poaceae (Gramineae) and is indigenous to Indian sub-continent. The crop is cultivated by tribal and poor farmers in low fertile soils with low or no cash input for food and feed. It has an excellent rejuvenating capacity compared to other cereal crops. In India, the crop is cultivated in an area of 291 thousand hectares with annual production of 102 thousand tones and productivity of 349 kg per hectare (Anonymous, 2011) which is very less as compared to other cereal crops. Andhra Pradesh, Chhattisgarh, Madhya Pradesh, Odisa, Tamil Nadu, Karnataka, Jharkhand and Gujarat are major little millet growing states in the country. In Madhya Pradesh, the crop is cultivated in 51.54 thousand hectare with productivity of 525.5 kg per hectare (www.landrecords.mp.gov.in). Dindori, Mandla, Chhindwara, Balaghat, Seoni, Anuppur, Betal, Singrauli, Umaria, Sidhi, Shahdol, Jabalpur, Narsinghpur, Raisen and Khandwa are major little millet growing

districts of Madhya Pradesh. The crop is highly drought tolerant and nutritionally as well as medicinally superior or at par with other cultivated cereals. Grains are recommended for diabetic and patients of cardio-vascular diseases. The grain of little millet possesses excellent storage properties and can be stored for several years without fear of store grain pests under ordinary storage conditions. Little millet is well known for its drought tolerance and is considered as one of the least water demanding crop. Being eco-friendly, the crop is suitable for fragile and vulnerable agro-ecosystems. Grain smut (*Macalpinomyces sharmae)*, rust (*Uromyces linearis*), banded leaf and sheath blight (*Rhizoctonia solani*) and Udbatta (*Ephelis oryzae*) are important fungal diseases occurred at different stages of plant growth and caused economical yield loss under favourable environmental conditions (Pall *et al.,* 1980; Jain *et al.,* 1997 and Chauhan, 2014). In India, grain smut was first reported by Sharma and Khare (1987) from Dindori district of Madhya Pradesh and causal organism was identified as *Tolyposporium sp.* Later, it was described as *Macalpinomyces sharmae* (Vanky, 1995). The disease is also reported from Jharkhand, Chhattisgarh and Tamil Nadu states of the country (Anonymous, 2004 and 2012; Haider, 1997). Sharma and Khare (1987) noticed up to 50 per cent plants/ grains affected by the pathogen whereas Jain *et al.,* (2006) reported 9.8 to 53.5 per cent reduction in grain yield per plant, 4.2 to 16.6 per cent in plant height and 6.4 to 38.9 per cent in panicle length. Jain and Joshi (2015) recorded 2.1 to 18.9% loss in grain yield due to grain smut in little millet.

The disease is ovaricolous and symptoms appeared at grain formation stage. The affected ovary is converted into smut, but does not increase in size than the normal grain. Some of the late developing grains remain greenish and increase in size slightly over the normal grains. On pressing such greenish healthy appearing grains release spores (Sharma and Khare, 1987). Studies on management of grain smut in little millet is meager in the literature, however few studies on identification of resistant sources and management through seed treatment with carboxin and carbendazim has been reported. Although, disease can be controlled by application of different chemicals but this is not the right way to control diseases in the present context because chemical application has its many disadvantages like soil pollution, water pollution and environment hazardous. Now a day people are very conscious to health and they are moving to organic production and consumption. The growing of resistant genotypes of crops is one of the best ways to manage many biotic and abiotic stresses in organic crop production system. So the present study was focused on status of the disease in the farmers' field and identification of resistant sources.

Materials and Methods

Pre-released and released cultivars of little millet

Twenty pre-released and released cultivars (DhLtMV 36-3, TNPSU 174, BL 8, Kadiri 1, DLM 89, TNPSU 167, BL 150, OLM 203, DLM 103, TNPSU 171, JK 8, TNPSU 170, BL 6, DhLtMV 10-2, TNAU 160, BL 41-3, KOPLM 53, GPUL 1, GPUL 2 and JK 36) of little millet having different maturity period were screened against grain smut. The seeds were sown in two rows of 3.0 m length in three replications at the spacing of 25.0 cm row to row and 7.5 cm plant to plant in randomized block design. Recommended doses of fertilizer *i.e.* 40 kg N and 20 kg P_2O_5 were applied before sowing for optimum plant growth. Grain smut incidence was recorded at dough stage by counting healthy and smutted plants in each row. Grain smut

severity was recorded by counting infected grains per panicle and susceptibility index (SI) was calculated for each cultivars.

