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Mottle disease in passion fruit: causal agent and selection of resistant plant lines

Somaweera B.A.S.C.[1]*, Abeysinghe S.[1], Kumari W.G.S.M.[1] and Basnayake V.[2]

[1]*Department of Botany, University of Ruhuna, Matara, Sri Lanka*
[2]*Plant Virus Indexing Centre, Homagama, Sri Lanka*

Commercial cultivation of passion fruit (*Passiflora edulis*) is becoming a growing industry in Hambantota, Galle and Kalutara districts in Sri Lanka due to increasing demand from industry for processing. Recently, a previously unreported severe mottling on yellow passion fruit was reported from the Fruit Research and Development Institute in Horana. Mottling was observed only on the fruit skin while fruit size appeared normal compared to symptomless fruits. Objectives of this study were to screen the symptomatic passion fruit plants for association of any viruses with the disease and select passion fruit lines exhibiting resistance to the disease. Crude sap extracted from leaves of symptomatic vines was serologically tested using enzyme-linked immunosorbent assays (ELISA). ELISA confirmed that the causal agent belongs to the genus *Potyvirus* and serologically related to Sri Lankan passion fruit mottle virus (SLPFMV). Reverse transcription polymerase chain reaction was conducted using total RNA extracted from leaf tissues of symptomatic vines. Due to the unavailability of SLPFMV sequences on the database for primer designing, a pair of degenerate primers for potyviruses (PNIbF5, PCPR1) which amplifies a region between coat protein and nuclear inclusion b protein was used. Sequencing of an amplicon of approximately 500 bp did not match to any sequence on the NCBI/GenBank. A disease index was prepared by visual observation of fruits and rating of symptom severity. Comparison of disease index and ELISA showed that there is no correlation between symptom severity and virus titer. Passion fruit lines that rated zero percentage disease index but containing high virus titer were identified as plant lines that exhibited high resistance for mottling.

Keywords: ELISA, mottling, *Potyvirus*, RT-PCR, resistance

*Corresponding Author: chanika.somaweera92@gmail.com