Mean values for yield, yield components, and blast disease infection in Edirne (E) and Uzunköprü (U), Turkey. 1995.

Variety	Grain yield (t ha^{-1})			1,000-grain weight (g)			Total rice recovery (%)			Head rice yield (%)			Disease infection[a]	
	E	U	Mean	E	U	Mean	E	U	Mean	E	U	Mean	Leaf blast	Node and neck blast
													U	U
Ribe	5.8 d	4.6 abc	5.2 bcde	31.7 fg	31.0 b	31.4 eg	70.7 de	70.5 ab	70.6 bc	63.8 bc	56.3 a	60.1 bc	MS	MS
Ergene	6.7 bcd	4.4 bc	5.6 bcd	36.0 cd	28.3 cd	32.2 def	72.4 bc	70.5 ab	71.5 abc	63.2 c	53.2 ab	58.2 de	MS	S
Serhat-92	6.8 bc	3.8 bcd	5.3 bcde	32.5 ef	25.8 e	29.1 hi	73.5 ab	69.7 abc	71.6 ab	68.4 ab	42.4 c	55.4 g	MR	MS
Ana/Mar	6.1 cd	3.6 cd	4.9 de	33.5 e	26.9 de	30.2 gh	69.2 ef	69.2 bc	69.2 de	64.9 abc	47.4 bcd	56.1 fg	S	HS
Lap/PG	4.7 e	2.2 e	3.5 f	30.5 g	25.1 e	27.8 i	68.3 f	69.1 bc	68.7 e	55.4 d	45.6 cd	50.5 h	HS	HS
TR-427	7.4 ab	5.7 a	6.5 a	32.8 ef	28.3 cd	30.6 fgh	72.1 bcd	71.6 a	71.9 ab	69.3 a	54.7 a	62.0 a	MR	MS
TR-475	6.3 cd	4.6 abc	5.4 bcde	35.0 d	30.4 bc	32.7 cde	73.1 ab	70.0 abc	71.5 ab	65.5 abc	55.3 a	60.4 abc	MR	MS
TR-489	6.3 cd	4.8 ab	5.6 bc	36.1 cd	32.6 ab	34.3 bc	73.3 ab	71.7 a	72.5 a	63.3 c	56.8 a	60.0 bc	MR	MS
TR-648	6.9 bc	3.1 de	5.0 cde	39.0 b	32.3 ab	35.6 b	73.1 ab	70.1 abc	71.6 ab	64.4 abc	53.3 ab	58.8 cde	MS	S
TR-765	6.9 bc	5.1 ab	6.0 ab	36.5 c	31.0 b	33.7 cd	74.2 a	69.0 bc	71.6 ab	68.1 abc	55.1 a	61.6 ab	MR	MS
Ipsala	6.4 cd	3.2 de	4.8 e	40.8 a	34.2 a	37.5 a	71.1 cd	71.6 a	71.3 abc	64.4 abc	55.0 a	59.7 cd	MS	S
Surek-95	7.8 a	3.9 bcd	5.9 b	35.5 cd	26.7 de	31.1 efg	72.2 bcd	68.0 c	70.1 cd	64.4 abc	50.3 abc	57.3 ef	MR	S
Mean	6.5	4.0	5.3	35.0	29.4	32.2	72.1	70.1	71.0	64.6	52.1	58.3		
F values														
Variety	6.637**[b]	6.01**	8.64**	40.80**	12.14**	21.42**	9.47**	2.22*	5.21**	3.91**	3.54**	4.11**		
Location	-	-	267.52**	-	-	262.02**	-	-	41.81**	-	-	189.22**		
Location x variety	-	-	3.10**	-	-	3.11**	-	-	4.02**	-	-	2.83**		
LSD (0.05)	0.90	1.10	0.70	1.35	2.43	1.69	1.67	2.25	1.40	5.17	7.11	1.68		
CV (%)	9.46	19.42	13.81	2.68	5.75	5.27	1.61	2.23	1.97	5.56	9.49	7.62		

[a] Based on field Evaluation of 70 and 100-d-old plants in Uzunköprü only. No Infection was reported in Edirne. MR = moderately resistant, MS = moderately susceptible, S = susceptible, HS = highly susceptible. [b] * and ** = significant at 0.05 and 0.01 level, respectively.

initiation) and 80 kg P ha^{-1} as a single basal dressing.

We examined the effects of blast disease infection on rice yield, total rice recovery, head rice, and 1,000-grain weight.

The blast disease infection in 1995 was the most severe ever recorded in the Uzunk pr region. It caused a 20% yield loss over 25,000 ha of riceland, with some farmers not even harvesting their crops. There was no disease infection, however, in Edirne.

Significant differences in all characters studied were recorded for the two locations, with all being less for rice grown in Uzunk pr (see table). The varieties with moderate susceptibility to node and neck blast (Ribe, TR-427, TR-475, TR-489, and TR-765) differed less for yield and yield components between the two sites than the susceptible and highly susceptible varieties (Ergene, Serhat-92, Ana / Mar, Lap/ PG, TR-648, Ipsala, and S rek-95).

The environmental factors did not, in general, affect 1,000-grain weight very much, although huge differences did exist for some varieties between the locations. Blast infection, plus other environmental factors, was therefore the main reason for smaller yields at Uzunk pr.

Node and neck blast caused more damage to the varieties than did leaf blast because none of the varieties were even moderately resistant to it. ■

IRRN categories. Specify the category in which the note being submitted should appear. Write the category in the upper right-hand corner of the first page of the note.

