

Marker Assisted Selection of Rice Genotypes for Xa5 and Xa13 Bacterial Leaf Blight Resistance Genes

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Abstract : Rice (*Oryza sativa* L.) is the major staple food crop over the world. It is prone to a number of biotic and abiotic stresses, out of which Bacterial Leaf Blight (BLB), caused by *Xanthomonas oryzae* pv. *oryzae*, is the most rampant. Management of this disease through chemicals or any other means is very difficult. The best way to control BLB is by the development of Host Plant Resistance. BLB resistance is not an activity of a single gene but it involves a cluster of more than thirty genes reported. Among these, Xa5 and Xa13 genes are two important ones, which can be diagnosed through marker assisted selection using closely linked molecular markers. During 2014, the first phase of field screening using forty traditional rice genotypes was carried out and twenty resistant symptomless genotypes were identified. Molecular characterisation of these genotypes using RM 122 SSR marker revealed the presence of Xa5 gene in thirteen genotypes. Forty-two traditional rice genotypes were used for the second phase of field screening for BLB resistance. Among these, sixteen resistant genotypes were identified. These genotypes, along with two susceptible check genotypes, were subjected to marker assisted selection for Xa13 gene, using the linked STS marker RG-136. During this process, presence of Xa13 gene could be detected in ten resistant genotypes. In future, these selected genotypes can be directly utilised as donors in Marker assisted breeding programmes for BLB resistance in rice.

Keywords : *oryza sativa*, SSR, STS, marker, disease, breeding

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