

Identification of high-yielding and stable resistance donors for yellow mosaic disease in blackgram (*Vigna mungo* L. Hepper)

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Electronic Supplementary Material (ESM)

The authors are fully responsible for both the content and the formal aspects of the electronic supplementary material. No editorial adjustments were made.

<https://doi.org/10.17221/41/2026-CJGPB>Table S1. Mean percent disease index (PDI) and seed yield per plant (SYPP) in *kharif*2023 and *kharif*2024 for blackgram genotypes under evaluation

S.N.	Genotype	Disease reaction	PDI (%)	SYPP (g)
1	IPU-99-45	Moderately Susceptible	24.44	5.8
2	IC-33-1242	Moderately Susceptible	18.20	6.7
3	AZAD-2	Moderately Susceptible	16.78	7.2
4	IPU-2K-99-197	Moderately Susceptible	22.23	5.8
5	IPU-99-112	Moderately Resistant	5.70	11
6	IPU-20-226	Susceptible	21.56	4.62
7	IPU-19	Moderately Resistant	6.05	12
8	IC-330852	Moderately Susceptible	15.56	6.36
9	IPU-35	Moderately Resistant	6.22	11
10	GU-91-20	Moderately Resistant	8.54	9.3
11	IPU-96-1	Moderately Resistant	8.90	9.5
12	IC-250240	Moderately Resistant	5.66	11.5
13	IC-99-245	Moderately Susceptible	19.06	7.37
14	IPU-2-43	Moderately Susceptible	20.56	7.35
15	IC-236718	Resistant	3.2	24.6
16	IC-519909	Moderately Susceptible	22.78	7.9
17	KU-302	Resistant	4.5	21.7
18	IPU-10-12	Moderately Susceptible	20.08	7.9
19	IC-11668	Resistant	3.89	22.6
20	IPU-2K-99-221	Resistant	4.1	23.8
21	IC-519911	Moderately Resistant	5.52	12.9
22	IPU-6-20	Resistant	3.89	21.9
23	IC-250238	Moderately Susceptible	19.56	7.9
24	IPU-99-178	Moderately Resistant	8.98	11.5
25	IC-14520	Moderately Susceptible	22.78	5.2
26	MASH-11	Moderately Susceptible	23.98	7.9
27	IPU-99-177	Resistant	4.56	20
28	NP-3	Resistant	4.06	21.6
29	IPU-01-392	Moderately Resistant	8.09	11.6
30	IPU-99-126	Moderately Susceptible	17.89	5.1
31	KU-96-3	Moderately Resistant	7.65	11.6
32	KU-219	Moderately Susceptible	15.78	5.9
33	IC-9928	Moderately Resistant	8.99	10.5
34	IPU-94-2	Moderately Resistant	7.80	11.7
35	KU-15	Moderately Susceptible	18.9	7.56
36	IPU-10-20	Moderately Susceptible	16.89	7.5
37	IPU-10-04	Moderately Resistant	7.90	11.7
38	IPU-24-21	Moderately Susceptible	18.90	7.8
39	IPU-99-224	Moderately Susceptible	17.89	7.5
40	IPU-99-236	Resistant	3.89	22.8
41	IPU-10-15	Moderately Resistant	8.08	11.5
42	IPU-01-390	Moderately Susceptible	16.78	6.9
43	IPU-10-16	Moderately Susceptible	15.80	7.5