Reaction of little millet cultivars in donor screening nursery

Thirteen cultivars (RLM 135, RLM 175, RLM 192, RLM 203, RLM 204, RLM 208, RLM 224, JK 8, OLM 203, TNAU 163, TNAU 176, TNAU 178 and RLM 4-1) of little millet received from Project Coordinating cell (Small millets), Bangalore, were sown in two rows of 3.0 m length in three replications at the spacing of 25.0 cm row to row and 7.5 cm plant to plant in randomized block design. Recommended doses of fertilizer *i.e.* 40 kg N and 20 kg P_2O_5 were applied before sowing for optimum plant growth. Grain smut incidence was recorded at dough stage by counting healthy and smutted plants in each row. Grain smut severity was recorded by counting infected grains per panicle and susceptibility index (SI) was calculated for each cultivar.

Land races of little millet

One hundred land races collected from seven districts of Madhya Pradesh were screened along with susceptible check (JK 8) against grain smut under field condition. The Seeds were sown in two rows of 3.0 m length with 25.0 cm row to row and 7.5 cm plant to plant spacing in augmented design. Recommended doses of fertilizer *i.e.* 40 kg N and 20 kg P_2O_5 were applied before sowing for optimum plant growth. Grain smut incidence was recorded by counting healthy and smutted plants in each row at dough stage. Grain smut severity was recorded in 20 panicles and susceptibility index was calculated.

Identification and utilization of resistant cultivars is the cheapest and feasible way to combat with any disease problem. In the present study, 20 pre-released and released cultivars, 13 entries from Donor Screening Nursery (DSN) and 100 landraces of little millet were screened against grain smut under field conditions. Six pre-released and released cultivars namely DhLTMV 36-3, Kadiri 1, OLM 203, KOPLM 53, GPUL 1 and GPUL 2 were free from grain smut and seven namely BL 8, TNPSU 171, TNPSU 170, BL 6, DhLTMV 10-2, TNAU 160 and BL 41-3 have shown resistance. In DSN, four entries namely OLM 203, TNAU 163, TNAU 176 and TNAU 178 were free from grain smut and RLM 208 was resistant. Among 100 landraces of little millet, 14 landraces namely RLM 175, RLM 177, RLM 179, RLM 182, RLM 186, RLM 189, RLM RLM 203, RLM 204, RLM 211, RLM 225, RLM 226,RLM 228, RLM 231 and RLM 232 were free from grain smut whereas 28 were resistant showing up to 5.0 susceptibility index. These cultivars may be utilized for resistance breeding programme. Earlier few studies, for identification of resistant sources against grain smut of little millet were undertaken by Jain (2002), Jain (2003). Jain *et al.,* (2006) and Jain and Tripathi (2007) and little millet variety OLM 203 was reported resistant while JK 8 susceptible to grain smut. These reports are in agreement with the present findings.

Results and Discussion

Screening of little millet cultivars against grain smut

Different categories of little millet cultivars *i.e.* pre- release and released cultivars, Donor Screening Nursery and land races exhibited significant variation in their response to grain smut caused by *Macalpinomyces sharmae* under field conditions. Grain smut incidence, severity and susceptibility index in 20 pre-released and released cultivars of little millet are presented in table 1. Grain smut incidence ranged 0.0 to 56.8% with 0.0 to 6.7% smut

severity. Susceptibility index (SI) varied from 0.0 to 17.2% was maximum in JK 36 followed by DLM 89 (15.6%) and JK 8 (14.4%). Six cultivars namely DhLTMV 36-3, Kadiri 1, OLM 203, KOPLM 53, GPUL 1 and GPUL 2 were free from grain smut and showed highly resistant reaction, whereas seven germplasm namely BL 8, TNPSU 171, TNPSU 170, BL 6, DhLTMV 10-2, TNAU 160 and BL 41-3 had shown resistant reaction. Three cultivars namely TNPSU 167, BL 150 and DLM 103 were moderately resistant, two germplasm namely TNPSU 174 and JK 8 were susceptible and two germplasm namely DLM 89 and JK 36 was highly susceptible to grain smut.

