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Evaluation of resistance of wild rice; *Oryza nivara* to feeding by Brown planthopper [*Nilaparvata lugens* (Stal)] populations

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Abstract

The Brown planthopper (BPH), *Nilaparvata lugens* is one of the most destructive monophagous insect pests of rice in Sri Lanka. The present study evaluated the level of resistance of seventeen *O. nivara* accessions collected from different locations in Sri Lanka (WRAC 01, 02, 04, 07, 11, 12, 14, 19, 21, 22, 24, 25, 35, 41, 46, 62 and 9864) to feeding by different BPH populations. Response of test accessions to feeding was assessed by using standard honeydew test. Randomized Complete Block Design with four replicates was applied for the test and repeated two times. Two BPH populations collected from Bathalagoda, Bombuwala which were reared on Bg 380 (susceptible check) and a virulent BPH population collected from Kegalle area and reared on Bg 379/2 (moderately resistant check) were used for screening. Also, to inspect genetic variation among BPH populations by Standard Seed Box Screening test, a differential set of four resistant cultivars with known resistant genes for BPH (Ptb 33- *bph2*, *Bph3*; Rathu Hennati - *Bph 3*; Baba wee - *bph4* and Pokkali-*Bph9*) were used. According to the results, certain accessions of *O. nivara* (WRAC 35, 21, and 02) showed significantly the least honeydew productions ($\alpha=0.05$) indicating their superior resistance to all BPH populations over Ptb 33 (resistant check). WRAC 01 and Ptb 33 grouped together for their resistance, while WRAC 25, 04, 22, 14, 07, 24 and 9864 showed significantly less honeydew productions compared to moderately resistant variety Bg 379/2 indicating their considerable level of resistance to BPH. Bg 380 showed the highest honeydew production indicating no resistance to BPH in it. Significantly the highest, moderate and lowest honeydew excretions were produced by Kegalle, Bathalagoda and Bombuwela populations respectively. Differential responses to standard resistant cultivars revealed genetic variation of Kegalle population from other two populations studied. Also, virulent nature of Kegalle population was detected for *bph 4* gene.

Keywords: Bioassay, Brown planthopper, *O. nivara*, Standard Honeydew test