

Screening of Brown Planthopper (*Nilaparvata lugens* (Stål)) Resistance in *Rathu Heenati* Accessions Available in Sri Lanka

W.H.K. Cooray¹, D.M.J.B. Senanayake^{2*}, N.M.C. Nayanakantha¹, W.A.R. Dhammika², S.R. Sarathchandra², M.R.A.B. Madduma², D.M.O.K.B. Dissanayake², E.A.D.N. Weerasinghe¹, and W.K.S.S. Sewmini¹

¹Department of Biosystems Technology, Faculty of Technological Studies, Uva Wellassa University, Badulla, Sri Lanka.

²Rice Research and Development Institute, Batalagoda, Sri Lanka.

*dmjbsenanayake@gmail.com

Brown Planthopper, BPH (*Nilaparvata lugens* Stål) is one of the most devastating insect pests reported on the rice crop worldwide. The traditional Sri Lankan rice variety *Rathu Heenati* has been found to have strong BPH resistance and is widely used as a BPH-resistant donor in rice breeding programs in several countries. The current study was conducted to identify BPH resistance in *Rathu Heenati* accessions available in Sri Lanka through phenotypic and molecular characterization at Rice Research and Development Institute, Batalagoda during the 2021/22 *Maha* season. Phenotypic characterization for BPH resistance was performed using the standard seedbox screening technique (SSST). *Rathu Heenati*'s accessions; 2080, 3888, 4992, 5579, 5486 and 3390 were tested for BPH resistance with BPH resistant var. Ptb33 and susceptible var. Bg380. The molecular markers; RM 589, RM 463, RG457 and AJ096 associated with the BPH resistance genes *BPH3*, *BPH2*, *BPH10*, and *BPH13* were used. The results revealed that *Rathu Heenati* accessions 4992 and 5579 are moderately resistant to BPH. Accession 3390 is moderately resistant/ susceptible to BPH while accessions 2080, 3888, and 5486 are highly susceptible to BPH. The molecular analyzes showed the presence of resistance genes *BPH3*, *BPH2*, *BPH10*, and *BPH13* in accessions 4992 and 5579; *BPH2* and *BPH3* in accession 3390. Therefore, these resistant genes might play an important role in determining some resistance of *Rathu Heenati* accessions to BPH. Hence *Rathu Heenati* accessions, especially 4992 and 5579, may be used effectively to develop BPH resistant varieties in rice breeding programs.

Keywords: Rice, BPH Resistance, Molecular Markers, *Rathu Heenati* Accessions