

# Disease Note

## Diseases Caused by Fungi and Fungus-Like Organisms

### First Report of *Ceratocystis manginecans* Causing Cankers and Death of *Coffea arabica* in Brazil

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In March 2022, we observed chlorotic and dead coffee plants (*Coffea arabica* L.) in a plantation near Luís Eduardo Magalhães, Bahia State, Brazil. The affected plants had dead and yellowed leaves, as well as cankers around wounds on the main trunk. Discolored xylem and necrotic inner bark were seen under the cankers, and the discoloration appeared to progress until the death of the trunk or branch. The mortality tended to occur within a planting line, suggesting transmission during mechanical harvesting or weeding operations, as seen in *Eucalyptus* plantations with *Ceratocystis* wilt (Ferreira et al. 2011). There was no evidence of ambrosia beetles. The stems of 20 symptomatic coffee plants (11 to 12 years old, cultivar Catuaí Vermelho IAC 144, cultivated under central pivot irrigation) were collected from a 10-ha area and dissected to examine the pattern of discoloration and to isolate potential pathogens. A *Ceratocystis* species was consistently isolated from the discolored tissues using carrot baits (Laia et al. 1999) and malt yeast extract agar (MYEA). Five isolates were deposited in the collection of the Forest Pathology Laboratory, Department of Plant Pathology, Universidade Federal de Lavras. Colonies on MYEA showed regular margins, produced a fruity and sweet odor, and rapidly formed perithecia. The perithecia were embedded in the medium or superficial, black, with subglobose to globose bases, 145 to 330 µm wide and 170 to 360 µm height, and necks were 270 to 1,160 µm long, 30 to 50 µm diameter at the base, and

14 to 19 µm diameter at the top. The internal transcribed spacer (ITS) region was sequenced (Ferreira et al. 2011; Harrington et al. 2014; Oliveira et al. 2015), and BLAST ([ncbi.nlm.nih.gov](https://ncbi.nlm.nih.gov)) searches with the sequences clearly placed the pathogen in the Latin American clade of *Ceratocystis*. The ITS sequence (GenBank accession no. OQ607878) matched closest (99.62% identical) with the isolate C1968 (accession no. AY585343) from mango (*Mangifera indica*) in Recife, Pernambuco State. Although the mango isolate had been considered *Ceratocystis fimbriata*, the taxonomy of Brazilian *Ceratocystis* species has been revised, and the coffee and mango isolates are now considered to be *Ceratocystis manginecans*, which has a very broad host range (Harrington et al. 2024). The *MAT1-2-1* sequence of the coffee isolate (GenBank accession no. OR185446) matched (100% identical) with a *Eucalyptus* isolate from Bahia (C1442, OP921563.1), which is now also classified as *C. manginecans* (Harrington et al. 2024). Koch's postulates with five coffee isolates (P711, P14, P811, P311, and KLC1) were performed with 12-month-old plants of the same coffee cultivar. The experiment was carried out in a randomized design, with five isolates, one control, and 10 plants per treatment, totaling 60 plants. An incision was cut at a downward angle, approximately halfway into the stem using a scalpel, and 1 ml of a  $2 \times 10^4$  conidia/ml suspension was introduced into the incision, which was then wrapped with a plastic film. Sterilized water was introduced into the incisions of control plants. The plants were kept in a greenhouse for 30 days and then dissected longitudinally. Internal stem discoloration ranged from 33 to 40 mm, but discoloration in the control stems was limited to 5 mm around the incision. Some of the inoculated plants showed yellowing of foliage, but none died in the 30 days period. *C. manginecans* was recovered from 100% of the inoculated plants but not from the control plants, thus fulfilling Koch's postulates. To our knowledge, this is the first report of *Ceratocystis manginecans* causing disease in *Coffea arabica* in Brazil although *C. colombiana* and *C. costaricensis* cause serious losses to coffee in northern South America and Costa Rica, respectively (Baker et al. 2003; Harrington et al. 2024; Marin et al. 2003). The extent of the problem in Brazil and its association with mechanical harvesting are being evaluated.

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