

Molecular Screening of Selected Rice Varieties with Specific Markers for Gm2 and Gm4(t) Gall Midge Resistant Genes

D.M.K.K. Dissanayake, K.K.S. Fernando¹ and J.M.R.S. Bandara²

Postgraduate Institute of Agriculture
University of Peradeniya
Peradeniya, Sri Lanka

Molecular screening for gall midge resistance was done using 47 selected rice varieties including 26 improved and 17 traditional varieties and four wild species. Specific primers were used to detect presence/absence of resistant genes. F10 primer was used to screen test varieties for Gm2 resistance. Phalguna and ARC6650 were used as the resistant and susceptible references, respectively. An amplified fragment of 600 bp was obtained with F10 primer with respect to all resistant and susceptible species/varieties except traditional varieties Perillanel and Podiwee, indicating that the Gm2 marker cannot be used to identify the presence of Gm2 rice gall midge resistant gene in tested (46) rice samples. Perillanel and Podiwee varieties behave similar to ARC6650 with F10 primer. Primer for Gm4(t) gene gave two different amplified fragments. Resistant varieties gave an amplified fragment of 570 bp while susceptible varieties amplified a fragment of 583 bp. Selected rice varieties were screened with respect to the resistant variety Ob 677 and susceptible varieties Tulsi and TN-1. It was found that, out of 46 tested 26 varieties including improved and traditional varieties amplified a fragment of resistance (570 bp). The rest of the species/varieties amplified a fragment of susceptibility (583 bp). Molecular screening results obtained for Gm4(t) to be confirmed with screening the varieties in the green house.

¹ Seed Certification and Plant Protection Center, Gannoruwa, Peradeniya, Sri Lanka.

² Department of Agricultural Biology, University of Peradeniya, Peradeniya, Sri Lanka.