Diseases Caused by Viruses

First Report of Tomato Brown Rugose Fruit Virus in Tomato in Spain

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In October 2019, tomato (*Solanum lycopersicum* L.) plants showing chlorosis and brown necrosis in apical leaflets and rugose surface in fruits were observed in a greenhouse in Vicar, Almería, Spain. A total of 0.5% of the tomato plants in the greenhouse (1.38 ha) showed these symptoms. The presence of tomato brown rugose fruit virus (ToBRFV) was suspected. A total of five symptomatic and two symptomless leaf samples were collected and analyzed by double-antibody sandwich (DAS)-ELISA with antibodies for ToBRFV, tobacco mosaic virus (TMV), and tomato mosaic virus (ToMV) (Loewe Biochemica, Germany). Symptomatic samples tested positive by DAS-ELISA only for ToBRFV. Therefore, one sample was selected and analyzed by reverse transcription (RT)-PCR with specific primers ToBRFV-F5722/ToBRFV-R6179 for ToBRFV (Panno et al. 2019a), which amplified a 458-bp fragment of the coat protein gene. The sequence obtained by Sanger sequencing from the amplicon showed 99.7%

nt identity with ToBRFV isolate from the United Kingdom (accession no. MN182533) and was deposited in the GenBank database under the accession number MT211630. Further surveys were performed in Vicar and El Egido (Almería, Spain) on plants showing viral-like symptoms. A total of 50 tomato and two pepper leaf samples from 28 greenhouses were collected and analyzed by DAS-ELISA for ToBRFV, TMV, ToMV, pepino mosaic virus (PepMV), tomato spotted wilt virus (TSWV), and tomato yellow leaf curl virus (TYLCV) with respective antibodies (Loewe Biochemica). Five tomato plants (four from Vicar and one from El Ejido) tested positive for ToBRFV. PepMV, ToMV, and TYLCV were also detected in one, three, and five tomato plants, respectively. The ELISA-positive results for ToBRFV were confirmed by end-point RT-PCR with primer pairs ToBRFV-F5722/ToBRFV-R6179 and ToBRFV-F/ToBRFV-R (Alkowni et al. 2019) and by real-time RT-PCR with TaqMan probe ToB-probe and specific primers ToB5520F/ToB5598R (Panno et al. 2019b). Tomato seeds used for plantation in these greenhouses were also analyzed, but ToBRFV was not detected. Eradication measures have been undertaken to prevent the virus spread and to control this outbreak. Official seed analyses by DAS-ELISA and real time RT-PCR (ISF 2019) are being conducted on the tomato and pepper imported seeds to prevent the appearance of new sources of ToBRFV inoculum in Spain.

References:

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