Disease Notes

First Report of Tomato spotted wilt virus on Brugmansia sp. in Serbia

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Abstract

Brugmansia (*Brugmansia* spp.), also known as Angel's trumpet, is a perennial shrub in the Solanaceae that is a popular landscape plant in the tropics and subtropics, and potted plant in temperate regions. In April 2012, virus-like symptoms including chlorotic leaf patterns and curling followed by necrosis and distortion of leaves were observed on five outdoor-grown brugmansia plants in a private garden in Mackovac, Rasina District, Serbia. Symptomatic leaves were tested for the presence of several common ornamental viruses including *Tomato spotted wilt virus* (TSWV), *Impatiens necrotic spot virus* (INSV), *Cucumber mosaic virus* (CMV), and *Tobacco mosaic virus* (TMV) by commercial double-antibody sandwich (DAS)-ELISA diagnostic kits (Bioreba AG, Reinach, Switzerland). Commercial positive and negative controls and extract from healthy brugmansia leaves were included in each ELISA. TSWV was detected serologically in all five brugmansia samples and all tested samples were negative for INSV, CMV, and TMV. The virus was mechanically transmitted from an ELISA-positive sample (41-12) to five plants of each

Petuina × *hybrida* and *Nicotiana glutinosa*. Inoculated *P.* × *hybrida* plants showed local necrotic lesions and *N. glutinosa* showed mosaic and systemic necrosis 4 and 12 days post-inoculation, respectively, which were consistent with symptoms caused by TSWV (1). For further confirmation of TSWV infection, reverse transcription (RT)-PCR was performed with the OneStep RT-PCR (Qiagen, Hilden, Germany) using a set of TSWV-specific primers, TSWV CP-f and TSWV CP-r (4), designed to amplify a 738-bp fragment of the nucleocap protein (N) gene. Total RNAs from naturally infected brugmansia and symptomatic *N. glutinosa* plants were extracted using the RNeasy Plant Mini Kit (Qiagen). Total RNAs obtained from the Serbian tobacco isolate of TSWV (GenBank Accession No. GQ3731 and healthy brugmansia plants were used as positive and negative controls, respectively. The expected size of the RT-PCR product was amplified from symptomatic brugmansia and *N. glutinosa* but not from healthy tissues. The amplified product derived from the isolate 41-12 was sequenced directly after purification with the QIAquick PCR Purification kit (Qiagen), deposited in GenBank (JX468080), and subjected to sequence analysis by MEGA5 software (3). Sequence comparisons revealed that the Serbian isolate 41-12 shared the highest nucleotide identity of 99.9% (99.5% amino acid identity) with an Italian TSWV isolate P105/2006RB (DQ915946) originating from pepper. To our knowledge, this is the first report of TSWV on brugmansia in Serbia. Due to the increasing popularity and economic importance of brugmansia as an ornamental crop, thorough inspections and subsequent testing for TSWV and other viruses are needed. This high-value ornamental plant may act also as reservoir for the virus that can infect other ornamentals and cultivated crops, considering that TSWV has a very broad host range (2).

References: (1) Anonymous. OEPP/EPPO Bull. 34:271, 2004. (2) G. Parrella et al. J. Plant Pathol. 85:227, 2003. (3) K. Tamura et al. Mol. Biol. Evol. 28:2731, 2011. (4) A. Vučurović et al. Eur. J. Plant Pathol. 133:935, 2012.

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