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DISEASE NOTES

First Report of *Phytophthora capsici* Causing Damping-off of *Capsicum chinense* in the Yucatan Peninsula

C. A. Sánchez-Borges, **R. A. Souza-Perera**, and **J. J. Zúñiga-Aguilar**, Unidad de Bioquímica y Biología Molecular de Plantas, Centro de Investigación Científica de Yucatán; Mérida 97200, México; **S. Shrestha** and **K. Lamour**, Department of Entomology and Plant Pathology, The University of Tennessee, TN 37996-4561 USA; and **C. C. Castillo-Aguilar**, Colegio de Posgraduados Campus Campeche, Champotón 24450, México.

ABSTRACT

Landraces of Habanero pepper (*Capsicum chinense* Jacq.) cultivated in Mexico's Yucatan Peninsula (YP) are among the peppers with the highest pungency levels (Canto-Flick et al. 2008). Because pungency is one of the most valuable agricultural traits of peppers, the international demand of Habanero pepper from the YP has increased in recent years. Due to adverse soil conditions in this region, seeds are germinated in polystyrene trays and 45-day-old seedlings are transplanted to the soil. Damping-off caused by *Phytophthora capsici* is one of the most devastating diseases of peppers in Central Mexico. Previously, it proved difficult to isolate *P. capsici* from pepper cultivars with root rot and damping-off symptoms in the YP. In this work, a molecular approach using PCR to amplify a specific Ras-related protein (Ypt1) gene (Lan et al. 2013) of *P. capsici* was utilized to assess diseased Habanero peppers. Samples of infected plants were collected from 16 representative locations with commercial operations in the YP. Symptomatic root tissue with typical browning and necrosis were collected in autumn 2014, surface disinfested using 0.1% sodium hipochloride, and cut into small pieces (0.5 mm) that were then plated onto potato dextrose agar (PDA) medium amended with rifamycin. Root slices were then overlaid with antibiotic-amended PDA to limit the growth of contaminant bacteria. After 24 h at 37°C, mycelium emerging through the PDA cover was subcultured to new PDA plates and genomic DNA extracted using a cetyltrimethylammonium bromide (CTAB)-based protocol (Stefanova et al. 2013). Five candidate isolates were selected by PCR amplification of the Ypt1 gene using the *P. capsici*-specific Pc1F/Pc1R primers described by Lan et al. (2013), and the identification of *P. capsici* was confirmed by sequencing the internal transcribed spacer (ITS) region using the ITS5 and ITS4 primers as previously described (Cooke et al. 2000). The resulting sequences had 100% similarity to sequences of known *P. capsici* strains deposited in GenBank and

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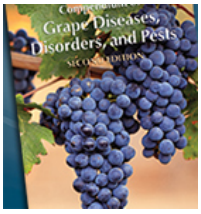
Phytophthora Database. Pathogenicity tests were performed by potting five lots of three six-week-old Habanero pepper seedlings in a mixture of soil and fragmented PDA + mycelium (25 mg PDA + mycelium per gram of soil). Two seedlings were inoculated with a mixture of soil and PDA medium as negative controls for every lot. Inoculated and control seedlings were incubated at 25°C and 80% relative humidity on 16/8-h light/dark photoperiod. After three days, all seedlings cultivated with *P. capsici* mycelium developed similar symptoms to those on naturally infected seedlings, and they died in 6 to 7 days. Reisolation of coenocytic mycelium from symptomatic root tissues was processed as above and ITS sequencing confirmed *P. capsici* as the causal agent (GenBank Accession No. LN867889). Mycelium was not isolated from negative control seedlings. This is the first report of *P. capsici* causing root rot of pepper in the Yucatan Peninsula. It is likely *P. capsici* was introduced during the process of seedling production and then dispersed to soil, although the origin of the isolates is unknown. Detection of *P. capsici* is important to establish appropriate eradication programs in the YP.



References:

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Canto-Flick, A., et al. 2008. HortSci. 43:1344. [ISI]

Cooke, D. E. L., et al. 2000. Fungal Gen. Biol. 30:17. 10.1006/fgbi.2000.1202. [CrossRef] [ISI]

Lan, C. Z., et al. 2013. Australas. Plant Pathol. 42:379. 10.1007/s13313-012-0185-8. [CrossRef] [ISI]

Stefanova, P., et al. 2013. Biotechnol. Biotechnol. Equip. 27:3803. 10.5504/BBEQ.2013.0026. [CrossRef] [ISI]

Citation