

MOLECULAR MARKER ASSISTED RICE BREEDING FOR SUBMERGENCE TOLERANCE

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Rice (*Oryza sativa*) is a semi-aquatic species that is typically cultivated under partially flooded conditions. Around 75,000 ha of rice fields in Sri Lanka are identified as flood prone areas. Submergence results poor rice yields with intolerant varieties, hence require introducing submergence tolerant varieties into these areas. In response, a back cross breeding programme was initiated by the Rice Research and Development Institute, Batalagoda to improve submergence tolerance in rice varieties. In back cross breeding, selection of submergence tolerant plants either morphologically or, by molecular means is essential. In this research, 10 day old 272 seedlings of *Bg 96-741/IR07 F291//Bg 96-741 (Bc₂F₁)* a population with parents (recurrent: *Bg96-741* and donor: *IR07F291*) were screened by submerging in 1m depth of irrigation water for 14 days in a cement tank. The plants were scored for survival after de-submergence up to 14 days. Rice SSR markers; *RM219*, *RM464A*, *RM316*, *RM23869*, *RM285* and *RM105* were used to check SSR polymorphisms between parents in 2.5% agarose gels. *RM316* and *RM219* markers (located in upstream and downstream of the *sub1-A* gene region respectively) which showed a clear polymorphism between parents were used to screen in *BC₂F₁* plants. Plant Nos. 5-6, 5-7, 5-8, 5-9, 5-10, 5-11, 5-12, 5-13, 8-7, 8-10, 8-17, 8-18 were selected as submergence tolerant individuals in both morphological and molecular screening. They will be used to continue the backcross breeding programme at RRDI, Batalagoda.

Key words: Molecular markers, *Oryza sativa*, *RM219*, *RM316*, Submergence tolerance.