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Table S1 to be continued

S.N.	Genotype	Disease reaction	PDI (%)	SYPP (g)
44	PU-10-09	Moderately Susceptible	14.80	6.7
45	IPU-99-235	Moderately Resistant	7.56	11.12
46	IPU-99-16	Moderately Susceptible	16.03	7.5
47	IC-385720	Moderately Resistant	7.99	11.5
48	T-9	Moderately Susceptible	15.55	7.5
49	IPU-10-19	Moderately Resistant	7.89	11.8
50	IPU-180	Moderately Susceptible	23.57	5.08
51	IPU-99-218	Moderately Resistant	8.65	11.8
52	MASH-114	Moderately Susceptible	15.56	6.8
53	IPU-10-05	Moderately Susceptible	14.88	6.2
54	IPU-99-60	Moderately Resistant	7.55	11
55	IC-345623	Susceptible	22.45	4.5
56	KUG-479	Moderately Susceptible	17.80	7.9
57	IC-16-511	Moderately Susceptible	16.78	7
58	IPU-99-244	Moderately Resistant	6.87	8.75
59	IPU-10-10	Moderately Resistant	7.65	10
60	DUS-34	Moderately Susceptible	17.56	7.5
61	IC-27264	Moderately Susceptible	18.06	7.9
62	IC-380892	Moderately Resistant	5.60	11.8
63	IPU-10-17	Moderately Resistant	5.79	11.5
64	IPU-99-217	Moderately Resistant	6.05	10.5
65	IC-261178	Moderately Susceptible	18.05	7.9
66	IPU-01-427	Susceptible	49.77	4.7
67	GAU-4	Moderately Resistant	6.78	10.6
68	IC-274045	Resistant	3.89	22.8
69	IPU-99-229	Moderately Resistant	7.85	11.8
70	IC-343967	Moderately Susceptible	22.35	5
71	IC-436620	Moderately Resistant	9.08	3.5
72	IPU-99-115	Susceptible	23.98	5
73	IPU-9-18	Resistant	3.89	20.86
74	IPU-01-415	Moderately Susceptible	20.25	6.36
75	IPU-99-220	Moderately Resistant	8.79	10.5
76	IC-381010	Moderately Resistant	7.88	11
77	IC-3945-51	Moderately Susceptible	21.56	7.8
78	Palampur-1	Resistant	3.21	20
79	KUG-489	Moderately Resistant	7.56	11.0
80	IPU-247	Moderately Susceptible	15.57	5.9
81	KU-9905	Susceptible	28.67	5.0
82	IPU-91-7	Resistant	2.98	20
83	IPU-99-79	Moderately Susceptible	21.52	7.8
84	IPU-99-239	Susceptible	34.65	4.4
85	IPU-99-221	Moderately Resistant	7.99	11.8
86	IPU-120	Moderately Resistant	8.70	10.7
87	IPU-99-231	Moderately Resistant	8.90	10.8

Table S1 to be continued

S.N.	Genotype	Disease reaction	PDI (%)	SYPP (g)
88	IPU-2000-1	Moderately Susceptible	20.90	6.7
89	KUG-502	Resistant	4.98	15.8
90	IPU-10-18	Susceptible	34.78	4.5
91	IC-346276	Moderately Resistant	7.57	10.8
92	IPU-14	Susceptible	44.35	3.5
93	IPU-99-294	Moderately Susceptible	21.56	5.9
94	IC-119020	Moderately Resistant	6.90	11.6
95	IPU-1004	Resistant	4.56	20.9
96	UT-14	Moderately Resistant	6.56	11.43
97	PANT-4	Susceptible	49.67	4.1
98	PANT-U-12	Moderately Susceptible	20.67	8.0
99	MASH-391	Moderately Resistant	6.02	11.45
100	MASH-479	Susceptible	23.78	5.0
101	RLBU-L1-13	Resistant	4.78	20.9
102	RLBU-L1-31	Resistant	2.56	23.6
103	RLBU-L1-23	Moderately Susceptible	19.87	7.9
104	RLBU-L1-40	Susceptible	33.56	4.3
105	RLBU-L1-30	Moderately Resistant	6.78	9.22
106	RLBU-L1-8	Susceptible	47.78	4.7
107	RLBU-L1-6	Moderately Resistant	8.90	6.35
108	RLBU-L1-115	Resistant	3.22	11.67
109	RLBU-L1-42	Moderately Susceptible	19.65	7.27
110	RLBU-L1-32	Susceptible	45.56	3.75
111	RLBU-L1-21	Moderately Resistant	6.80	9.6
112	RLBU-L1-28	Susceptible	47.90	3.6
113	RLBU-L1-44	Moderately Resistant	7.45	9.56
114	RLBU-L1-37	Moderately Resistant	9.57	9.6
115	RLBU-L1-3	Moderately Susceptible	22.67	5.7
116	RLBU-L1-35	Moderately Resistant	9.55	9.8
117	RLBU-L1-29	Susceptible	35.90	5
118	RLBU-L1-27	Moderately Resistant	9.08	10
119	RLBU-L1-16	Resistant	3.90	12
120	RLBU-L1-18	Moderately Resistant	9.67	10
121	RLBU-L1-33	Resistant	2.8	24.2
122	RLBU-L1-14	Moderately Resistant	8.57	9
123	RLBU-L1-11	Moderately Susceptible	18.90	7.8
124	RLBU-L1-26	Susceptible	26.78	5.83
125	RLBU-L1-25	Moderately Resistant	7.77	12.20
126	RLBU-L1-38	Susceptible	49.67	3.68
127	RLBU-L1-24	Moderately Resistant	7.54	12
128	RLBU-L1-39	Moderately Susceptible	21.35	5.8
129	RLBU-L1-2	Moderately Resistant	7.10	12.33
130	RLBU-L1-15	Moderately Resistant	8.98	8.9
131	RLBU-L1-17	Moderately Resistant	8.90	9.6

