



First report of *Potato spindle tuber viroid* (PSTVd) in ornamental plants in Greece

I. Malandraki, M. Papachristopoulou and N. Vassilakos*

Benaki Phytopathological Institute, 8 S. Delta Str. 145 61 Kifissia, Athens, Greece

*E-mail: N.Vassilakos@bpi.gr

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Potato spindle tuber viroid (PSTVd) has quarantine status in the European Union. During 2009, a survey of PSTVd in ornamental plants of the species *Solanum jasminoides* and *Brugmansia* spp. was conducted in Greece. Samples were collected from 21 commercial nurseries located in central, north, south and west Greece, and consisted of symptomless upper leaves collected at random from 10% of plants within each nursery. A total of 391 samples (315 *S. jasminoides* and 76 *Brugmansia* spp.) were examined. Total RNA was extracted from each sample and analysed by reverse transcription polymerase chain reaction (RT-PCR) using two different sets of PSTVd specific primers: PSTVdfw/ PSTVdrev (ATCCCCGGGGAAACCTGGAGCGA, CCCTGAAGCGCTCTCCGAG) and PSTVd-32/PSTVd-33 (AAACCCTGTTTCGGCGGAATTAC, TCACCCTTCCTTCTTCGGGTGTC) respectively (Kalantidis *et al.*, 2007; Di Serio, 2007). From among the 391 samples an amplicon of approximately 360 bp was obtained from two *S. jasminoides* samples and four *Brugmansia* spp. samples. Sequencing of PCR products from both ends showed that all *Brugmansia* isolates (GenBank Accession No. GU481090) were identical to PSTVd isolate 3077740 from *Brugmansia suaveolens* (EF192394) (Verhoeven *et al.*, 2008). One of the *Solanum* isolates (GU481091) was identical to PSTVd isolate 3373056 from *S. jasminoides* (EF192393) (Verhoeven *et al.*, 2008). The other *Solanum* isolate (GU481092) was 99% identical to intermediate strain PSTVd (AY937179) (Owens & Thompson, 2005). Pathogenicity studies showed infection of tomato plants after mechanical inoculations in a greenhouse under quarantine conditions. Plant tissue derived from the samples found to be PSTVd-positive in the laboratory tests were used as inoculum. PSTVd infections of tomato plants were determined by symptomatology and RT-PCR, followed by direct sequencing of the PCR products.

Positive samples came from plants in three nurseries from different areas of the country. The four positive samples of *Brugmansia* spp. were collected from a single nursery in Attica, Central Greece. These plants originated from Italy. The *S. jasminoides* isolate (GU481091) was

collected from a nursery in Messinia, Peloponnese, and classified as of domestic origin while the origin of the second *Solanum* isolate (GU481092) collected from a nursery in northern Greece is still under investigation. Although infected *Brugmansia* spp. and *S. jasminoides* plants did not show any symptoms, they might act as sources of inocula for crops such as potato and tomato. In all cases control measures are being applied. This is the first report of PSTVd in Greece.

References

- Di Serio F, 2007. Identification and characterization of *Potato spindle tuber viroid* infecting *Solanum jasminoides* and *S. rantonnetii* in Italy. *Journal of Plant Pathology* **89**, 297-300.
- Kalantidis K, Denti MA, Tzortzakaki S, Marinou E, Tabler M, Tsagris M, 2007. Virp1 is a host protein with a major role in *Potato spindle tuber viroid* infection in *Nicotiana* plants. *Journal of Virology* **81**, 12872-12880. [doi:10.1128/JVI.00974-07]
- Owens RA, Thompson SM, 2005. Mutational analysis does not support the existence of a putative tertiary structural element in the left terminal domain of *Potato spindle tuber viroid*. *Journal of General Virology* **86**, 1835-1839. [doi:10.1099/vir.0.80869-0]
- Verhoeven JThJ, Jansen CCC, Roenhorst JW, 2008. First report of pospiviroids infecting ornamentals in the Netherlands: *Citrus exocortis viroid* in *Verbena* sp., *Potato spindle tuber viroid* in *Brugmansia suaveolens* and *Solanum jasminoides*, and *Tomato apical stunt viroid* in *Cestrum* sp. *Plant Pathology* **57**, 399. [doi:10.1111/j.1365-3059.2007.01742.x]

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