Thirteen germplasm of little millet including one resistant check OLM 203 and one susceptible check JK 8 were screened against grain smut. The data presented in table 2 and variation in grain smut parameters indicated the significant differences among genotypes for their reaction to grain smut.

Table.1 Reaction of pre-released and released little millet cultivars against grain smut

S. No.	Germplasm	Grain smut			Reaction
		Incidence (%)[a]	Severity (%)[b]	Susceptibility Index (SI)	
1.	DhLtMV 36-3	0.0(0.00)	0.0 (0.701)	0.0	HR
2.	TNPSU 174	55.7(48.33)	2.2 (1.654)	11.1	S
3.	BL 8	30.4(33.44)	0.7 (1.077)	4.6	R
4.	Kadiri 1	0.0(0.00)	0.0 (0.701)	0.0	HR
5.	DLM 89	56.8(48.97)	4.3 (2.189)	15.6	HS
6.	TNPSU 167	34.5(35.91)	1.4 (1.382)	6.9	MR
7.	BL 150	27.1(31.11)	1.2 (1.302)	5.7	MR
8.	OLM 203*	0.0(0.00)	0.0 (0.701)	0.0	HR
9.	DLM 103	35.7(36.57)	2.1 (1.604)	8.7	MR
10.	TNPSU 171	19.5(26.13)	0.8 (1.119)	3.9	R
11.	JK 8**	42.6(40.68)	4.9 (2.327)	14.4	S
12.	TNPSU 170	24.1(29.27)	0.7 (1.077)	4.1	R
13.	BL 6	22.1(27.72)	0.4 (0.924)	3.0	R
14.	DhLtMV 10-2	21.1(26.93)	0.6 (1.028)	3.6	R
15.	TNAU 160	10.1(18.39)	0.6 (1.037)	2.5	R
16.	BL 41-3	13.7(21.26)	0.5 (1.005)	2.6	R
17.	KOPLM 53	0.0(0.00)	0.0 (0.701)	0.0	HR
18.	GPUL 1	0.0(0.00)	0.0 (0.701)	0.0	HR
19.	GPUL 2	0.0(0.00)	0.0 (0.701)	0.0	HR
20.	JK 36	44.4(41.75)	6.7 (2.673)	17.2	HS
	CD(0.05)	7.603	0.248	-	-

[a] Figures in parentheses are ARC SIN transformed values.
[b] Figures in parentheses are square root transformed value.
*Resistant check ** Susceptible check,
HR = Highly Resistant, R = Resistant, MR= Moderately Resistant,
S = Susceptible, HS= Highly Susceptible

Table.2 Reaction of little millet entries against grain smut in donor screening nursery

S. No.	Germplasm	Grain smut[a] Incidence (%)	Grain smut[b] severity (%)	Susceptibility index (SI)	Reaction
1.	RLM 135	35.6(36.60)	2.7 (1.776)	9.8	MR
2.	RLM 175	41.4((39.93)	3.1 (1.860)	11.3	S
3.	RLM 192	41.3(39.89)	1.7 (1.477)	8.4	MR
4.	RLM 203	57.1(49.15)	2.7 (1.774)	12.4	S
5.	RLM 204	61.0(51.43)	3.3 (1.942)	14.2	S
6.	RLM 208	25.5(30.16)	0.8 (1.111)	4.5	R
7.	RLM 224	47.2(43.34)	2.8 (1.804)	11.5	S
8.	JK 8**	69.4(57.00)	5.4 (2.436)	19.4	HS
9.	OLM 203*	0.0(0.00)	0.0 (0.701)	0.0	HR
10.	TNAU 163	0.0(0.00)	0.0 (0.701)	0.0	HR
11.	TNAU 176	0.0(0.00)	0.0(0.701)	0.0	HR
12.	TNAU 178	0.0(0.00)	0.0(0.701)	0.0	HR
13.	RLM 4-1	28.4(32.13)	0.9(0.701)	5.1	MR
	CD(0.05)	9.424	0.367	-	-

