Association of tomato leaf curl Sudan virus with leaf curl disease of tomato in Jeddah, Saudi Arabia.

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Abstract:

Tomato is an important vegetable crop and its production is adversely affected by leaf curl disease caused by begomovirus. Leaf curl disease is a serious concern for tomato crops caused by begomovirus in Jeddah, Kingdom of Saudi Arabia. Tomato leaf curl disease has been shown to be mainly caused either by tomato leaf curl Sudan virus or tomato yellow leaf curl virus as well as tomato leaf curl Oman virus. Many tomato plants infected with monopartite begomoviruses were also found to harbor a symptom enhancing betasatellites. Here we report the association of tomato leaf curl Sudan virus causing leaf curl disease of tomato in Jeddah, Kingdom of Saudi Arabia. The complete genome sequence analysis showed highest (99.9 %) identity with tomato leaf curl Sudan virus causing leaf curl disease in Arabian Peninsula. In phylogenetic relationships analysis, the identified virus formed closest cluster with tomato leaf curl Sudan virus. In recombination analysis study, the major parent was identified as tomato leaf curl Sudan virus. Findings of this study strongly supports the associated virus is a variant of tomato leaf curl Sudan virus causing disease in Sudan, Yemen and Arabian Peninsula. The betasatellites sequence analysis showed highest identity (99.8 %) with tomato leaf curl betasatellites-Amaranthus-Jeddah. The phylogenetic analysis result based on betasatellites formed closed cluster with tomato yellow leaf curl Oman betasatellites. The importance of these findings and occurrence of begomovirus in new geographic regions causing leaf curl disease of tomato in Jeddah, Kingdom of Saudi Arabia are discussed.

Keywords:

Tomato leaf curl disease  Begomovirus  Tomato leaf curl Sudan virus  Betasatellite  Saudi Arabia

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