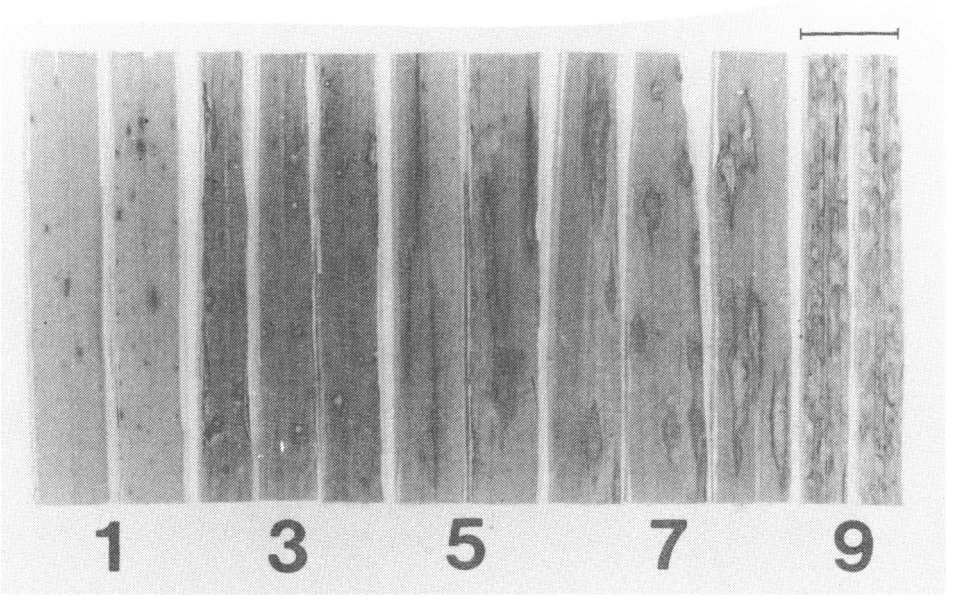

Variation of leaf blast lesion, IRRI, 1988. See table for the description of each lesion type. The bar indicates 1 cm.

Classification code for leaf Bl lesion type. IRRI, 1988.

Code	Description
0	No lesions
1	Small brown specks of pinpoint size or larger brown specks without sporulating center
3	Small, roundish to slightly elongated necrotic sporulating spots, about 1-2 mm in diameter with a distinct brown margin or yellow halo
5	Narrow or slightly elliptical lesions, 1-2 mm in breadth, more than 3 mm long with a brown margin.
7	Broad spindle-shaped lesion with yellow, brown, or purple margin
9	Rapidly coalescing small, whitish, grayish, or bluish lesions without distinct margins

coalesce to cause considerable leaf damage.

Type 9 lesions are frequently observed on highly susceptible varieties at the early seedling stage; plants with this lesion type either die quickly or become severely stunted. In the field, disease progress on cultivars with lesion types 5, 7, or 9 vary greatly, depending on the level of quantitative resistance and environmental conditions at different growth stages.

In field assessment of varietal resistance, predominant lesion type and disease severity (i.e., leaf area affected) should be recorded separately, to indicate qualitative as well as quantitative resistance at different growth stages. When an entry has mixed lesion types, the lesion with higher code number should be recorded. □

Insect resistance

Donors for resistance to Andhra Pradesh biotype 4 gall midge (GM)

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An unprecedented shift in the population of GM *Orseolia oryzae* (Wood-Mason) prevalent in Srikakulam and Vizainagaram districts has occurred since 1986. Almost all varieties—including Phalguna and Surekha—known for their resistance in these districts, were severely damaged. The loss in about 31,000 ha was estimated to be more than $410 million.

We reared the GM population from this area on Phalguna plants under strict quarantine in the greenhouse during 1987, and evaluated 90 GM donors with resistance to the Hyderabad population (biotype 1) against the Srikakulam population under artificial infestation.

Only 12 donors showed resistance to the new population (see table). All traditional resistance donors, like Eswarakora (resistant to biotypes 1 and 3), Siam 29 and Leuang 152 (resistant to biotypes 1 and 2), were susceptible. In addition, improved varieties Phalguna and Surekha (IR8/Siam 29), Kakatiya (TR8/W1263), Rajendradhan 202 (IR8/W1251), Samridhi (R68-I/Jaya), Asha and Usha (IR22/W12631) were susceptible. All 90 donors maintained their resistance against the Hyderabad population.

GM donors showing resistance to biotype 4 population of Srikakulam in the greenhouse. Andhra Pradesh, India.

CR-MR 1523	T10	Ptb 18
Velluthacheera	T1425	Ptb 21
Vellachenipan	T1432	Aganni
NHTA8	T1477	Banglei

Evidently the Srikakulam population is different from the three known biotypes in the country and is more virulent. Hence, it may be considered biotype 4. Some advanced cultures involving donors like Velluthacheera are being tested for their yield potential and adaptability in Srikakulam. □

Short-duration donors for brown planthopper (BPH) resistance

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We screened 200 traditional cultivars of Madhya Pradesh in Hyderabad in 1987 for resistance to BPH. The standard seedbox screening technique had two replications.

