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Okra leaf curl disease: an emerging threat to okra cultivation in Northern Sri Lanka

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Okra (*Abelmoschus esculentus*) is cultivated in tropical, subtropical, and warm temperate regions for its edible fruits. During the last few years okra cultivation in South Asia has been severely affected by okra yellow vein mosaic disease (OYVMD), and several research activities are conducted to find suitable control measures. However, in the last two seasons, okra plants have been affected by a new disease in northern Sri Lanka. The symptoms of the disease coincide with the description of leaf curl disease reported from India. The present study was aimed to quantify incidence of the disease and identify the causative agent associated with the disease in Northern Sri Lanka. Five districts were selected for this study, namely Jaffna, Vavuniya, Mannar, Kilinochchi, and Mullaitivu. In each district, the disease incidence was measured in three different farms affected by the disease. Symptomatic leaf samples and symptomless leaf samples from different plants were collected from each farm. Total DNA was extracted by a modified CTAB method. Polymerase chain reactions (PCR) were carried out using primers specific to begomovirus and its satellites. Leaf samples collected from okra plants grown in insect proof cages were used as control. Seeds of four different okra varieties were tested using PCR with same primers to determine whether the disease could be transmitted via seed. Symptomatic plants showed upward curling of leaves, vein thickening, twisting of the stem and lateral branches with leaves becoming thick and leathery. In the later stages of disease, plants were severely stunted with small, deformed fruit, unfit for marketing. The disease was noticed only in some newly introduced hybrid varieties. Varieties which showed high sensitivity to OYVMD, such as MI5, MI7, TV8 and Haritha, did not show leaf curl symptoms. The disease incidence ranged from 10% to 87.5%. PCR assays confirmed that the disease was associated with a complex of three different viruses: a monopartite begomovirus, betasatellite and alphasatellite. Above viruses were not detected in seeds; therefore, the viruses are unlikely to be transmitted by seeds. The present study has confirmed that some varieties of okra plants are affected by a leaf curl disease in northern Sri Lanka and the disease is associated with infection by a begomovirus and specific satellite viruses. Further studies are being carried out to identify the virus at species level based on nucleotide sequences.

Keywords: Begomovirus, leaf curl, okra, satellite viruses

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