

Abstract

Rhopalosiphum padi as a Possible Virus Vector of Sugarcane mosaic virus in *Zea mays* in Ukraine: The First Report [†]

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Abstract: Maize dwarf mosaic disease (MDMD) is one of the most common and economically important viral diseases of maize in many countries. In Europe, the spread of two pathogens of this disease has been proven: the maize dwarf mosaic virus (MDMV) and the sugarcane mosaic virus (SCMV). MDMV and SCMV are transmitted by aphids in a non-persistent manner. According to the literature, more than 20 different species of aphids capable of transmitting MDMD are known. This study presents the first report of Sugarcane mosaic virus (SCMV) in maize in Ukraine. Plants with typical mosaic symptoms were found in corn crops in the Kyiv region in early June 2018. The pathogen was transmitted by mechanical inoculation to maize and sweet maize plants with the manifestation of mosaic symptoms. In August, symptoms of mosaic together with aphids *Rhopalosiphum padi* were found on previously healthy plants in the same corn crop. In 2020, in the same sown area, corn was free of viral infection during an inspection in June, however, a re-inspection in September revealed mosaic symptoms on maize plants and the presence of aphids *R. padi* in the leaf axils. The presence of SCMV in maize samples taken in 2018 and 2020 in both June and August/September, as well as in inoculated maize and sweet maize plants, was confirmed by DAS-ELISA (Double-antibody sandwich enzyme-linked immunosorbent assays) using a commercial test system from Loewe Biochemica. The obtained data allow suggesting that *Rhopalosiphum padi* is a natural vector of SCMV in agrocenoses of Ukraine.

Keywords: aphids; virus vectors; Maize dwarf mosaic disease; *Sugarcane mosaic virus*; *Rhopalosiphum padi*; Ukraine; corn