[a] Figures in parentheses are ARC SIN transformed values
[b] Figures in parentheses are square root transformed value.
*Resistant check, ** Susceptible check
HR = Highly Resistant, R = Resistant, MR= Moderately Resistant,
S=, Susceptible, HS= Highly Susceptible

Table.3 Reaction of little millet land races against grain smut under field conditions

S No.	Germplasm	Grain smut			Reaction
		Grain smut Incidence (%)	Grain smut Severity (%)	Susceptibility index (SI)	
1.	RLM 101	23.0	2.5	7.6	MR
2.	RLM 102	26.7	6	12.7	S
3.	RLM 103	20.6	1.8	6.1	MR
4.	RLM 104	7.7	2.3	4.2	R
5.	RLM 105	66.7	6.1	20.2	HS
6.	RLM 106	14.3	2.3	5.7	MR
7.	RLM 108	14.3	1.4	4.5	R
8.	RLM 109	30.0	1.4	6.5	MR
9.	RLM 110	64.3	3.5	15.0	S
10.	RLM 112	33.3	2.2	8.6	MR
11.	RLM 113	35.7	5.1	13.5	S
12.	RLM 114	10.0	8.7	9.3	MR
13.	RLM 115	23.1	1.7	6.3	MR
14.	RLM 116	16.7	3.0	7.1	MR

S No.	Germplasm	Grain smut			Reaction
		Grain smut Incidence (%)	Grain smut Severity (%)	Susceptibility index (SI)	
15.	RLM 117	15.0	1.3	4.4	R
16.	RLM 119	13.3	2.1	5.3	MR
17.	RLM 120	19.4	1.6	5.6	MR
18.	RLM 121	10.0	0.7	2.6	R
19.	RLM 122	11.8	2.1	5.0	R
20.	RLM 126	13.3	1.5	4.5	R
21.	RLM 127	27.8	8.2	15.1	HS
22.	RLM 128	20.0	1.3	5.1	MR
23.	RLM 129	21.1	1.3	5.2	MR
24.	RLM 130	7.1	1.9	3.7	R
25.	RLM 134	16.7	2.1	5.9	MR
26.	RLM 135	21.4	3.4	8.5	MR
27.	RLM 138	21.7	1.3	5.3	MR
28.	RLM 139	20.0	3.1	7.9	MR
29.	RLM 140	36.4	3.0	10.4	S
30.	RLM 141	23.1	3.5	9.0	MR
31.	RLM 142	23.5	3.0	8.4	MR
32.	RLM 143	45.4	7.9	18.9	HS
33.	RLM 144	19.4	1.6	5.6	MR
34.	RLM 146	32.8	2.6	9.2	MR
35.	RLM 147	17.6	1.9	5.8	MR
36.	RLM 148	25.0	3.5	9.4	MR
37.	RLM 149	53.3	7.5	20.0	HS
38.	RLM 150	17.6	2.3	6.4	MR
39.	RLM 151	13.3	1.4	4.3	R
40.	RLM 152	16.7	1.3	4.7	R
41.	RLM 153	21.4	3.6	8.8	MR
42.	RLM 154	14.9	1.4	4.6	R
43.	RLM 155	41.7	2.8	10.8	S
44.	RLM 156	25.0	3.0	8.7	MR
45.	RLM 157	19.3	1.7	5.7	MR
46.	RLM 158	38.5	4.1	12.6	S
47.	RLM 160	17.6	3.6	8.0	MR
48	RLM 161	7.7	1.7	3.6	R
49	RLM 162	21.1	0.4	2.9	R
50	RLM 165	20.0	1.2	4.9	R
51	RLM 166	7.7	1.4	3.3	R
52	RLM 167	30.8	2.5	8.8	MR
53	RLM 170	15.4	1.3	4.5	R
54	RLM 171	7.8	1.1	2.9	R