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Table S1 to be continued

S.N.	Genotype	Disease reaction	PDI (%)	SYPP (g)
132	RLBU-L1-20	Moderately Susceptible	13.50	8.75
133	RLBU-L1-22	Resistant	4.56	18.5
134	RLBU-L1-4	Resistant	3.89	15.5
135	RLBU-L1-34	Susceptible	47.58	2.17
136	RLBU-L2-12	Moderately Resistant	7.55	11.6
137	RLBU-L2-4	Moderately Resistant	8.90	8.9
138	RLBU-L2-45	Susceptible	44.56	2.92
139	RLBU-L2-11	Moderately Susceptible	16.67	7.8
140	RLBU-L2-27	Susceptible	31.56	4.5
141	RLBU-L2-3	Moderately Resistant	8.90	10
142	RLBU-L2-53	Moderately Susceptible	15.45	7.45
143	RLBU-L2-7	Moderately Resistant	9.56	8.57
144	RLBU-L2-43	Resistant	4.56	15
145	RLBU-L2-9	Susceptible	32.56	4.8
146	RLBU-L2-52	Resistant	4.89	15
147	RLBU-L2-24	Moderately Resistant	8.88	10
148	RLBU-L2-50	Resistant	5.00	13.8
149	RLBU-L2-33	Susceptible	33.45	4.8
150	RLBU-L2-44	Moderately Resistant	9.67	11.67
151	RLBU-L2-26	Resistant	3.89	20
152	RLBU-L2-39	Moderately Resistant	8.66	11.4
153	RLBU-L2-31	Resistant	4.76	15.9
154	RLBU-L2-19	Resistant	4.89	13.5
155	RLBU-L2-21	Susceptible	35.78	4.5
156	RLBU-L2-8	Moderately Resistant	8.05	11.4
157	RLBU-L2-32	Moderately Susceptible	14.45	7.4
158	RLBU-L2-15	Resistant	3.5	23.7
159	RLBU-L2-55	Moderately Resistant	9.05	8.9
160	RLBU-L2-25	Moderately Susceptible	14.00	7.4
161	RLBU-L2-10	Moderately Resistant	6.89	10.5
162	RLBU-L2-29	Moderately Resistant	6.50	11.7
163	RLBU-L2-54	Resistant	2.12	20.6
164	RLBU-L2-13	Resistant	3.12	22.9
165	RLBU-L2-41	Moderately Resistant	7.00	11.8
166	RLBU-L2-34	Moderately Susceptible	15.90	7.5
167	RLBU-L2-17	Resistant	1.87	23.6
168	RLBU-L1-36	Moderately Resistant	7.54	11.6
169	RLBU-L2-5	Resistant	1.56	23.5
170	RLBU-L2-42	Moderately Resistant	6.89	10.5
171	RLBU-L2-46	Moderately Susceptible	15.68	7.9
172	RLBU-L2-22	Moderately Resistant	7.56	10.5
173	RLBU-L2-37	Moderately Resistant	6.55	10.8
174	RLBU-L2-6	Resistant	2.05	22.6
175	RLBU-L2-47	Moderately Susceptible	20.08	6.7

