Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Neoscytalidium dimidiatum* Causing Stem Canker on Dragon fruit (*Hylocereus* spp.) in Puerto Rico

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Dragon fruit or pitahaya (*Hylocereus* spp.) is a tropical fruit belonging to the Cactaceae. It is native to Central and South America and commercially grown in the United States in southern California, south Florida, and Puerto Rico. During a disease survey from April to June 2020, stem canker was observed in greenhouses and commercial orchards located in Mayagüez and San Sebastián, Puerto Rico, with an incidence of 80%. Diseased cladodes (stems) of 1-mm² tissue sections of 23 pitahaya varieties (NOI-13, NOI-14, NOI-16, N97-15, N97-17, N97-18, N97-20, N97-22, American Beauty, Cosmic Charlie, Halley's Comet, Purple Haze, Alice, Bloody Mary, Dark Star, David Bowie, Delight, Makisupa, Red Jaina, Soul Kitchen, Vietnamese Jaina, Neitzel, and Lisa) were disinfested with 70% ethanol, rinsed with double-distilled water, and plated on potato dextrose agar (PDA) amended with 60 mg/liter of streptomycin. Three isolates (17B-173-T3, 12C-118-T1, and 13B-131-T2) of *Neoscytalidium dimidiatum* (syn. *N. hyalinum*) were identified using taxonomic keys (Crous et al. 2006) and sequencing of the internal transcribed spacer (ITS) with primers ITS5 and ITS4 (White et al. 1990) and translation elongation factor 1 alpha (TEF1- α) with primers EF1-728F and EF1-986R (Carbone and Kohn 1999). Sequences were compared using the BLASTn tool with *N. dimidiatum* deposited in NCBI GenBank. In PDA, colonies of *N. dimidiatum* were initially powdery white and turned grayish-black with age. Arthroconidia ($n = 50$) were dark brown, disarticulating, truncate or cylindrical at the base, thick-walled, with zero to one septum, averaging 9.1×5.5 μ m in size.

GenBank accession numbers of *N. dimidiatum* DNA sequences were MT921260, MT921261, and MT921262 for ITS and MT920898, MT920899, and MT920900 for TEF1- α . Sequences were 99 to 100% identical with the ex-isotype CBS145.78 accession numbers KF531816 for ITS and KF531795 for TEF1- α . Pathogenicity tests were conducted on 12 healthy dragon fruit plants of 1.5 years old using three non-detached cladodes per plant. Cladodes were inoculated with 5-mm mycelial plugs from 8-day-old pure cultures grown on PDA. Three healthy dragon fruit plants were used as controls and were inoculated with PDA plugs only. The experiment was repeated once. Twenty days after inoculation (DAI), isolates of *N. dimidiatum* caused stem canker on dragon fruit plants. For all isolates, sunken orange spots averaged 3×2 mm in length at 8 DAI. Necrotic blotches with chlorotic halos averaged 10×15 mm at 14 DAI; stem cankers with water-soaked tissue were observed at 20 DAI, and arthroconidia and black pycnidia on dry stem cankers at 30 DAI. Untreated controls had no symptoms of stem canker, and no fungi were isolated from tissue. *N. dimidiatum* has been reported to cause stem canker on *Hylocereus* spp. in China, Florida, Israel, Malaysia, and Taiwan (Chuang et al. 2012; Ezra et al. 2013; Lan et al. 2012; Sanahuja et al. 2016). To our knowledge, this is the first report of *N. dimidiatum* causing stem canker in Puerto Rico.

References:

- Carbone, I., and Kohn, L. 1999. Mycologia 91:553.
- Chuang, M. F., et al. 2012. Plant Dis. 96:906.
- Crous, P. W., et al. 2006. Stud. Mycol. 55:235.
- Ezra, D., et al. 2013. Plant Dis. 97:1513.
- Lan, G. B., et al. 2012. Plant Dis. 96:1702.
- Sanahuja, G., et al. 2016. Plant Dis. 100:1499.
- White, T. J., et al. 1990. Page 315 in: PCR Protocols: A Guide to Methods and Applications. Academic Press, San Diego, CA.

The author(s) declare no conflict of interest.

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