2. Testing rice varieties for reaction to leaf blast pathogen

A total of 120 rice varieties were tested twice each with three replications for their reaction to leaf blast pathogen *P. oryzae* (Table 4). The susceptible HR 12 was killed by leaf blast infection in all tests and replications. Only 48 rice varieties showed resistance to leaf blast (score SI < 5.0). This included 2 varieties from hill rices - Akutphou and PR2143; 11 from irrigated early varieties - ADT36, CO47, Jyothi, Swarnaprabha, IR36, TN1, Punidavathi, Rasi, ASD16, Karjat5 and Erramallelu; 10 from irrigate medium maturity - PR116, DRRH1, KRH2, Narendradhan359, PR111, Punshi, HKR126, Puduvaiponni, Swarnamuki and Narmada; 9 from irrigated medium early maturity - Athira, PHB71, PA6201, IR64, Phouoibi, Norin, Bharani, IR72 and PR115; 10 from rainfed shallow lowland varieties - ADT44, Kothamologolukulu, Deepti, Swarnadhan, Kanchana, Salivahana, Simhapuri, Manasarovar, Nagarjuna and Sriranga; 5 from rainfed upland varieties Aditya, Narendradhan80, Tulasi, Prasanna and VL154; none of the scented rice or semi-deep water varieties; and one deep water rice - Eremaphou were resistant in the tests for leaf blast disease.

Several varieties released for different ecosystems showed a moderate resistance (score SI ≥ 5 to < 7) to blast pathogen. These are: two hill rices - VL84 and Sukradhan; 9 from irrigated early varieties – Erramallelu, Karjat4, TKM9, Aishwarya, Nidhi, ASD18, Cottondorasannalu, DRRH2 and Karjat185; 19 from irrigate medium maturity – Surendra, Palghar1, SYE 14-9-8, Sarjoo52, HKR120, HKR46, Suraksha, Kharveli, TKM10, ASD20, CO48, PR106, PR114, Jaya, Sonasali, Tapaswini, Vibhava,

Vikramarya and Vijetha; 5 from irrigated medium early maturity – PR115, PR113, Triguna, Arvindar and Lalat; 8 from rainfed shallow lowland varieties – Savithri, Bharatidasan, Phalguna, Pooja, Subramanyabharati, Mandyavijaya, Pratibha and Vajiram; 4 from rainfed upland varieties -VL154, Govind, GR5 and Annada; and one deep water rice – Dinesh.

Overall severity index of leaf blast reaction score for the 120 varieties released for commercial cultivation in various ecosystems tested remained between 5.03 and 5.76 (Table 5). The standard error estimates indicated the high level of precision in the estimates and it depended on the number of varieties tested for an ecosystem. The coefficients of variation indicated stability of the reaction of varieties released for different ecosystems to *P. oryzae* infection.

Table 4. Reaction of rice varieties released for commercial cultivation in different ecosystem to leaf blast pathogen *Pyricularia oryzae*.

No.	VARIETY	First test			Second test			Mean	Ecosystem
		R1	R2	R3	R1	R2	R3	(SI)	
1	ADITYA	6	5	0	6	3	5	4.17	RUP
2	ADT36	7	6	3	5	1	0	3.67	IRE
3	ADT44	6	9	1	4	2	1	3.83	RSL
4	AISHWARYA	6	7	9	4	3	5	5.67	IRE
5	AJAYA	4	7	6	4	5	5	5.17	IRM
6	AKUTPHOU	9	9	0	5	3	1	4.50	HRIR
7	AMULYA	9	6	9	4	8	6	7.00	SDW
8	ANJALI	7	8	5	6	6	7	6.50	RUP
9	ANNADA	5	6	8	7	5	6	6.17	RUP
10	ARVINDAR	5	6	7	6	8	7	6.50	IRME
11	ASD16	7	4	6	5	4	1	4.50	IRE
12	ASD18	7	8	7	6	4	7	6.50	IRE
13	ASD20	5	6	4	7	8	6	6.00	IRM
14	ATHIRA	3	5	0	2	2	1	2.17	IRME
15	BHARANI	9	5	2	1	6	6	4.83	IRME
16	BHARATIDASAN	5	6	8	5	5	4	5.50	RSL
17	CO47	3	7	2	5	2	1	3.33	IRE
18	CO48	5	4	6	7	6	8	6.00	IRM
19	COTTONDORASANNALU	5	6	7	6	8	7	6.50	IRE
20	DEEPTI	4	5	0	3	5	5	3.67	RSL
21	DHANARASI	5	6	7	4	9	8	6.50	RSL
22	DINESH	5	6	7	5	6	6	5.83	DW

