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DISEASE NOTES

First Report of *Schlumbergera virus X* in Prickly Pear (*Opuntia ficus-indica*) in Mexico

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ABSTRACT

In Mexico, the tender pads (cladodes) of prickly pear (*Opuntia ficus-indica*) are used to prepare traditional Mexican dishes. In 2012, a survey for viral diseases was conducted in commercial prickly pear orchards in San Martin de las Piramides County, Mexico. The young cladodes of most plants showed viral-like symptoms that consisted of irregular yellow ringspots and cladode malformation. Electron microscopy observations of macerated tissues from the 10 symptomatic cladodes yielded filamentous virus particles of approximately 500 to 600 nm long. Sap extracts from 10 symptomatic cladodes were used to mechanically inoculate the indicator plants *Gomphrena globosa*, *Chenopodium amaranticolor*, and *Chenopodium quinoa*, which reacted with chlorotic lesions that later became necrotic, whereas *Datura stramonium* plants reacted with systemic chlorotic lesions and leaf deformation. Electrophoretic analysis of dsRNA extracted from symptomatic cladodes yielded a banding pattern similar to the one reported for potexviruses (Valverde et al. 1986; 1990). Based on these preliminary results, we suspected that a member of the potexvirus genus was present in the symptomatic cladodes. Therefore, total RNA was extracted from all 10 symptomatic cladodes as previously described (Pallas et al. 1987) and used reverse transcription (RT)-PCR experiments. RT-PCR was carried out with the One Step High Fidelity System (Invitrogen, Carlsbad, CA) using Potexvirus group primers (Potex F5/Potex R2) (van der Vlugt and Berendsen 2002), which amplify a 584-bp fragment of the RNA-dependent RNA polymerase (RdRp) gene of potexviruses. Amplicons of the expected size were obtained from RNA extracts of all 10 field-collected samples. The PCR products from three samples were directly sequenced with a Genetic Analyzer 3100 (Applied Biosystems, Foster City, CA) and sequence results (GenBank Accession Nos. KT699207, KT699208, and KT699209) showed amino acid identity values that ranged from 93 to 94% with the corresponding RdRp amino acid sequence of *Schlumbergera virus X* (SVX) (GenBank Accession No. ACD99908). Similar sequences were obtained from RNA extracts from symptomatic *D. stramonium*. Additional analysis addressed to amplify the complete coat protein gene (CP) using specific SVX primers (2875s CACACTCGAGCTTCACAATAATCCAAGGC; and 2876As CACAGTCGACAAACAGAAGGCTTGACTCG) showed the presence of the expected amplicon of around 860 nucleotides. The results obtained in this investigation support that SVX is present in the symptomatic cladodes of prickly pear. The high incidence of irregular yellow ringspots and cladode malformation symptoms observed in commercial prickly pear

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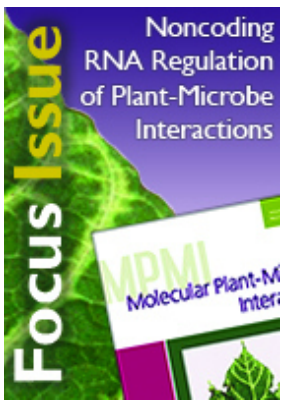

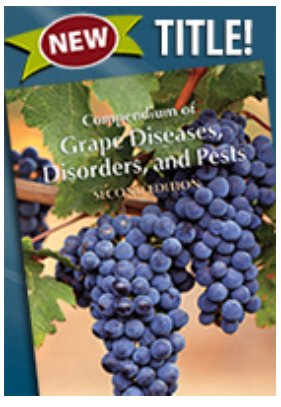

orchards represent a serious threat to this crop in Mexico. To our knowledge, this is the first report of SVX infecting prickly pear in Mexico.

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