Review Form 1.7

Journal Name:	**International Journal of Plant & Soil Science**
Manuscript Number:	**Ms_IJPSS_99596**
Title of the Manuscript:	**Gene validation for Brown Plant Hopper resistance in rice varieties using SSR markers**
Type of the Article	**Original Research Article**

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
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PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments **1. Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) **2. Is the title of the article suitable?** (If not please suggest an alternative title) **3. Is the abstract of the article comprehensive?** **4. Are subsections and structure of the manuscript appropriate?** **5. Do you think the manuscript is scientifically correct?** **6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	The Brown Plant Hopper (BPH), *Nilaparvata lugens* (Homoptera: Delphacidae) is one of the most destructive insect pests causing significant yield loss in most of the rice cultivars of Asia. =Marker-assisted backcrossing is used to introgress the genes for BPH resistance in which the selection of donor parents that can impart durable resistance and validation of the presence of genes is a prerequisite. =Jyothi the most popular, widely cultivated rice variety in Kerala is screened along with four parental lines viz., PTB33 (Variety released from RARS, Pattambi), =IRRI introgressed lines- IR65482-7-216-1-2, IR7103-121-15-B, and a breeding line RP2068-13-5-8 for validating the presence of genes *Bph3*, *BPH18*, *Bph20*, and *Bph21* using SSR markers. =Parental polymorphism was shown for markers specific to *Bph3*, *BPH18,* and *Bph20*. =Besides this, cluster analysis using the UPGMA method produced 4 clusters. =The variety 'PTB33' was obtained in a separate cluster which can be attributed to its resistant character against BPH and can be considered as a potential donor. =The IRRI introgressed lines- IR65482-7-216-1-2, IR7103-121-15-B, and the breeding line RP2068-13-5-8 can also be well utilized as donors by proper standardized BPH screening tests for confirming the phenotypic expression of BPH resistance =SSR markers were used for screening rice parental genotypes for validating the presence of genes in genotypes considered donor parents and the absence of genes in the susceptible parent 'Jyothi'. The varieties PTB33, IRRI introgression lines IR65482-7-216-1-2, IR7103-121-15-B showed polymorphism for the markers specific to the genes *Bph3*, *BPH18*, and *Bph20*. These genotypes may be effectively used in marker-assisted backcrossing as donor parents to transfer the genes for resistance to the high-yielding but susceptible variety 'Jyothi'. The title of the article is suitable The abstract of the article is comprehensive Subsections and structure of the manuscript are appropriate The manuscript is scientifically correct The references are sufficient and recent	
Minor REVISION comments **1. Is language/English quality of the article suitable for scholarly communications?**	English quality of the article suitable for scholarly communications	
Optional/General comments	=The genetics of BPH resistance revealed the presence of 32 major genes (*Bph1* to *Bph32*) in cultivated rice and seven wild relatives [10]. Whereas, cloning and characterization of nine potential genes (*Bph3/Bph17*, *Bph6*, *BPH9*, *Bph14*, *Bph15*, *BPH18*, *BPH26*, *BPH29*, and B*ph32*) were carried out to date [11]. =[16] Introgressed BPH-resistant genes *Bph20* and *Bph21* into an elite variety CO43*Sub1* using IR71033-121-15 as a donor and two introgressed lines 32-4-34 and 32-4-35 showed resistance to BPH population. =Identification of genes for BPH resistance from different rice cultivars, the study of resistant mechanisms, and the introgression of resistant genes to elite well-adapted but susceptible rice varieties become needful for sustainable economic yield under the BPH outbreak =Marker-assisted selection in plant breeding enables the selection of individual plants based on their genotype. Selection of parents in backcross breeding programmes and other breeding techniques is more efficiently done with aid of molecular markers reducing the cost, time, and resources. Screening of rice varieties and validating the presence or absence of genes of interest is essential for the selection of donor and recipient parents in breeding programmes for the development of resistant varieties. =Study was undertaken to validate the presence or absence of four genes that impart BPH resistance (*Bph3*, *BPH18*, *Bph20*, and *Bph21*) in five genotypes of rice varieties to identify the best variety with multiple resistant genes, that could be used as a donor for marker-assisted gene pyramiding breeding programs and confirmation of the absence of the genes in Jyothi variety which is high yielding but susceptible to be used as recipient parent	

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PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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