

**IDENTIFICATION OF BIOTYPES OF BROWN PLANTHOPPER
(*Nilaparvata lugens* Stal) IN THE BATTICALOA DISTRICT**

By

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ABSTRACT

Brown Planthopper (BPH) is the most destructive pest especially in irrigated rice in Sri Lanka. It affects rice crop at all stages of plant growth. BPHs are considered as the main constraints limiting rice yields in tropical environments and it is acting as virus vector also. Bg-357 and Bg-366 are the rice varieties released by Department of Agriculture in the year 1997 and 2009 for economical cultivation, which were moderately resistant to BPH.

Batticaloa is the one of major rice-growing districts in Sri Lanka. There are some problems related to rice production in the Batticaloa district, *viz.*, water scarcity, late cultivation and infestation of BPH. Mandur is the major rice-growing area in the Batticaloa district and in this area the damage from the BPH is very severe. This was mainly due to the late cultivation of rice.

Because of the water scarcity, farmers go for late cultivation in the later part of the *Yala* season. Farmers in early-cultivated areas apply insecticides to control the problem of BPH and do not follow the recommended rate of application. The farmers also change the insecticide season to season, which may lead to the development of biotypes in BPH and resistant BPHs migrated towards the fields, which were cultivated at later part of season.

In Mandur area most of farmers cultivated Bg-357, Bg-366 and Bg-94-1 rice varieties. Even though Bg-366 and Bg-357 are moderate resistant rice varieties, they were severely affected by BPH with 25-50% and 50-70% yield loss respectively in Mandur area.

This may be due to the emergence of a virulent BPH population, which can be a new biotype capable of breaking the resistance of Bg-366 and Bg-357.

In order to confirm the biotypes of BPH, the BPH samples were collected from the Rice Research Development Institute (RRDI), Batalagoda and Batticaloa district especially Mandur and Kokkadichchola areas and undergone for the morphological and genetic characterization. The morphological study showed that there were differences between the BPH samples collected from the Mandur area and Batalagoda and Kokkadichchola areas. The BPH samples of Mandur area have nodes through the vein system, which was not observed in the Batalagoda and Kokkadichchola areas.

Polymerase Chain Reaction (PCR) amplifications were carried out using Microsatellite markers for each sample of BPH. As the analysis of PCR products of marker 7314 by gel electrophoresis did not show the polymorphism it was suggested to do further study up to DNA sequencing for all samples of BPH to observe the Polymorphism.

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