

Category	: 8th Rice Genetics Symposium
Select Theme	: Genetic improvement
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Keyword 1	: Genomics-assisted breeding
Keyword 2	: Biotic stress tolerance
Keyword 3	: Pre-breeding
Title of Entry	: Mapping and candidate gene identification of loci determining resistance to BPH (<i>Nilaparvata lugens</i>) in <i>Oryza nivara</i> X <i>Swarna</i> BILs
Presenting author	: Akanksha Srivastava
Presenting author email	: akanksha.srivastav007@gmail.com
Co author 1	: Satendra kumar Mangrauthia, P. Madhu, V. Jhansilakshmi,
Co author 2	: B.Divya, N. Sarla, T. Ram
Affiliation presenting author	: ICAR-Indian Institute of Rice Research
Affiliation 1	:
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Brown plant hopper (BPH) is one of the most aggressive pests of rice that limits its production. In Asia, yield losses in crops caused by BPH are chronic and at times severe. Most of the identified genes towards BPH-resistance (R genes) are biotype specific and are ineffective against BPH biotype4 which is predominant in Indian sub-continent. Hence, it is imperative to identify R genes for the BPH biotype4. Most of the known R genes reported till now have been screened only at seedling stage; however, the information of R genes contributing BPH resistance in other crucial growth stages is limited. In this study, the mapped resistant genes against BPH biotype 4 was screened in seedling as well as later plant growth stages. Using backcross population derived from cross between <i>O.nivara</i> and <i>Swarna</i> , two recessive genes were identified which explained 21 % and 22 % of phenotypic variance respectively. The trait was associated with the marker loci RM8213, RM5953 and R4M17 on chromosome 4. The loci reported for BPH resistance may harbour novel R genes. Promising genes lying between RM8213 and R4M17 were identified through functional annotation. Expression of selected genes was quantified in BPH resistant RPbio4918-230S (backcross introgression line of <i>O.nivara</i>) and <i>Swarna</i> (the susceptible parent). Among the 10 genes analyzed, 8 genes showed upregulation in RPbio4918-230S while <i>Swarna</i> showed down regulation of all the genes after BPH infestation. Specifically, a serine/ threonine-protein kinase receptor gene was significantly upregulated in RPbio4918-230S but down regulated in <i>Swarna</i> . Our study involved in the identification of new marker loci and their associated resistance genes is having immense importance in determining the resistance towards BPH biotype4 and may greatly facilitates as a useful resistance resource, in future rice breeding programmes.

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