First Report of Watermelon chlorotic stunt virus in Watermelon in the Palestinian Authority

M. S. Ali-Shtayeh, R. M. Jamous, E. Y. Hussein, O. B. Mallah, and S. Y. Abu-Zaitoun, Biodiversity and Biotechnology Research Unit, Biodiversity and Environmental Research Center, BERC, Tili, Nablus, West Bank, Palestinian Authority

In the summer of 2010, watermelon plants (Citrullus lanatus Thunb.) from eight fields surveyed in two districts (Jenin and Qalqilia) in the West Bank of the Palestinian Authority (PA) exhibited typical Watermelon chlorotic stunt virus (WmCSV) symptoms including yellow veining, chlorotic mottling, stunting of young leaves, and reduction of yield. Disease incidence ranged from 8 to 98% and was associated with whitefly (Bemisia tabaci) infestation. In symptomatic leaves of 79 of 215 watermelon plants examined, geminiviral DNA was detected by PCR (3) and rolling circle amplification (RCA) (2). Geminivirus DNA-A and DNA-B component fragments were amplified by PCR using degenerated and specific primers (3). The full-length DNA-A of WmCSV-[PAL] was amplified from field-collected watermelon plants using WAI-Xbal-(v)/WAI-Xbal-(c) primer pair, and the generated PCR product was sequenced (3). A DNA-A fragment (2,017 bp) (GenBank Accession No JN673223) comprising a conserved region of the coat protein (AV1), AC5, AC3, AC1, and AC2 genes, showed 99, 99, 99, 98, 98, and 97% nucleotide identity with sequences of WmCSV isolates from Jordan (GenBank accession No. EU561237), Israel (LEF201809), Lebanon (HM368371), Sudan (AJ245650), Iran (AJ245652), and Yemen (AJ012081), respectively. The circular genomic DNA-A and DNA-B of WmCSV-[PAL] were amplified from a whitefly-inoculated watermelon plant by RCA (2) and used to inoculate 30 watermelon plants with a nonvacuum gene gun (4). Typical WmCSV symptoms developed in all these plants 4 weeks postinoculation and virus infection was confirmed by PCR. In 2011, WmCSV was detected from the southern and eastern parts of neighboring Jordan (1). The new emergent disease in the PA was detected in all of the surveyed watermelon 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 viruliferous whiteflies that moved from infected plants in Israel to neighboring fields in Jenin and Qalqilia districts. This is in accordance with the observation that disease incidence was always associated with high population of B. tabaci. 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 WmCSV infecting cucurbits in the PA.