

Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Lasiodiplodia iraniensis* Causing Crown Rot on Banana Fruits in Brazil

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Banana is a fruit of great importance in Brazil, and crown rot causes considerable damage and losses (Ploetz et al. 2003). The disease is associated with fungal complexes, especially *Lasiodiplodia theobromae* sensu lato (Kamel et al. 2016; Renganathan et al. 2020; Waliullah et al. 2022). Three asymptomatic bunches of banana cultivar Prata Catarina were collected in Russas, Brazil (4°58'11.6"S, 38°01'44.5"W), in 2017. The samples were disinfected with NaClO (200 ppm) and incubated in a moist chamber at 28°C with a 12-h light/12-h dark photoperiod for 3 days. After the appearance of the symptoms (32% of severity), the isolation was conducted in potato dextrose agar (PDA). A monospore culture (BAN14) was obtained from a typical crown rot lesion, which was subjected to morphological characterization, showing abundant aerial mycelium of olivaceous gray color on the surface and greenish gray on the back (Rayner 1970) in PDA after 15 days at 28°C. The growth rate was 28.2 mm per day. The fungus produced pycnidia and conidia on water agar medium containing pine needles, within 3 to 4 weeks at 28°C. The conidia were initially aseptate and subglobose to subcylindrical, which became pigmented with one central transverse septum and longitudinal striations, and measured 23.5 (18.7) 26.0 × 12.7 (9.7) 14.8 μm (*n* = 50). Paraphyses were hyaline, cylindrical, thin walled, and apparently coenocytic with rounded apex, with length and width dimensions of 34 (43.8) 53.2 × 2.1 (2.5) 3.2 μm (*n* = 30). Conidiophores were absent. Conidiogenous cells were hyaline and smooth, with thin walls.

The genomic DNA was extracted and amplified by PCR with the primers TEF1-688F/TEF1-1251R, ITS1/ITS4, and Bt2a/Bt2b, and sequenced in both directions (GenBank accessions ON975017 [*TEF1*], ON986403 [*TUB2*], and ON921398 [*ITS1*]). BLASTn analysis of *TEF1*, *TUB2*, and ITS sequences in the NCBI database showed 99 to 100% nucleotide identity to a representative isolate of *Lasiodiplodia iraniensis* (IRAN921). Phylogenetic analysis using maximum parsimony based on the combined *TEF1*, *TUB2*, and ITS sequences indicated that BAN14 formed a supported clade (82% bootstrap value) to *L. iraniensis*. The pathogenicity was evaluated in 20 banana fruits cultivar Prata Catarina at the point of harvest. For inoculation, the bananas were washed with water and soap and disinfected with NaClO (200 ppm). Posteriorly, two wounds were made on the extremities of the fruits and inoculated with 5-mm-diameter mycelial discs with 7 days of growth on PDA. After inoculation, the fruits were incubated in plastic boxes in a wet chamber at 25°C with a 12-h light/12-h dark photoperiod for 5 days. The control fruits were inoculated with PDA discs without the pathogen. The experiments were repeated twice. The BAN14 isolate was pathogenic to the banana cultivar Prata Catarina. BAN14 was grouped with *L. iraniensis* described by Abdollahzadeh et al. (2010) in Iran. This species is distributed in Asia, South and North America, Australia, and Africa. In Brazil, it has been reported in association with *Anacardium occidentale*, *Annona muricata*, *A. squamosa*, *Annona × cherimola-squamosa*, *Citrus* sp., *Eucalyptus* sp., *Jatropha curcas*, *Mangifera indica*, *Manihot esculenta*, *Nopalea cochenillifera*, *Vitis* sp., and *V. vinifera*. Until now, there is no description of the relation between banana crown rot and *L. iraniensis* (Farr and Rossman 2022). This is the first report on the pathogenicity of this species on banana fruit cultivar Prata Catarina worldwide.

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