

Varietal reaction to rice tungro disease in deepwater transplanted variety trials at Pusa, Bihar, India

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Rice tungro virus symptoms were noticed in August 1980 in two varieties, Bhutahi and BR46, in a transplanted deepwater variety trial, UVT-6 (State). The population of green leafhopper *Nephotettix virescens*, the tungro vector, increased and the disease spread fast. Tungro symptoms appeared in many varieties. Infection started with the yellowing of leaves. Later, plants were

Reaction of rice varieties to tungro virus.

Score	Entries (no.)	Varieties, lines
1	1	Jaladhi-1
3	6	Janaki (64-117), NC 487/77, CN 603, C 188-1, BIET 820, C 62-10.
5	5	OR 1103, C 185-1, C180-4, C 62-31, C 183-1.
7	11	RAU 21-35-3-5, (BIET 821), RAU 21-82-1-3 (BIET 799), RAU 21-147-1-4 (BIET 807), KLG 70-P, OR 1105, BR 14, CN 540, Pichar, C 181-1, C 186-1, BIET 821.
9	9	RAU 21-168-1-2 (BIET 724), C 62-68, Bhutahi, Bajal. Jalaj. KLG 165-P, KLG 161-7-P, BR 46, OR 1104.

stunted. The disease was first noticed in the center of the plot; it later spread to other parts.

UVT-6 (All-India Coordinated Rice

Improvement Program), a transplanted deepwater variety trial in the adjacent plot, also showed the disease symptoms. Both the UVT-6 (State) and UVT-6 (AICRIP) trials had three replications. Scoring was based on the Standard Evaluation System for Rice (1976) and the maximum score was used for varietal reaction (see table). Of 32 entries from 2 trials, only 7 had resistant reactions. The direct-seeded trial in the adjacent field had very little damage.

Janaki (64-117), released in 1980 for cultivation in deepwater areas (up to 150 cm water depth) of North Bihar, is resistant to tungro. So, it replaces BR14 and BR46, the earlier released varieties for similar situations. The nature of the disease was confirmed by rice virologists at the Central Rice Research Institute, Cuttack. ■

Multiple disease resistance breeding materials in Karnataka

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The following cultivars were evaluated under field pressure during the 1979 kharif at the RRS, V. C. Farm, and found resistant to discoloration and ephelis, leaf and neck blast, and brown spot fungal diseases. The cultivars represent a relatively wide genetic base and will be good donors in breeding programs.

RP1045-714-3-3 (IET 6884), TR1-15 (IET 7054), RNR 87893 (IET 7063),

KAU1674 (IET 7096), CR260-501-294-51 (IET 7144), CR263-889 (IET 7145), RP1153-12-4 (IET 6627), RP1045-23-2-1 (IET 6314), RP1017-1-5-1 (IET 6664), Raminad Str. 3, Usen, IR1721-11-5-3-2-3-1, Milyang 30, IR1544-38-2-2, IR32, BR167-2B-9 (Asha), H 5, IR1905-PP11-29-4-61, IR2588-5-1-2, IR2797-105-2-2-3, IR5853-162-1-2-3, IR8608-82-1-3-1-3, IR10198-662, IR13429-198-2, Rasht 507, 5721. ■

GENETIC EVALUATION AND UTILIZATION

Insect resistance

Studies on varietal resistance and host specificity of rice green leafhoppers

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Because the green leafhoppers (GLH) *Nephotettix virescens* (Distant) and *Nephotettix nigropictus* (Stal) are important pests of rice, detailed investigations of insect-plant relationships were undertaken.

A high degree of resistance was sought among 108 known pest-resistant

entries. In host-plant preference tests, 76 and 72 entries had significantly less damage from *N. virescens* and *N. nigropictus*. In general, *N. nigropictus* caused more damage than *N. virescens* to the same varieties. In various tests, PTB 2, PTB 18, and PTB 7 were highly resistant, and Khama 49/ 8, PTB 21, DS 1, ARC 6049, Khama 49/2, ARC 10243, and Jhinga sail were resistant to both species. The adult longevity test was found to be a good criterion for identifying high levels of resistance in rice varieties.

The high level of resistance of PTB 2, PTB 18, and PTB 7 could be due to the fact that both GLH species showed a

low preference for settling and egg-laying on those varieties. Both leafhopper species preferred to settle and oviposit on 30- to 40-day-old plants.

A high level of antibiosis was observed on PTB-2, PTB 18, and PTB 7. Those varieties caused high mortality of first-instar nymphs and newly emerged adults caged on them. There was also low damage to 15-day-old seedlings on which 100 nymphs were caged for 20 days. Plant age did not alter the degree of antibiosis. Insects of both species made more feeding punctures and excreted less honeydew during feeding on resistant varieties. Analysis of the plant tissue demonstrated successful