First report of tomato torrado virus (ToTV) infecting tomato in Morocco

Mohamed Afechtal¹

Received: 31 March 2020 / Accepted: 4 July 2020 / Published online: 13 July 2020
© Società Italiana di Patologia Vegetale (S.I.Pa.V.) 2020

Keywords Tomato torrado virus · Tomato · Morocco

The tomato crop (*Solanum lycopersicum* L.) has great importance in Morocco; tomatoes are the main exported vegetable in the country. During spring 2015, a field survey was carried out in order to assess the sanitary status of tomato crops grown in open field in Skhirat region of Morocco. A few plants of cv. Maria showed growth reduction and necrotic lesions on fruits and basal parts of the leaves. Symptoms resembled those caused by tomato torrado virus (ToTV). Total RNA was extracted from leaf tissue of ten plants with and without symptoms using the RNeasy Plant Mini Kit (Qiagen, Germany) and screened for the presence of ToTV by reverse transcription (RT)-PCR using two sets of primers: TR1F/TR1R and TR2F/TR2R, which amplify products of 892 and 573 bp for RNA 1 and RNA 2, respectively (Pospieszny et al. 2007). All of five tested symptomatic tomato plants reacted positively and showed amplicons of the expected sizes using both sets of primers, whereas no RT-PCR product was obtained from five tested asymptomatic plants. Amplified RT-PCR products using primer pair TR1F/TR1R were purified and sequenced in both directions. Three sequences were deposited in GenBank under accession numbers MH414916, MH414917 and MH414918. Nucleotide blast analysis of the Moroccan isolates showed 99% sequence identity with the Polish isolate Wal'03 (EU563948) (Budziszewska et al. 2008). The

neighbour-joining phylogenetic analysis showed that the Moroccan ToTV isolates were clustered in the same group. Whitefly transmission by *Bemisia tabaci* from an infected plant to six tomato plants (cv. Maria) yielded chlorosis, and positive RT-PCR tests for ToTV. ToTV has been already reported from several Mediterranean countries, but to our knowledge, this is the first report of ToTV infecting tomato plants in Morocco and in North Africa. Further investigations will disclose a clear picture of the ToTV relevance in the country.

References

- Budziszewska M, Obrępańska-Stęplowska A, Wiczorek P, Pospieszny H (2008) The nucleotide sequence of a polish isolate of tomato torrado virus. *Virus Genes* 37(3):400–406. <https://doi.org/10.1007/s11262-008-0284-3>
- Pospieszny H, Borodynko N, Obrępańska-Stęplowska A, Hasiów B (2007) The first report of tomato torrado virus in Poland. *Plant Dis* 91(10):1364. <https://doi.org/10.1094/PDIS-91-10-1364A>

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

✉ Mohamed Afechtal
mohamedafechtal.inra@gmail.com

¹ Regional Agricultural Research Center of Kénitra, Laboratory of Virology, National Institute for Agricultural Research (INRA), 14 rue Ibn Temmam, B.P. 257, Kénitra, Morocco