Pest resistance—insects

Resistance of varieties derived from *Oryza sativa/Oryza officinalis* to brown planthopper in the Mekong Delta, Vietnam

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One hundred lines containing a brown planthopper (BPH) resistance gene from the wild rice species *Oryza officinalis* were sent from IRRI to CLRRI in 1990. Several of these lines were released to farmers and have been widely grown in the Mekong Delta, although susceptibility to blast has limited their popularity. It is not known whether the BPH resistance gene from *O. officinalis* is a novel gene or one of about 10 BPH genes already identified from other sources. In tests at IRRI, the gene appears to be dominant.

We report here on the resistance of varieties with the *O. officinalis* gene to BPH in the Mekong Delta, and compare them with a series of test varieties containing known resistance genes.

BPH resistance was evaluated using the standard seedbox screening test and scored with the *Standard evaluation system for rice.* Each year (1993-96), plants were infested with a fresh BPH population collected at CLRRI and reared in a screenhouse for one to three generations on TN1.

Brown planthopper resistance of selected varieties. Cuu Long Delta Rice Research Institute, Vietnam. 1993-96.

Variety	BPH resistance gene	SSST damage scores [a]		
		1993	1994	1996
TN1	None	9.0 a	9.0 a	9.0 a
Mudgo	*Bph1*	3.7 def	5.0 c	5.7 cd
ASD7	*bph2*	5.0 dc	7.7 ab	7.7 ab
Rathu Heenati	*Bph3*	1.0 hi	2.3 d	3.7 ef
Babawee	*bph4*	5.0 dc	6.3 bc	4.3 de
ARC10550	*Bph5*	7.7 ab	9.0 a	9.0 a
Swarnalata	*bph6*	1.7 gh	3.0 d	5.7 cd
T12	*Bph7*	-	-	7.0 bc
Chin Saba	*bph8*	4.3 de	7.7 ab	7.7 ab
Pokkali	*Bph9*	6.3 bc	7.7 ab	7.7 ab
IR64	*Bph1* plus Minor gene(s)	4.3 de	5.0 c	5.7 cd
Ptb33	*bph2, Bph3*	0.0 i	0.0 e	0.0 g
MTL 103 (IR54751-2-34-10-6-2)	*O. officinalis*	2.3 fgh	3.0 d	2.3 f
MTL 110 (IR54742-23-19-16-10-3)	*O. officinalis*	3.0 efg	5.0 c	5.7 cd
MTL 114 (IR54751-2-44-15-2-2)	*O. officinalis*	3.7 def	5.7 c	3.7 ef

[a] Scores are the means of three replicates. Means within a column followed by the same letter are not significantly different (P>0.05, LSD test).

The resistance score of varieties containing the *O. officinalis* gene varied from 2.3 (resistant) to 5.6 (moderately resistant) (see table). We did not find a trend of decreasing resistance over time. However, hopperburn was observed in some farmers' fields planted to these varieties, probably as a result of insecticide overuse.

In all 3 yr of testing, varieties with the *O. officinalis* gene were significantly more resistant to BPH than the test varieties with two other dominant genes, *Bph5* and *Bph9.* This suggests that the *O. officinalis* gene is distinct from these genes, although minor genes in the *O. officinalis*-derived varieties could be enhancing their resistance. Interestingly, varieties containing the genes *bph4, Bph5, Bph7, bph8,* and *Bph9* scored susceptible or only moderately resistant to BPH in 2 or 3 of the test years, even though varieties containing these genes are not known to have been grown in the Mekong Delta. ■

Erra Mallelu, Kavya, and Orugallu: fine-grained, gall midge (biotype 1)-resistant rice varieties

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Rice gall midge (biotype 1) is a serious pest when rice is planted late because of delayed rains and late filling of tanks, or planted in the tailend areas of canals in the Telangana zone of Andhra Pradesh, India. Rice varieties Erra Mallelu (1991), Kavya (1991), and Orugallu (1993) were released to control gall midge in this area.

Erra Mallelu (UGL 20471) is a short-duration rice variety (see table) that outperformed popular Tellahamsa,

Characters of fine-grained gall midge (biotype I)-resistant rice varieties.

Character	Cultivars		
	Erra Mallelu	Kavya	Orugallu
Parentage	Sabarmati/W12708	WGL 27120/// WGL 17672/ Mahsuri//Surekha	OBS677/IR2070-423-2-5
Duration (d)	120	135	140
Suitable season	Wet, winter, summer	Wet, winter (under irrigation)	Wet (up to 30 Jun)
Height (cm)	80-85	90–95	85
Panicle-bearing tillers hill^{-1} (no.)	10-12	10-12	15-16
Photoperiod sensitivity	Insensitive	Insensitive	Insensitive
Response to fertilizer	Responsive	Responsive	Responsive
Anthocyanin pigmentation	Absent	Absent	Absent
Plant type	Semicompact	Compact	Compact and erect
Panicle length (cm)	22.2	24.5	21.7
Grains panicle^{-1} (no.)	125	220	180
Glume color	Light brown	Straw	Straw
1,000-grain weight (g)	21.0	20.5	24.5
Head rice recovery (%)	70	73	68
Grain type	Long slender	Medium slender	Long slender
L-B ratio of grain (mm)	4.37	3.86	3.74
L-B ratio of kernel (mm)	3.61	2.78	3.00
Abdominal white	Absent	Absent	Absent
Yield potential (t ha^{-1})	6.0-6.5	6.5-7.0	7.0
Resistance to pests	Resistant to gall midge biotype 1	Resistant to gall midge biotype 1	Resistant to gall midge biotype 1 and tolerant of bacterial leaf blight