

Phenotypic Evaluation of a Core Rice Panel for Sheath Blight Resistance

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Sheath blight (SB) caused by *Rhizoctonia solani* Kühn is a major rice (*Oryza sativa* L.) disease, second only to rice blast. Host plant resistance is the most economical and environmentally-friendly approach for SB disease mitigation. However, there is limited knowledge on resistance donors for the use in rice breeding programs. Hence, the current study is the first to report the screening of 60 rice accessions including traditional and newly improved Sri Lankan rice germplasm and exotic lines for SB resistance. The study was conducted in a replicated field trial, during the *yala* season of 2019. At early booting stage, rice plants were artificially inoculated by placing cultured *R. solani* mycelia at leaf bases and three weeks after inoculation, disease progression was scored following the IRRI standard evaluation system (SES; 0 to 9 scale) derived based on percentage vertical spread of the lesion (VSL) along the plant. The Friedman test carried out using SES scores revealed three significantly different groups ($p \leq 0.05$). Rice accessions *Kaluheenati*, Bw267-3 and *Kalundai samba* were identified as resistant to SB (SES scale 0 to 1) and were reported as similar to each other ($p > 0.05$). Of these, *Kaluheenati* could be identified as a resistant accession reporting a median SES (mSES) score of 0, indicating no VSL upon inoculation. Further, 23 rice accessions were identified as susceptible to SB (SES scale 7 to 9) and were similar to each other ($p > 0.05$). Of these, the ten accessions (*Gonabaru*, *Pachchaperumal*, *Dikwee*, *Halsuduwee*, *Moraberakan*, *Wannidahanala*, *Yakadawee*, Bg250, Bg251 and Ld99-12-38) reported a mSES score of 9 with a VLS of 65-100%. The remaining 34 accessions expressed intermediate SB disease responses (SES scale 3 to 5) and were similar to each other ($p > 0.05$). We recommend the use of *Kaluheenati*, Bw267-3 and *Kalundai samba* as SB resistance donors for QTL mapping and future rice breeding programs.

Keywords: Sheath blight, *Rhizoctonia solani*, Sri Lankan rice accessions, Resistance donors, Rice breeding

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