Table S1 to be continued

S.N.	Genotype	Disease reaction	PDI (%)	SYPP (g)
176	RLBU-L2-2	Moderately Resistant	6.89	11.2
177	RLBU-L2-23	Susceptible	44.43	4.7
178	RLBU-L2-18	Resistant	2.08	22.6
179	RLBU-L2-30	Moderately Resistant	6.90	11.8
180	RLBU-L3-10	Susceptible	40.76	4.5
181	RLBU-L3-11	Resistant	2.56	22.8
182	RLBU-L3-6	Moderately Resistant	7.23	11.6
183	RLBU-L3-17	Moderately Susceptible	19.05	7.8
184	RLBU-L3-13	Resistant	3.98	19.0
185	RLBU-L3-7	Resistant	4.99	17.8
186	RLBU-L3-8	Moderately Resistant	6.90	9.6
187	RLBU-L3-5	Moderately Resistant	6.45	11.2
188	RLBU-L3-3	Moderately Susceptible	18.56	7.5
189	RLBU-L3-16	Resistant	4.34	14.6
190	RLBU-L3-21	Highly Susceptible	51.55	2.2
191	RLBU-L3-20	Resistant	3.89	20.8
192	RLBU-L3-14	Moderately Resistant	8.9	8.9
193	RLBU-L3-4	Moderately Susceptible	15.78	7.5
194	RLBU-L3-1	Moderately Susceptible	16.90	8.2
195	RLBU-L3-19	Moderately Susceptible	14.55	7.6
196	RLBU-L3-15	Moderately Susceptible	13.25	7.8
197	RLBU-L3-18	Moderately Resistant	8.77	11.6
198	RLBU-L3-9	Resistant	4.78	16.5
199	IPU-13-1	Resistant	2.78	22.89
200	PANT-U-8	Resistant	2.98	23.87
201	PANT-U-9	Resistant	3.11	22.65
202	PRATAP-URD-1	Resistant	4.77	21.89
203	Palampur-3	Resistant	5.00	14
204	RLBU-L3-20	Moderately Resistant	9.76	8.5
205	RLBU-L3-35	Moderately Resistant	8.90	11
206	KUG-500	Resistant	4.34	22
207	IC-519910	Resistant	4.98	15.6
208	Palampur-2	Resistant	4.99	14.5
209	RLBU-L3-38	Moderately Resistant	7.67	10
210	RLBU-L3-40	Moderately Resistant	7.89	11.5
211	IPU-99-61	Moderately Resistant	6.55	11
212	IC-250242	Moderately Resistant	6.04	9.12
213	IC-385721	Moderately Resistant	7.65	7.8
214	IC-274045	Resistant	3.98	13.5
215	IC-236702	Resistant	4.00	15
216	RLBU-L1-5	Resistant	4.76	20

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Table S2. Principal component scores (PC1 and PC2) of blackgram (*Vigna mungo* L. Hepper) genotypes