No.	VARIETY	First test			Second test			Mean	Ecosystem
		R1	R2	R3	R1	R2	R3	(SI)	
23	DRRH1	3	9	2	2	4	3	3.83	IRM
24	DRRH2	5	6	7	7	8	6	6.50	IRE
25	EREMAPHOU	4	5	1	5	2	3	3.33	DW
26	ERRAMALLELU	5	6	5	4	3	7	5.00	IRE
27	GEB24	9	8	9	2	7	7	7.00	IRM
28	GOVIND	5	9	2	6	5	7	5.67	RUP
29	GR101	7	6	0	8	6	5	5.33	SCR
30	GR11	9	7	9	4	7	7	7.17	IRME
31	GR3	7	9	9	5	8	3	6.83	RUP
32	GR4	9	9	9	6	6	7	7.67	IRE
33	GR5	9	6	4	2	7	7	5.83	RUP
34	GURJARI	9	7	8	5	7	6	7.00	IRME
35	HKR120	5	9	4	5	5	5	5.50	IRM
36	HKR126	4	6	2	4	3	6	4.17	IRM
37	HKR46	7	6	4	5	5	6	5.50	IRM
38	HPR2023	3	5	0	5	3	5	3.50	HRIR
39	IR36	7	7	5	4	2	1	4.33	IRE
40	IR64	5	4	0	4	4	5	3.67	IRME
41	IR72	7	7	5	6	3	1	4.83	IRME
42	JAYA	7	9	8	6	4	3	6.17	IRM
43	JEERAGASAMBA	6	9	3	7	5	6	6.00	SCR
44	JYOTHI	6	7	2	4	3	1	3.83	IRE
45	KANCHANA	3	8	1	5	4	3	4.00	RSL
46	KARJAT185	6	5	7	4	9	8	6.50	IRE
47	KARJAT3	7	9	3	5	5	2	5.17	SCR

No.	VARIETY	First test			Second test			Mean	Ecosystem
		R1	R2	R3	R1	R2	R3	(SI)	
48	KARJAT4	4	9	7	8	1	3	5.33	IRE
49	KARJAT5	7	4	8	4	3	1	4.50	IRE
50	KASTURI	5	6	4	6	8	7	6.00	SCR
51	KHARVELI	5	4	9	4	5	7	5.67	IRM
52	KHITISH	9	9	9	2	9	5	7.17	IRE
53	KOTHAMOLOGOLUKULU	5	4	1	0	4	6	3.33	RSL
54	KRH2	2	6	0	2	7	6	3.83	IRM
55	KRISHNHAMSA	8	5	9	7	4	3	6.00	IRE
56	LALAT	7	5	9	5	7	7	6.67	IRME
57	LEIMAPHHOU	5	4	6	7	6	5	5.50	HRIR
58	MAHSURI	7	7	7	9	5	6	6.83	RSL
59	MANASAROVAR	5	6	4	3	4	6	4.67	RSL
60	MANDYAVIJAYA	5	5	9	5	7	7	6.33	RSL
61	NAGARJUNA	6	5	2	4	4	7	4.67	RSL
62	NARENDRADHAN118	7	8	6	7	6	9	7.17	RUP
63	NARENDRADHAN359	3	5	3	5	2	5	3.83	IRM
64	NARENDRADHAN97	7	8	9	5	7	7	7.17	RUP
65	NARMADA	3	7	0	8	3	7	4.67	IRM
66	NARENDRADHAN80	4	7	0	5	2	5	3.83	RUP
67	NIDHI	7	6	4	4	6	7	5.67	IRE
68	NORIN	5	4	3	2	7	4	4.17	IRME
69	PA6201	2	6	0	0	7	6	3.50	IRME
70	PALGHAR1	6	5	4	3	5	8	5.17	IRM
71	PHALGUNA	9	5	4	5	7	5	5.83	RSL
72	PHB71	4	5	2	0	4	5	3.33	IRME

