Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Colletotrichum tropicale* Causing Anthracnose on *Passiflora edulis* in Brazil

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Brazil is the world's largest producer and consumer of yellow passion fruit (*Passiflora edulis* f. *flavicarpa*), mainly for the manufacture of concentrate and frozen juice as well as for fresh consumption (Faleiro et al. 2005). Between June and July 2018, passion fruit plants with symptoms of anthracnose were observed in commercial planting in the municipality of Coruripe (20 ha), northeastern state of Alagoas, Brazil. Approximately 70% of the plants showed leaves with relatively large, watery, circular spots that affected 30% of the leaf surface. Small fragments taken from the transition region of symptomatic tissue were superficially disinfected in 70% ethanol for 30 s and in 1% NaClO for 1 min, rinsed in sterile distilled water (SDW), dried on filter paper, plated on potato dextrose agar (PDA, Kasvi), and incubated at 25°C under white light and a 12-h photoperiod for 3 days. Two isolates were obtained and deposited in the Collection of Phytopathogens at the Universidade Federal de Alagoas (COUFAL0281 and COUFAL0282). To identify the isolates, partial sequences of the glyceraldehyde-3-phosphate dehydrogenase (GAPDH) and β -tubulin (TUB2) genes and the rDNA-ITS (ITS) region were amplified by PCR. The partial sequences were deposited at GenBank (MT299339, MT334694, MT310553, MT299340, MT334695, and MT310554). Based on the BLASTn analysis, sequences of the PCR products showed high nucleotide similarity with sequences of the species *Colletotrichum tropicale* (CBS 124949/ex-type and ICMP 18672), for GAPDH (98.94 and 100%) and TUB2 (99 and 100%) genes and for ITS

(100%). This result was also confirmed in the phylogenetic tree of Bayesian inference assembled with concatenated data (GAPDH, TUB2, and ITS). The colonies of the isolates were white with a white reverse, with dense mycelium, and mean growth rate of 7.54 mm/day, after 7 days on PDA medium at 25°C. Conidia were subcylindrical with rounded ends, hyaline, smooth walls, and measured 13.63 to 20.59 μ m ($\bar{x}$ = 17.54 μ m; n = 50) in length and 4.40 to 7.93 μ m ($\bar{x}$ = 5.88 μ m; n = 50) in width. Appressoria were melanized, subglobose, irregular, and measured 7.44 to 18.57 μ m ($\bar{x}$ = 10.04 μ m; n = 50) in length and 5.49 to 10.16 μ m ($\bar{x}$ = 7.66 μ m; n = 50) in width. These morphological characteristics were consistent with those described for *C. tropicale* E.I. Rojas, S.A. Rehner & Samuels (Rojas et al. 2010). To confirm pathogenicity, 30 μ l of a 10⁶ conidia/ml SDW conidia suspension, together with a drop of 20% Tween, was deposited on the adaxial surface of passion fruit leaves wounded with a sterile needle, with four repetitions. The control consisted of leaves inoculated only with SDW. The leaves were placed in a plastic Gerbox box with sterilized filter paper moistened with SDW and maintained in a biochemical oxygen demand incubator stove at 25°C and photoperiod of 12 h. After 7 days, typical anthracnose symptoms were observed on inoculated leaves. The pathogen was reisolated and confirmed by morphological characterization, according to Koch's postulates. No symptoms were observed in the negative control. The occurrence of this species has been frequently reported in several other crops grown in northeastern Brazil (Costa et al. 2019; Silva et al. 2017; Veloso et al. 2018; Vieira et al. 2017). Additionally, many of these crops are grown in close proximity to the passion fruit orchards, thus favoring pathogen movement between hosts, probably, due to the anthropic influence, circulation of animals and insects, and wind-driven rain splashes. However, this is first report of *C. tropicale* in *P. edulis* in the world.

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