S.N.	Genotypes	PC1	PC2
1	IPU-99-45	-1.3536	0.0386
2	IC-33-1242	-0.8466	-0.2387
3	AZAD-2	-0.6935	-0.2641
4	IPU-2K-99-197	-1.2147	-0.1003
5	IPU-99-112	0.4879	-0.4754
6	IPU-20-226	-1.3233	-0.2931
7	IPU-19	0.5935	-0.3257
8	IC-330852	-0.7241	-0.448
9	IPU-35	0.4552	-0.4427
10	GU-91-20	0.0924	-0.5139
11	IPU-96-1	0.0953	-0.4657
12	IC-250240	0.5542	-0.414
13	IC-99-245	-0.8151	-0.0991
14	IPU-2-43	-0.9119	-0.0074
15	IC-236718	2.381	1.1036
16	IC-519909	-0.9812	0.2023
17	KU-302	1.9291	0.8151
18	IPU-10-12	-0.8116	0.0326
19	IC-11668	2.0824	0.8917
20	IPU-2K-99-221	2.2223	1.058
21	IC-519911	0.7417	-0.2441
22	IPU-6-20	1.993	0.8023
23	IC-250238	-0.7789	-0.0001
24	IPU-99-178	0.3456	-0.2054
25	IC-14520	-1.3259	-0.1424
26	MASH-11	-1.0566	0.2777
27	IPU-99-177	1.7084	0.6019
28	NP-3	1.944	0.7747
29	IPU-01-392	0.4143	-0.2486
30	IPU-99-126	-1.0313	-0.4624
31	KU-96-3	0.4419	-0.2762
32	KU-219	-0.7966	-0.4929
33	IC-9928	0.2173	-0.3324
34	IPU-94-2	0.4452	-0.254
35	KU-15	-0.7808	-0.0849
36	IPU-10-20	-0.6621	-0.2189
37	IPU-10-04	0.439	-0.2477
38	IPU-24-21	-0.7502	-0.0543
39	IPU-99-224	-0.725	-0.1561
40	IPU-99-236	2.1079	0.9172
41	IPU-10-15	0.4021	-0.262
42	IPU-01-390	-0.7318	-0.3024
43	IPU-10-16	-0.5936	-0.2874
44	PU-10-09	-0.6329	-0.4524

Table S2 to be continued

S.N.	Genotypes	PC1	PC2
45	IPU-99-235	0.3863	-0.3431
46	IPU-99-16	-0.6081	-0.273
47	IC-385720	0.4078	-0.2676
48	T-9	-0.5779	-0.3031
49	IPU-10-19	0.4523	-0.2356
50	IPU-180	-1.3909	-0.108
51	IPU-99-218	0.4046	-0.1878
52	MASH-114	-0.6679	-0.3919
53	IPU-10-05	-0.7018	-0.5112
54	IPU-99-60	0.3716	-0.3591
55	IC-345623	-1.3945	-0.2525
56	KUG-479	-0.6683	-0.1107
57	IC-16-511	-0.7191	-0.2897
58	IPU-99-244	0.1271	-0.689
59	IPU-10-10	0.2377	-0.4805
60	DUS-34	-0.7042	-0.1768
61	IC-27264	-0.6846	-0.0943
62	IC-380892	0.5963	-0.3795
63	IPU-10-17	0.546	-0.4059
64	IPU-99-217	0.402	-0.5172
65	IC-261178	-0.684	-0.095
66	IPU-01-427	-3.0859	1.49
67	GAU-4	0.3689	-0.4585
68	IC-274045	1.5115	0.3264
69	IPU-99-229	0.4549	-0.2381
70	IC-343967	-1.3244	-0.1949
71	IC-436620	-0.6819	-1.2203
72	IPU-99-115	-1.4268	-0.0925
73	IPU-9-18	1.8602	0.6695
74	IPU-01-415	-1.0188	-0.1533
75	IPU-99-220	0.2298	-0.345
76	IC-381010	0.3509	-0.3384
77	IC-3945-51	-0.9173	0.1129
78	Palampur-1	1.7932	0.517
79	KUG-489	0.371	-0.3585
80	IPU-247	-0.7834	-0.5061
81	KU-9905	-1.7216	0.2023
82	IPU-91-7	1.8076	0.5026
83	IPU-99-79	-0.9148	0.1103
84	IPU-99-239	-2.174	0.5015
85	IPU-99-221	0.4461	-0.2293
86	IPU-120	0.261	-0.3251
87	IPU-99-231	0.2612	-0.2998
88	IPU-2000-1	-1.0163	-0.069