S No.	Germplasm	Grain smut			Reaction
		Grain smut Incidence (%)	Grain smut Severity (%)	Susceptibility index (SI)	
55	RLM 172	22.2	1.2	5.2	MR
56	RLM 173	7.7	3.3	5.0	R
57	RLM 174	33.3	2.6	9.3	MR
58	RLM 175	0.0	0.0	0.0	HR
59	RLM 176	25.0	1.7	6.5	MR
60	RLM 177	0.0	0.0	0.0	HR
61	RLM 178	25.0	3.5	9.4	MR
62	RLM 179	0.0	0.0	0.0	HR
63	RLM 181	20.0	2.9	7.6	MR
64	RLM 182	0.0	0.0	0.0	HR
65	RLM 183	23.1	1.1	5.0	R
66	RLM 185	41.1	2.5	10.1	S
67	RLM 186	0.0	0.0	0.0	HR
68	RLM 189	0.0	0.0	0.0	HR
69	RLM 191	6.3	1.3	2.9	R
70	RLM 193	23.1	2.5	7.6	MR
71	RLM 194	16.7	3.0	7.1	MR
72	RLM 195	8.3	1.4	3.4	R
73	RLM 196	53.3	3.2	13.1	S
74	RLM 198	18.0	1.3	4.8	R
75	RLM 199	50.0	3.2	12.6	S
76	RLM 200	25.0	1.8	6.7	MR
77	RLM 201	19.2	1.2	4.8	R
78	RLM 202	6.2	1.3	2.8	R
79	RLM 203	0.0	0.0	0.0	HR
80	RLM 204	0.0	0.0	0.0	HR
81	RLM 205	11.7	1.3	3.9	R
82	RLM 206	13.3	2.8	6.1	MR
83	RLM 207	7.1	2.1	3.9	R
84	RLM 211	0.0	0.0	0.0	HR
85	RLM 215	42.2	2.2	9.6	MR
86	RLM 216	15.4	2.1	5.7	MR
87	RLM 217	12.1	2.3	5.3	MR
88	RLM 218	22.2	2.7	7.7	MR
89	RLM 219	29.0	2.8	9.0	MR
90	RLM 220	41.7	4.6	13.8	S
91	RLM 222	46.1	7.1	18.1	HS
92	RLM 223	16.3	1.3	4.6	R
93	RLM 224	41.7	2.7	10.6	S
94	RLM 225	0.0	0.0	0.0	HR

S No.	Germplasm	Grain smut			Reaction
		Grain smut Incidence (%)	Grain smut Severity (%)	Susceptibility index (SI)	
95	RLM 226	0.0	0.0	0.0	HR
96	RLM 227	15.1	1.3	4.4	R
97	RLM 228	0.0	0.0	0.0	HR
98	RLM 229	6.2	2.9	4.2	R
99	RLM 231	0.0	0.0	0.0	HR
100	RLM 232	0.0	0.0	0.0	HR
101	JK 8 (SC)	43.1	5.1	14.8	S
	Mean Max. Min SD	20.0 66.7 0.0 14.73	2.3 8.7 0.0 1.83	6.5 20.2 0.0 4.56	

Table.4 Grouping of little millet land races on the basis of grain smut susceptibility index (SI)

Reaction	Grain smut (SI)	No. of landraces	germplasm
HR	0.0	14 (13.9%)	RLM 175, 177, 179, 182, 186, 189, 203, 204, 211, 225, 226, 228, 231 and 232
R	Up to 5	28 (27.7%)	RLM 104,108,117,121,122,126,130,151,152, 154,161,162,165,166, 170,171,173,183,191, 195, 198,201,202, 205, 207, 223, 227, 229
MR	5.1 to 10.0	42 (41.6%)	RLM 101, 103, 106, 109, 112, 114, 115, 116, 119, 120, 128, 129, 131, 135, 138, 139, 141, 142, 144, 146, 147, 148, 150, 153, 156, 157, 160, 167, 172, 174, 176, 178, 181, 193, 194, 200, 206, 215, 216, 217, 218 and 219
S	10.0 to 15	12 (11.9%)	RLM 102, 110, 113, 140, 155, 158, 185, 196, 199, 220, 224, JK 8
HS	< 15	5 (4.9%)	RLM 105, 127, 143, 149, 222