Anjania, Badidhan, Badshahbhog, Bangoli 3, Budiyabanko, Bansbhira, Barhi, Barik safed, Basangi, Lal Basant, Bataru, Benwar, Bewara, Banspatri, Bhakawa, and Chapdo were resistant; Bakalu, Bagri, Basant dhoura, Benisar halka, Bewra hara, Bhaji, Badi, and Chhatri were moderately resistant. These cultivars are popular for direct sowing under rainfed conditions. They are drought tolerant and mature within 120 d. □

Mode of feeding on selected wild rices and weight gain of first-instar larvae of rice leaffolder (LF)

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We measured the leaf area consumed and weight gain by two rice LF species—*Cnaphalocrocis medinalis* (Guenée) and *Marasmia patnalis* Bradley—feeding on wild rice leaves in the laboratory. The wild rices were *Oryza officinalis, O. perennis, O. punctata, O. nivara,* and *O. australiensis.* IR36 and TKM6 were the susceptible and resistant checks.

Filter paper discs 2.5 cm in diam were placed on the bottoms of 30-ml plastic cups and moistened with distilled water to maintain humidity and leaf turgor. A 2-cm-long leaf-cut from the middle portion of leaves of 30-d-old plants and 10 1d-old, first-instar larvae from insectary culture at IRRI were placed in each cup and the cups were closed with a tight-fitting paper lid. Cups were arranged in a randomized complete block design in an incubator at 26-28°C and 40% relative humidity for 48 h.

Leaf area consumed was measured using an automatic area meter (Model AAM-7, Hayashi Denkoh Co., Ltd., Tokyo, Japan). Percent increase in larva body weight was measured by recording individual larval weight before and after 48 h feeding.

Leaf area consumed differed significantly. *C. medinalis* larvae consumed a significantly bigger leaf area of susceptible IR36, *O. officinalis,* and *O. perennis* than of resistant TKM6 and the three other wild rices (see table). *M. patnalis* larvae consumed significantly less leaf area of all the wild rices and resistant TKM6 than of IR36. *C. medinalis* larvae consumed significantly more on all the wild rices except *O. nivara* than did *M. patnalis* larvae.

Leaf area consumed and percent weight gain by 1-d-old, first-instar LF larvae after 48 h on selected wild rices.[a] IRRI, 1988.

Treatment	LF species		Difference [b]
	C. medinalis	*M. patnalis*	
	Leaf area consumed [c] (cm^2)		
O. officinalis	0.923 ± 0.211 ab	0.518 ± 0.041 b	0.405**
O. perennis	0.903 ± 0.350 abc	0.408 ± 0.137 bc	0.515**
O. punctata	0.699 ± 0.199 c	0.523 ± 0.046 b	0.176*
O. nivara	0.310 ± 0.107 d	0.342 ± 0.045 cd	–0.032ns
O. australiensis	0.734 ± 0.205 bc	0.233 ± 0.107 d	0.501**
IR36 (susceptible check)	1.104 ± 0.203 a	0.981 ± 0.158 a	0.123ns
TKM6 (resistant check)	0.681 ± 0.147 c	0.382 ± 0.144 c	0.299**
	Percent weight gain[d]		
O. officinalis	178 ± 49.65 c	151 ± 37.06 a	27ns
O. perennis	155 ± 37.55 bc	198 ± 37.21 bc	–43**
O. punctata	134 ± 40.91 ab	177 ± 66.55 abc	–43ns
O. nivara	160 ± 52.34 bc	148 ± 56.19 a	12ns
O. australiensis	163 ± 49.91 bc	168 ± 34.16 ab	– 5ns
IR36 (susceptible check)	161 ± 61.01 bc	203 ± 49.34 c	–42ns
TKM6 (resistant check)	102 ± 45.89 a	166 ± 41.82 ab	–64**

[a] For leaf area consumed and percent weight gain in a column, means (±SD) followed by a common letter are not significantly different at the 5% level by DMRT. [b] ns = not significant, ** = significant at 1% level, * = significant at 5% level by t-test. [c] Ten larvae/replication; av of 9 replications. [d] One larva/replication; av of 14 replications.

Larvae of both species gained weight on all host plants tested. Weight gained by *C. medinalis* larvae on wild rices was comparable to that gained by those feeding on susceptible IR36. *M. patnalis* gained less weight on *O. officinalis, O. nivara, O. australiensis,* and TKM6 than on susceptible IR36. Although *C. medinalis* larvae consumed more than did *M. patnalis* larvae, percent weight gain increase in *M. patnalis* was higher than in *C. medinalis* on resistant TKM6 and *O. perennis* wild rice. □

Comparison of steam and molecular distillation methods in rice

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In our search for the chemical basis of rice resistance to insect pests, we are developing a method to extract volatiles from rice plants so that the extract resembles the volatiles the plant emits naturally to the environment, in enough quantity to evaluate their biological activity.

With the steam distillation used traditionally, there has always been a question of extract quality because of the drastic conditions of the method.

We evaluated qualitative differences in volatile composition of molecular and steam distillates from IR26 using gas chromatography (GC).

Fresh foliage from 45-d-old plants was cut in 5-cm pieces and 100 g placed in a 500-ml glass container connected to one end of a 10-cm-long U tube. On the other end, the distillate was collected in a glass thimble. A high vacuum valve was connected 5 cm over the thimble.

The sample container was immersed in a Dewar flask containing dry ice/acetone for 20 min. The system was connected to a high vacuum line and the air evacuated until the inside pressure reached 10^{-3} mm Hg. The high vacuum valve was closed, the Dewar flask was