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Table S2 to be continued

S.N.	Genotypes	PC1	PC2
89	KUG-502	1.1458	0.0921
90	IPU-10-18	-2.1694	0.5224
91	IC-346276	0.3448	-0.3834
92	IPU-14	-2.8984	0.9962
93	IPU-99-294	-1.1599	-0.1297
94	IC-119020	0.489	-0.3234
95	IPU-1004	1.8232	0.7167
96	UT-14	0.4887	-0.3664
97	PANT-4	-3.1562	1.4071
98	PANT-U-12	-0.8359	0.0825
99	MASH-391	0.5252	-0.3978
100	MASH-479	-1.4143	-0.105
101	RLBU-L1-13	1.8094	0.7306
102	RLBU-L1-31	2.2936	0.9357
103	RLBU-L1-23	-0.7984	0.0194
104	RLBU-L1-40	-2.1182	0.4202
105	RLBU-L1-30	0.1928	-0.6347
106	RLBU-L1-8	-2.9608	1.3649
107	RLBU-L1-6	-0.3068	-0.8678
108	RLBU-L1-115	0.7292	-0.5457
109	RLBU-L1-42	-0.8649	-0.0748
110	RLBU-L1-32	-2.9426	1.1041
111	RLBU-L1-21	0.24	-0.5849
112	RLBU-L1-28	-3.1088	1.232
113	RLBU-L1-44	0.1941	-0.5492
114	RLBU-L1-37	0.0659	-0.4109
115	RLBU-L1-3	-1.2551	-0.0854
116	RLBU-L1-35	0.0927	-0.3866
117	RLBU-L1-29	-2.1759	0.6566
118	RLBU-L1-27	0.1478	-0.3906
119	RLBU-L1-16	0.7286	-0.4608
120	RLBU-L1-18	0.1107	-0.3535
121	RLBU-L1-33	2.3551	1.0274
122	RLBU-L1-14	0.0522	-0.5503
123	RLBU-L1-11	-0.7502	-0.0543
124	RLBU-L1-26	-1.4968	0.1894
125	RLBU-L1-25	0.511	-0.1921
126	RLBU-L1-38	-3.2098	1.3535
127	RLBU-L1-24	0.4999	-0.2321
128	RLBU-L1-39	-1.1594	-0.1556
129	RLBU-L1-2	0.5697	-0.2176
130	RLBU-L1-15	0.0137	-0.5373
131	RLBU-L1-17	0.108	-0.453
132	RLBU-L1-20	-0.2895	-0.2724

Table S2 to be continued

S.N.	Genotypes	PC1	PC2
133	RLBU-L1-22	1.5169	0.4104
134	RLBU-L1-4	1.176	-0.0147
135	RLBU-L1-34	-3.2712	1.0294
136	RLBU-L2-12	0.4482	-0.2825
137	RLBU-L2-4	0.0187	-0.5423
138	RLBU-L2-45	-2.9857	0.9353
139	RLBU-L2-11	-0.61	-0.1944
140	RLBU-L2-27	-1.967	0.3201
141	RLBU-L2-3	0.1591	-0.4019
142	RLBU-L2-53	-0.578	-0.3158
143	RLBU-L2-7	-0.0649	-0.543
144	RLBU-L2-43	1.0701	-0.0364
145	RLBU-L2-9	-1.9916	0.4212
146	RLBU-L2-52	1.0494	-0.0157
147	RLBU-L2-24	0.1604	-0.4032
148	RLBU-L2-50	0.8893	-0.1619
149	RLBU-L2-33	-2.0475	0.4771
150	RLBU-L2-44	0.3239	-0.1403
151	RLBU-L2-26	1.7505	0.5598
152	RLBU-L2-39	0.3529	-0.2383
153	RLBU-L2-31	1.1724	0.0911
154	RLBU-L2-19	0.8579	-0.2071
155	RLBU-L2-21	-2.2322	0.5853
156	RLBU-L2-8	0.3912	-0.2766
157	RLBU-L2-32	-0.5216	-0.385
158	RLBU-L2-15	2.2473	1.0076
159	RLBU-L2-55	0.0093	-0.5329
160	RLBU-L2-25	-0.4933	-0.4133
161	RLBU-L2-10	0.3492	-0.4644
162	RLBU-L2-29	0.5269	-0.3357
163	RLBU-L2-54	1.9383	0.5251
164	RLBU-L2-13	2.169	0.8816
165	RLBU-L2-41	0.5083	-0.2915
166	RLBU-L2-34	-0.5999	-0.2811
167	RLBU-L2-17	2.3369	0.8924
168	RLBU-L1-36	0.4488	-0.2831
169	RLBU-L2-5	2.3437	0.8601
170	RLBU-L2-42	0.3492	-0.4644
171	RLBU-L2-46	-0.535	-0.2439
172	RLBU-L2-22	0.3071	-0.4223
173	RLBU-L2-37	0.4089	-0.4475
174	RLBU-L2-6	2.198	0.776
175	RLBU-L2-47	-0.9647	-0.1206
176	RLBU-L2-2	0.4386	-0.375

