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Watermelon chlorotic stunt virus (WmCSV): a serious disease threatening watermelon production in Palestine

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Abstract:

The incidence of watermelon chlorotic stunt disease and the molecular characterization of the Palestinian isolate of Watermelon chlorotic stunt virus (WmCSV-[PA]) were studied. In 2008, and 2010, symptomatic leaf samples were collected from watermelon (*Citrullus lanatus* Thunb.), squash (*Cucurbita pepo*), and cucumber (*Cucumis sativus* L.) plants. Disease incidence ranged from 8-98% and was associated with whitefly (*Bemesia tabaci*) infestation. Analysis of collected samples by PCR and RCA revealed that 42.6 % (101 out of 237) of the samples collected from Jenin and Qalqilieh were infected with WmCSV-[PA]. 27 out of the 110 samples collected from Jenin were found to be mixed infected with WmCSV-[PA] and Squash leaf curl virus. The amplified full-length DNA-A of WmCSv [PA] was cloned and sequenced. The sequence of 2017 bp was deposited in the GenBank under accession number JN201809. Sequence analysis reveals that WmCSV-[PA] fragment comprising the conserved region of the coat protein (AV1), AC5, AC3, AC1, and AC2 genes, is closely related to other virus isolates from WmCSV-[JO] (99%), Israel (WmCSV-[IL]) (99%), Lebanon (WmCSV-[LB]) (99%), Sudan (WmCSV-[SD]) (98%), Iran (WmCSV-[IR]) (98%), and Yemen (AJ012081) (97%). The new emergent disease in Palestine was detected in all the surveyed fields in regions where cucurbits are intensively grown, only a few kilometers east of Israel. This suggests that the introduction of WmCSV to the PA might have occurred through transplant movement between Israel and the PA or through viruleferous whiteflies that moved from infected plants in Israel to neighboring fields in Jenin and Qalqilia. The virus endangers the production of watermelon in the affected areas to the point of becoming the limiting factor of growing watermelon in open fields. To our knowledge, this is the first report of a WmCSV (whitefly-transmitted geminivirus infecting cucurbits) in Palestine.

Key words: WmCSV, Cucurbits, geminivirus, *Bemesia tabaci*