

pathotype I and the antigen of pathotype II, and vice versa (see table). These results were confirmed by gel-diffusion tests.

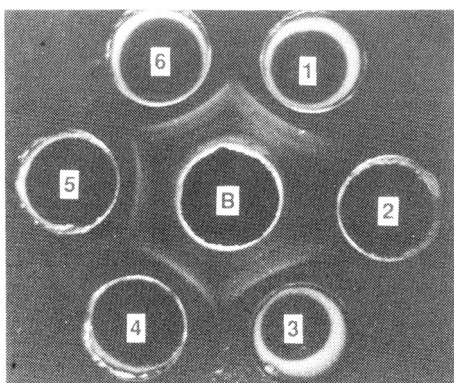
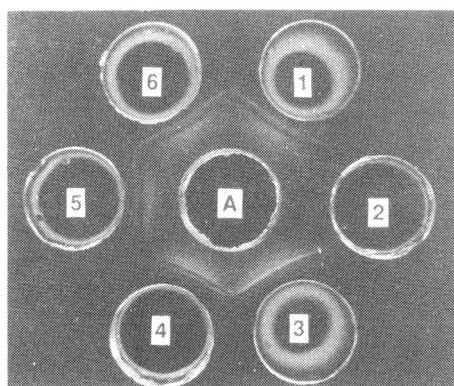
In the gel-diffusion test with the antiserum of pathotype I, one to four precipitin bands were formed with nonheated antigenic preparations of pathotype I isolates collected at different sites; no band was formed against pathotype II antigen. With heated antigenic preparations, a thick precipitin band was formed near the antigenic well and two fast-moving precipitin lines

formed near the antiserum well, except with the antigen of pathotype II (see figure).

These results indicate that pathotypes I and II are serologically distinct in their antigenic components. □

Agglutination titers of antisera of pathotype I and II isolates. Andhra Pradesh, India.

Group	Antiserum	Antigens	
		H.561	H.501
Pathotype I	H.561	1:5120	—
Pathotype II	H.501	—	1:2560



Serological reactions of heated (B) and nonheated (A) antigens of *X. c. pv. oryzae* isolates tested against pathotype I antiserum. The central well contained pathotype I antiserum. The outer well had non-heated (top) or heated (bottom) isolates of Punjab (1), West Bengal (2), Orissa (3), and Bihar (4, 5, and 6).

TM4309: A blast (BI)-resistant, short-duration rice

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TM4309, a short-duration, high-yielding, BI-resistant, fine rice selection

from the pedigree of BAM3/ IR50, was selected to replace BI-susceptible IR50 in rabi season (Jan seeding). In dry (rabi) and early wet (kharif) seasons 1986-88, TM4309 had a yield average of 5.0 t/ha (see table). The lower yield of IR50 (3.9 t/ha) was due to severe damage by BI. □

TM4309 performance under BI stress at Tirur, India, 1986-89.

Season	Duration (d)	IR50			TM4309		
		Yield (t/ha)	BI rating		Yield (t/ha)	BI rating	
			Score ^a	Reaction ^b		Score ^a	Reaction ^b
Kharif 1986-87	105	2.9	9	S	4.1	1	R
Rabi 1986-87	105	3.6	9	S	4.9	2	R
Kharif 1987-88	110	5.6	5	MS	6.5	1	R
Rabi 1987-88	115	3.0	7	S	4.7	1	R
Kharif 1988-89	105	4.2	—	—	4.8	—	—
Mean	108	3.9	7.5	S	5.0	1.3	R

^a Standard evaluation system for rice. ^b R = resistant, S = susceptible, MS = moderately susceptible.

Reaction to sheath blight (ShB) disease of new rice cultivars in Andhra Pradesh (A.P.)

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We screened 38 rice cultivars developed at Agricultural Research Institute, Rajendranagar, Hyderabad — 18 short, 13 medium, and 7 long duration — against ShB caused by *Rhizoctonia solani* Kuhn. The cultivars and TN1 as susceptible check were grown in 1986 and 1987 monsoon seasons in a randomized complete block design with two replications.

Each entry was planted in 6-m² plots, at 15- × 15-cm spacing. At booting, individual hills were artificially inoculated by inserting pathogen grown

on typha bits between the tillers, just above the water. Disease intensity was evaluated 30 d after inoculation.

Differences between years were significant (Table 1), indicating the importance of measuring resistance across years. Varietal differences and their interaction with year were also significant. The highest incidence was on susceptible TN1 both years (Table 2). RNR6250, RNR74802, and RNR1535 had the lowest ShB incidence.

Table 1. ANOVA for ShB incidence in new rice cultivars. 1986 and 1987 wet seasons, Andhra Pradesh, India.

Source	df.	MSS
Replications within location	1	0.268
Years	1	135.148**
Varieties	38	2.655**
Varieties × years	38	2.953**
Error	76	0.287

** = significant at 1% level.

RNR74802 (Sona/ Manoharsali) has long slender grains and RNR1535 (Tella Hamsa/ARC14302) has medium bold grains. They are now in minikit trials in A.P. □

Table 2. Average ShB scores, 1986 and 1987.