Figures in parentheses are percentage of land races.
HR = Highly resistant, R = Resistant, MR= Moderately Resistant,
S= Susceptible, HS= Highly Susceptible,

The disease incidence, severity and susceptibility index varied from 0.0 to 69.4%, 0.0 to 5.4% and 0.0 to 19.4%, respectively. Four germplasm namely OLM 203, TNAU 163, TNAU 176 and TNAU 178 found highly resistant showing 0.0% grain smut incidence, whereas RLM 208 was found resistant to grain smut. Three germplasm namely RLM 135, RLM 192 and RLM 4-1 were moderately resistant, four namely RLM 175, RLM 203, RLM 204 and RLM 224 were susceptible and JK 8 was highly susceptible to grain smut.

Incidence of grain smut in 101 land races of little millet including one susceptible check JK 8 is presented in table 3. Significant variation among land races for their reaction to grain smut was observed. Grain smut incidence varied from 0.0 to 66.7% with a mean of 20% among the screened land races. Smut severity ranging from 0.0 to 8.7% with a mean of 2.3% and susceptibility index (SI) varied from 0.0 to 20.2% with a mean of 6.5. Fourteen land races namely RLM 175, RLM 177, RLM 179, RLM 182, RLM 186, RLM 189, RLM 203, RLM 204, RLM 211, RLM 225, RLM 226,RLM 228, RLM 231 and RLM 232 were free from grain smut, whereas 28 land races namely RLM 104, RLM 108, RLM 117, RLM 121, RLM 122,RLM 126,RLM 130,RLM 151,RLM 152, RLM 154, RLM 161, RLM 162, RLM 165, RLM 166, RLM 170, RLM 171, RLM 173, RLM 183, RLM 191, RLM 195, RLM 198, RLM 201, RLM 202, RLM 205, RLM 207, RLM 223, RLM 227 and RLM 229 were resistant showing up to 5.0 susceptibility index. Forty two land races were with moderately resistant reaction of which 12 namely RLM 102, RLM 110, RLM 113, RLM 140, RLM 155, RLM 158, RLM 185, RLM 196, RLM 199, RLM 220, RLM 224 and JK 8 were susceptible and 5 namely RLM 105, RLM 127, RLM 143, RLM 149 and RLM 222 were highly susceptible to grain smut. Data presented in table 4 revealed that 41.7% land races were MR, 27.7% were R and 13.9% were highly resistant to grain smut. While only 11.9% land races were susceptible and 4.9% were highly susceptible to grain smut.

Identification and utilization of resistant cultivars is the cheapest and feasible way to combat with any disease problem. Six pre-released and released cultivars namely DhLTMV 36-3, Kadiri 1, OLM 203, KOPLM 53, GPUL 1 and GPUL 2 were free from grain smut and seven namely BL 8, TNPSU 171, TNPSU 170, BL 6, DhLTMV 10-2, TNAU 160 and BL 41-3 have shown resistance. In DSN, four entries namely OLM 203, TNAU 163, TNAU 176 and TNAU 178 were free from grain smut and RLM 208 was resistant. Among 100 landraces of little millet, 14 landraces namely RLM 175, RLM 177, RLM 179, RLM 182, RLM 186, RLM 189, RLM RLM 203, RLM 204, RLM 211, RLM 225, RLM 226, RLM 228, RLM 231 and RLM 232 were free from grain smut whereas 28 were resistant showing up to 5.0 susceptibility index. These germplasm may be utilized for resistance breeding programme. Earlier few studies, for identification of resistant sources against grain smut of little millet were undertaken by Jain (2002), Jain (2003). Jain *et al.*, (2006) and Jain and Tripathi (2007) and little millet variety OLM 203 was reported resistant while JK 8 susceptible to grain smut.

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