

## DISEASE NOTE

**FIRST REPORT OF  
TOMATO SPOTTED WILT VIRUS  
INFECTING PUMPKIN IN CHINA**

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In August 2015, symptomatic pumpkin (*Cucurbita moschata* Duch.) plants were observed in Linyi, Shandong province, China. Plants exhibited symptoms of leaf mottling, crinkling and mosaic which appeared similar to symptoms caused by *Tomato spotted wilt virus* (TSWV) (Karavina *et al.*, 2016). Twenty field samples, two symptomatic and 18 asymptomatic, were collected. A high incidence of thrips (*Thrips palmi*) was also observed in the field and on the sampling plants. Given the symptoms observed and the prevalence of thrips, TSWV infection was suspected. Total RNA was extracted from symptomatic and asymptomatic plants and analyzed by RT-PCR using specific primer pair TSWV-F1 (5'-CACACTAAGCAAGCACACA-3')/TSWV-R1 (5'-TCAGTCTTACAAATCATC-3'), designed for this study, corresponding to a highly conserved region including the complete nucleocapsid protein (N) gene. Fragments of the expected size (976 bp) were amplified from the symptomatic but not from the asymptomatic samples, and one of them was cloned and sequenced (KX185153). No other viruses were detected. The incidence of TSWV in the four acres pumpkin field surveyed was 0.45%. Sequence comparisons revealed that the N gene of this isolate shared the highest nucleotide identity of 99.9% with an isolate of TSWV from an asparagus lettuce sample from China (KP330473) indicating the pumpkin plants were infected with TSWV. Phylogenetic analysis showed that this isolate and other isolates from China clustered together with those from South Korea and Japan as a separate group. TSWV (genus *Tospovirus*, family *Bunyaviridae*) has an extensive host range (Cho *et al.*, 1987) of which tomato, pepper, peanut and tobacco are common susceptible host crops. TSWV has been reported to infect tomato, tobacco and other plants (Dong *et al.*, 2010) in China. To our knowledge, this is the first report of TSWV infecting pumpkin in China.

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## DISEASE NOTE

**FIRST REPORT OF  
PAPAYA RINGSPOT VIRUS INFECTING  
CARICA PAPAYA IN ARGENTINA**

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Papaya plants (*Carica papaya* L.) with severe leaf mosaic and deformation symptoms were observed and collected in the Formosa, Corrientes and Misiones provinces of northern Argentina. These symptoms were similar to those induced by *Papaya ringspot virus* (PRSV-P) (Tripathi *et al.*, 2008). Electron microscopy observations of leaf dip preparations from symptomatic papaya leaves revealed typical flexuous potyvirus particles of ca. 800 × 12 nm (Francki *et al.*, 1985). Papaya leaf extracts from affected plants were mechanically inoculated on healthy papaya plants, which showed typical symptoms of the disease. The presence of the virus in symptomatic plants was tested and confirmed by double antibody sandwich enzyme-linked immunosorbent assay (DAS-ELISA), using a specific PRSV antiserum (Agdia, Elkhart, IN). Total RNA was extracted using RNeasy Plant Mini Kit (Qiagen, Hilden, Germany) and tested by reverse transcription-polymerase chain reaction (RT-PCR) with specific PRSV coat protein gene primers: BoCP\_Fwd 5'-TCCAAGAATGAAGCTGTGGACGCTGGTT-3' and BoCP\_Rev 5'-TYAGTTGCGCATACCCAGGAGAGAGT-3'. The RT-PCR amplicons of the expected size were purified and directly sequenced in both directions at Macrogen Inc. (Seoul, Korea). BLASTn analysis of the sequenced fragments (828 bp) (GenBank accession Nos. KX385113 to KX385116) showed 97 to 98% nucleotide sequence identity with previously reported PRSV-P isolates from Brazil (AF344642, JQ755427, JQ755424). To the best of our knowledge, this is the first report of the occurrence of PRSV in papaya plants in Argentina. Due to the devastating effects of PRSV in papaya (Tripathi *et al.*, 2008) and the recent increase of cultivation area in northern Argentina, it becomes necessary to implement management strategies to control this disease and avoid the introduction of the virus into new production areas.

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