No.	VARIETY	First test			Second test			Mean	Ecosystem
		R1	R2	R3	R1	R2	R3	(SI)	
73	PHOUOIBI	7	6	2	5	2	1	3.83	IRME
74	POOJA	5	6	5	8	7	4	5.83	RSL
75	PR106	7	4	9	4	6	6	6.00	IRM
76	PR111	4	4	0	4	5	6	3.83	IRM
77	PR113	9	6	7	4	4	6	6.00	IRME
78	PR114	7	9	4	4	5	7	6.00	IRM
79	PR115	7	6	4	5	5	7	5.67	IRME
80	PR116	2	3	1	1	4	6	2.83	IRM
81	PRABHAT	7	8	6	9	5	8	7.17	IRM
82	PRASANNA	4	4	1	5	3	7	4.00	RUP
83	PRATIBHA	8	9	9	8	3	1	6.33	RSL
84	PUDUVAIPONNI	9	7	2	1	3	5	4.50	IRM
85	PUNIDAVATHI	4	6	1	5	5	5	4.33	IRE
86	PUNSHI	4	4	3	3	2	7	3.83	IRM
87	PUSA BASMATI1	7	5	3	5	5	6	5.17	SCR
88	RASI	7	5	1	4	2	7	4.33	IRE
89	RATNA	8	7	9	9	9	8	8.33	IRE
90	SABITA	7	9	8	6	6	6	7.00	SDW
91	SALIVAHANA	5	4	3	2	5	5	4.00	RSL
92	SARJOO52	9	5	2	4	5	7	5.33	IRM
93	SAVITHRI	5	6	4	6	7	4	5.33	RSL
94	SIMHAPURI	4	4	1	4	5	6	4.00	RSL
95	SONASALI	8	4	8	6	5	6	6.17	IRM
96	SRIRANGA	4	9	1	4	4	7	4.83	RSL
97	SUBRAMANYABHARATI	6	7	5	8	7	4	6.17	RSL

No.	VARIETY	First test			Second test			Mean	Ecosystem
		R1	R2	R3	R1	R2	R3	(SI)	
98	SUKARADHAN	5	7	8	6	5	4	5.83	HRUR
99	SURAKSHA	3	7	8	4	5	6	5.50	IRM
100	SURENDRA	6	5	6	1	6	6	5.00	IRM
101	SWARNA	7	9	9	7	8	5	7.50	RSL
102	SWARNAPRABHA	5	7	3	5	2	1	3.83	IRE
103	SWARNADHAN	3	9	0	1	5	5	3.83	RSL
104	SWARNAMUKI	3	5	5	5	3	6	4.50	IRM
105	SYE 14-9-8	3	5	9	5	4	5	5.17	IRM
106	TAPASWINI	8	6	9	7	6	1	6.17	IRM
107	TARAORI BASMATI	8	6	2	4	5	6	5.17	SCR
108	TELLAHAMSA	9	7	8	9	8	9	8.33	IRE
109	TKM10	7	6	5	8	4	5	5.83	IRM
110	TKM9	6	5	6	7	4	5	5.50	IRE
111	TRIGUNA	7	5	7	4	6	7	6.00	IRME
112	TULASI	4	6	0	4	4	5	3.83	RUP
113	VAJRAM	8	9	9	6	5	1	6.33	RSL
114	VIBHAVA	6	6	8	4	6	7	6.17	IRM
115	VIJETHA	7	9	9	7	4	3	6.50	IRM
116	VIKRAMARYA	5	6	8	5	7	7	6.33	IRM
117	VL154	5	6	7	5	6	4	5.50	RUP
118	VL82	7	5	4	6	8	5	5.83	HRIR
119	CHECK (TN1)	6	4	2	4	4	6	4.33	IRE
120	CHECK (HR12)	9	9	9	9	9	9	9.00	IRM

R = Replication; SI = mean score across replications and repeated tests

Table 5. Summary analysis of reaction of rice varieties released for commercial cultivation in different ecosystem to leaf blast pathogen *Pyricularia oryzae*.

	Hills	IRE	IRM	IRME	RSL	RUP	SCR	SDW /DW	Over ecosystems
Varieties tested	5	23	34	16	21	12	6	4	120
Severity index	5.03	5.46	5.29	5.08	5.21	5.56	5.47	5.76	5.35
Standard Error	0.45	0.31	0.19	0.38	0.27	0.37	0.17	0.90	0.12
Standard Deviation	1.02	1.49	1.05	1.51	1.22	1.30	0.41	1.79	1.29
CV(%)	20.20	27.28	19.89	29.62	23.50	23.32	7.56	31.12	41.47

Hills = hill rice irrigated/upland; IRE = irrigated early maturity; IRME = irrigated mid-early maturity; IRM = irrigated medium maturity; RUP = rainfed upland; RSL = rainfed shallow lowland; SCR = scented rice; SDW = semideep water (30-50 cm water depth); DW = deep water (>50-100 cm water depth).