Cultivar	Disease score
RNR6250	4.3
RNR74802	4.5
RNR1535	4.8
RNR1-138-8-1	5.0
RNR1806	5.1
RNR18953	5.1
RNR98357	5.4
RNR9075	5.4
RNR133-87	5.4
RNR10244	5.5
RNR89128	5.6
RNR286	5.6
RNR3070	5.7
RNR9062	5.8
RNR99372	5.9
RNR1-111-63	5.9
RNR82096	6.0
RNR5 204	6.0
RNR15-97-36	6.0
RNR52147	6.1
RNR32341	6.1
RNR6827	6.2
RNR16210	6.5
RNR99514	6.6
RNR17085	6.7
RNR9139	6.8
RNR15-84-11	6.8
RNR769	6.8
RNR18586	6.8
RNR99378	6.8
RNR10212	6.9
RNR10208	6.9
RNR99180	7.1
RNR18545	7.1
RNR17-1864	7.1
RNR18864	7.1
RNR527	7.1
RNR16050	7.2
TN1 (check)	7.2
SE (m) ±	0.4

Field evaluation for resistance to rice grassy stunt virus (GSV)

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Severe yellowing and stunting affected rice in the Kuttanad area of Kerala, India, during 1988 kharif (Aug-Sep to Oct-Nov). Serological tests at the

Directorate of Rice Research, Hyderabad, confirmed the presence of GSV strain 2 (GSV-2).

We screened 7 varieties, 8 prerelease cultivars from 3 crosses, and 70 promising cultivars from 16 crosses for resistance to GSV-2 in the field.

None of the seven varieties showed resistance (see table). Of the eight prerelease cultivars, only KAU168

(ARC6650/ Jaya) showed moderate resistance.

Twelve cultivars from the crosses MO 5/Improved Sona, MO 4/Culture 25331, Culture 1954/Jyothi, Jyothi/Culture 2533 1, Vykatharyan/MO 6, Thonnooran/IR8, and Thonnooran/MO 6 showed moderate resistance. □

Varietal resistance to GSV strain 2. Kerala, India, 1988 kharif.

Variety or culture	Parentage	GSV-2 damage ^a (0-9)	Grain yield (t/ha)
MO 4 (Bhadra)		5	0.2
MO 5 (Asha (R))		5	1.0
MO 6 (Pavizham)		4	2.3
MO 7 (Karthika)		4	1.3
Jyothi		4	1.4
Mahaveera		4	0.9
Jaya		4	0.8
KAU93	Jaya/Ptb 33	4	1.1
KAU126	Jaya/Ptb 33	4	1.8
KAU129	Jaya/Ptb 33	4	1.6
KAU153-1	IR1561/Ptb 33	4	1.4
KAU168	ARC6650/Jaya	2	4.4
KAU170	ARC6650/Jaya	4	1.8
KAU200	IR1561/Ptb 33	4	2.0
KAU204	IR1561/Ptb 33	4	1.3
M28-1-1	MO 5/Improved Sona	3	1.4
M38-2-1-1	MO 4/Culture 25331	3	2.1
M38-2-1-2	MO 4/Culture 25331	3	1.3
M38-4-1	MO 4/Culture 25331	3	1.9
M38-8-2	MO 4/Culture 25331	3	3.1
M39-3-1	Culture 1954/Jyothi	3	1.7
M40-5-2	Jyothi/Culture 25331	3	1.5
M41-16-2	Vykatharyan/MO 6	3	2.1
M48-11-1	Thonnooran/IR8	3	1.4
M48-11-2	Thonnooran/IR8	3	1.9
M48-11-3	Thonnooran/IR8	3	2.9
M49-2-3	Thonnooran/MO 6	3	1.6

^aStandard evaluation system for rice.

Resistance of TKM6 and IR20 to rice tungro spherical virus (RTSV)

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In the greenhouse, TKM6 and IR lines with TKM6 in their parentage show high levels of resistance to RTSV infection, but are susceptible to rice tungro bacilliform virus (RTBV) infection. Field trials at the IRRI farm confirm the resistance of TKM6 and IR20 to RTSV.

In 1987 wet season (WS), TKM6 and TN1 planted in 25- × 50-m plots at 20- × 20-cm spacing were subjected to natural infection. Leaf samples were collected at 18, 32, 49, and 92 d after transplanting (DT) from a sample of 36 hills. Each plot had 10 sampling units arranged in a W-pattern.

In 1988 WS, IR20 (IR262-24-3/TKM6) was planted in 21- × 21-m plots at 20- × 20-cm spacing. Leaf samples were collected from a sample of 9 hills at 14, 28, 42, and 55 DT. The 46 sampling units/plot were arranged in a quincuncial pattern. Leaf samples were