<https://doi.org/10.17221/41/2026-CJGPB>

Table S2 to be continued

S.N.	Genotypes	PC1	PC2
177	RLBU-L2-23	-2.7503	1.1544
178	RLBU-L2-18	2.1961	0.7779
179	RLBU-L2-30	0.5146	-0.2978
180	RLBU-L3-10	-2.5452	0.8982
181	RLBU-L3-11	2.1915	0.8336
182	RLBU-L3-6	0.4683	-0.3026
183	RLBU-L3-17	-0.7596	-0.0449
184	RLBU-L3-13	1.6172	0.4378
185	RLBU-L3-7	1.4005	0.3481
186	RLBU-L3-8	0.2337	-0.5787
187	RLBU-L3-5	0.4663	-0.4027
188	RLBU-L3-3	-0.7671	-0.114
189	RLBU-L3-16	1.0329	-0.1013
190	RLBU-L3-21	-3.5169	1.2827
191	RLBU-L3-20	0.8831	0.0613
192	RLBU-L3-14	0.0187	-0.5423
193	RLBU-L3-4	-0.5924	-0.2887
194	RLBU-L3-1	-0.5734	-0.1289
195	RLBU-L3-19	-0.5023	-0.3532
196	RLBU-L3-15	-0.3951	-0.4094
197	RLBU-L3-18	0.3715	-0.2058
198	RLBU-L3-9	1.2478	0.1689
199	IPU-13-1	2.1891	0.8589
200	PANT-U-8	2.3017	0.9966
201	PANT-U-9	2.1378	0.849
202	PRATAP-URD-1	1.9364	0.8563
203	Palampur-3	0.9148	-0.1364
204	RLBU-L3-20	0.8831	0.0613
205	RLBU-L3-35	0.2868	-0.2743
206	KUG-500	1.9775	0.8433
207	IC-519910	1.1203	0.0666
208	Palampur-2	0.9793	-0.0732
209	RLBU-L3-38	0.2364	-0.4792
210	RLBU-L3-40	0.4141	-0.2739
211	IPU-99-61	0.4344	-0.4219
212	IC-250242	0.2265	-0.694
213	IC-385721	-0.0432	-0.7613
214	IC-274045	1.5115	0.3264
215	IC-236702	1.1053	-0.0716
216	RLBU-L1-5	1.6958	0.6144



Figure S1. Field view of blackgram genotypes at RLBCAU, Jhansi: resistant genotype (A), susceptible genotype (B)

