

## Evaluation of DNA Markers Linked to Blast Resistance Genes, *Pikh*, *Pit* (*p*), and *Pita*, for Parental Selection in Sri Lankan Rice Breeding

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**ABSTRACT:** Rice blast, is a serious disease affecting rice, caused by a fungal pathogen *Magnaporthe grisea* (anamorph - *Pyricularia grisea*). This paper summarizes the progress and the achievements made in detection of blast resistance genes in phenotypically evaluated, selected rice cultivars in Sri Lanka based on simple sequence repeats (SSR) DNA markers. In the present study, blast pathogen was identified by morphological characters, molecular techniques which confirmed the identity as *M. grisea*. Total of 34 rice varieties including several Sri Lankan rice varieties and IRRI recommended rice varieties were evaluated for blast resistance. Total of 17 varieties were susceptible to the fungal infection and 17 varieties remained resistant. Tetep, Bg359, Bg304, IR64, Bg352, Bg357 were found to be highly resistant to the rice blast disease, while LD125, Bg94/1, Bw267-3, Bw451, Bw400, H7, Bg34-6, H10, IRR119 were highly susceptible. In marker genotyping, most of the highly resistant and resistant varieties demonstrated the presence of blast resistant *Pita* gene of variety Tetep and *Pita* gene was absent in the highly susceptible varieties. But *Pita* gene was absent in some of the resistant varieties like Bg300, Bg348 and *Ptb33* and present in susceptible varieties H10, Bg276-5 and IR07F291. For polymorphism of *Pikh* gene most of the resistant varieties depicted the band lengths of 161-171bp. Susceptible varieties gave the band length of 151bp. According to the results of marker genotyping with *Pit(p)* blast resistant gene, the resistant varieties gave a band length of 117bp while susceptible varieties produced the band length of 111bp. Hence resulted polymorphism findings can be used in future studies to differentiate the resistant and susceptible varieties.

**Key words:** F2 population, *Magnaporthe grisea* (anamorph - *Pyricularia grisea*), marker genotyping, phenotypic screening, rice blast resistance.

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