

Greenhouse evaluation of selected rice varieties against white backed planthopper *Sogatella furcifera* (Horvath)

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ABSTRACT

Ninety three rice varieties were evaluated at nursery stage against WBPH under greenhouse condition at CRR I Cuttack during 2009 and 2010. Only Pt33 was highly resistant and recorded damage score '0'. IR 64 Sub I and IR-64 MAS, Satabdi, Kalinga I, Hazaridhan and PS-3 were found to be resistant with score '1' while Swarna, Trupti and Virendra, Satyakrishna, Virendra, Sadabahar, Heera, Varsadhan, Jogen, Neela, Khanish, Tara, ASD-16, CSR-4, CR-1014 and PR-113 were moderately resistant with damage score '3'.

Key words: rice, variety, white backed planthopper, resistance

The white backed plant hopper (WBPH), *Sogatella furcifera* (Horvath) is serious insect pest of rice in rice growing areas in tropical Asia (Kadirvel *et al.*, 2003). In India it has been reported from several states like A.P., Assam, Bihar, Haryana, T.N., U.P., W.B., M.P., Orissa, Maharashtra, Rajasthan and Punjab (Chelliah and Gunathilagaraj, 1990). Knowledge on the status of the released varieties helps for better management of the pest. In the present investigation ninety three rice varieties were evaluated for their resistance against WBPH in the greenhouse at Cuttack during 2009 and 2010.

Each variety was sown in a line in a plastic tray. A uniform plant population of 20 plants was maintained in each variety. WBPH reared on the susceptible variety TN1 was used for the evaluation. After 10 days of germination, WBPH nymphs (2nd and 3rd instars) were released on the seedlings at the rate of 8 insects per plant and after ten days, observations were recorded on the percent mortality of the plants as per the Standard Evaluation System, (IRRI, 2002) scale during 2009 and the resistant varieties were re-evaluated in the same procedure during 2010.

Table 1. Evaluation of rice varieties against WBPH under net house condition, 2009

Damage score (SES)	No. of genotypes	Rice genotypes
0	1	Ptb-33
1	6	IR 64 Sub I and IR-64 MAS, Satabdi, Kalinga I, Hazaridhan and PS-3
3	16	Swarna, Trupti and Virendra, Satyakrishna, Virendra, Sadabahar, Heera, Varsadhan, Jogen, Neela, Khanish, Tara, ASD-16, CSR-4, CR-1014 and PR-113
5	15	Chandrama and Mandia Vijaya, Tapaswini, Krishnahansa, WITA-9, Rajashree, Geetanjali, Hanseswari, BTP-5204, Pooja, Rasi, VLD-61, WGL-32100, PR-118 and PR-115,
7	20	Swarna MAS, Annapurna, PR III, Pant dhan, PR 116, WITA-8, VLD-221, Sattari, Swarna Sub 1, MTU-1071 and Kalinga-II, NLR-34449, Utkalprava, Chandan, GR-4, CSR-5, WGL-32183, Kalinga-III, Pant dhan and ARB-2,
9	35	Sonamani, Lalat MAS, FR-13A, Moti, Pokkali, Nuadhusara, GR-12, Poorav, Lunishree, Abhisek, Katarani, ADT 36, GN-103, Nuakalazira, PTB-1, CSR 30, CSR-13, WITA -12, Pusa-44, Prasan, Karuna, VLD 16, Dandi, IR-36, Dumka-2, Pusa-33, Sneha, Indravati, Annada, CSR-23, IR-36, WR-3-2-6-1, Masuri, Lalchandani and TN-1

Table 2. Evaluation of selected rice varieties against WBPH under net house condition, 2010

Damage score (SES)	No. of genotypes	Rice genotypes
0	1	Ptb-33
1	6	IR 64 Sub I and IR-64 MAS, Satabdi, Kalinga I, Hazaridhan and PS-3
3	16	Swarna, Trupti, Virendra, Satyakrishna, Virendra, Sadabahar, Heera, Varsadhan, Jogen, Neela, Khanish, Tara, ASD-16, CSR-4, CR-1014 and PR-113
5	14	Chandrama and Mandia Vijaya, Krishnahansa, WITA-9, Rajashree, Geetanjali, Hanseswari, BTP-5204, Pooja, Rasi, VLD-61, WGL-32100, PR-118 and PR-115,
7	1	Tapaswini,
9	1	TN-1

Six varieties viz., IR 64 Sub I and IR-64 MAS, Satabdi, Kalinga I, Hazaridhan and PS-3 were found to be resistant during both the years, recording damage score '1' while the resistant check Ptb 33 scored '0'. Sixteen genotypes viz., Swarna, Trupti, Virendra, Satyakrishna, Virendra, Sadabahar, Heera, Varsadhan, Jogen, Neela, Khanish, Tara, ASD-16, CSR-4, CR-1014 and PR-113 were moderately resistant to the pest and in damage score '3'. The all other varieties except Tapaswini, selected from 2009 trial registered similar damage score during 2010 evaluation. The rest thirty five were found to be highly susceptible and completely killed by the pest and recorded damage score '9'. In a similar artificial infestation screening trial undertaken by Rath *et al* (2005, 2009) and Rath (2008) reported 31 resistant cultivars against this pest, respectively.

REFERENCES

- IRRI 2002. Standard Evaluation System for rice (SES), International Rice Research Institute (IRRI), Philippines pp 56
- Chelliah S and Gunathilagaraj K 1990. Rice pest management: Status and strategies. Lead paper presented in the National Symposium on Rice in Wetland Ecosystems, December 19-21, 1990, kottayam, kerala, pp54.
- Kadirvel P, Maheswaran M, Gunathilagaraj K. 2003 Detection of simple sequence repeat markers associated with resistance to white backed planthopper, *Sogatella furcifera* (Horvath), in rice. *IRRN* 28.2 : 22-23.
- Rath PC, Prakash A, Rao J and Subudhi HN 2005. Screening of rice varieties against white backed plant hopper(WBPH) *Sogatella furcifera* Horvath, in net house condition. *J. Appl. Zool. Res.* 16(1): 21-22
- Rath PC, Prakash A, Nandagopal V and Subudhi HN 2009. Comparative studies of some rice genotypes against white backed plant hopper(WBPH) *Sogatella furcifera* Horvath. *J. Appl. Zool. Res.* 20(2) : 125-126
- Rath PC 2008. Evaluation of rice genotypes against white backed plant hopper (*Sogatella furcifera* Horvath). *Oryza*. 45(4):331-332