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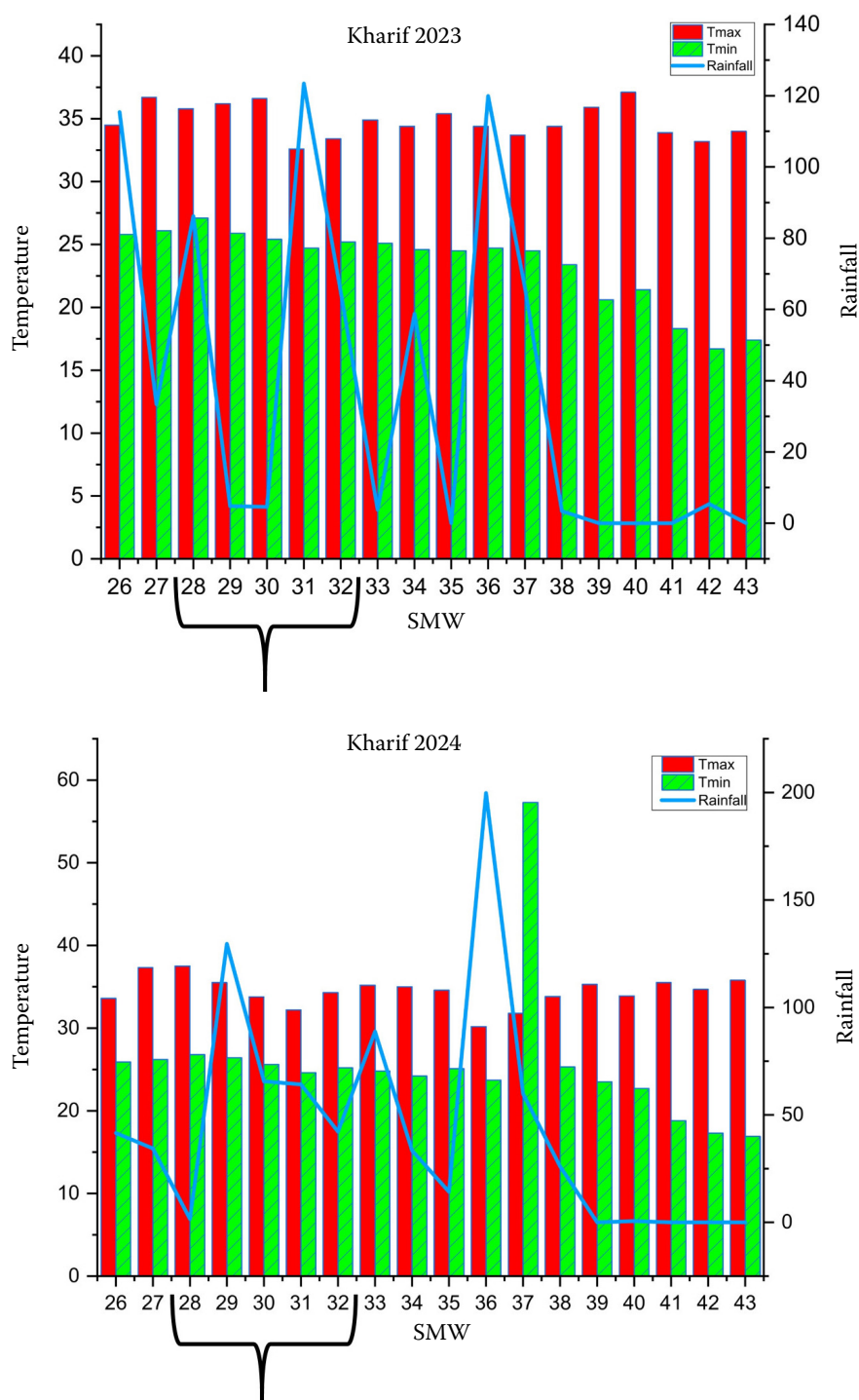


Figure S2. Weekly variation in maximum and minimum temperatures (Tmax and Tmin) and rainfall during Kharif 2023 and Kharif 2024

The bracket spanning SMW 28–32, indicates the period from crop sowing to the initiation of YMD phenotyping; SMW – standard metrological week