

Research Article

Determination of Predominant CLCuD Begomovirus Species Infecting Cotton in Northwest India in the Current Conditions

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Abstract

Cotton leaf curl disease (CLCuD), caused by whitefly transmitted monopartite CLCuD begomovirus associated with betasatellite and alphasatellite molecule, is a serious constrain in cultivation of cotton in Northwest (NW) India. To estimate disease incidence and per cent disease index (PDI) of CLCuD in cotton growing states Haryana, Punjab and Rajasthan of NW India, survey was made in the year 2018 and 2019. Overall disease incidence of 23.90 per cent with 15.37 PDI in 2018 and incidence of 21.17 per cent and 12.16 PDI in 2019 were recorded. Twenty nine cotton varieties and nine Bt-hybrid cottons were evaluated for resistance to CLCuD through whitefly (*Bemisia tabaci*) inoculation. All the varieties and hybrids were susceptible showing 66.7-100 per cent disease incidence. To identify the begomoviruses and its variants causing CLCuD in current condition, complete coat protein gene (771 nts) of 29 isolates of CLCuD begomoviruses, 13 of 2018 and 16 of 2019, collected from NW India were amplified, sequenced and analyzed. Sequence identity and phylogenetic analysis showed that the isolates of 2018 made two groups; 12 were the members of *Cotton leaf curl Kokhran virus-Burewala* (CLCuKoV-Bu) strain and one was the member of *Cotton leaf curl Multan virus-Rajasthan* (CLCuMuV-Ra) strain; whereas in 2019, two groups were formed; 13 were members of CLCuMuV-Ra and three of CLCuKoV-Bu strain indicating that CLCuKoV-Bu strain was dominant in 2018 and CLCuMuV-Ra strain in 2019. Based on sequence analysis of β C1 gene, a single betasatellite species, Cotton leaf curl Multan betasatellite (CLCuMB); and based on Rep gene, two alphasatellite species, Cotton leaf curl Multan alphasatellite (CLCuMA) and *Gossypium darwinni* symptomless alphasatellite (GDarSLA) associated with CLCuD-begomovirus in NW India were identified.

Key words: Begomovirus, CLCuD, cotton, disease incidence, virus variants, whitefly

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