



First record of *Ceratocystis fimbriata* on *Carapa guianensis*

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Crabwood or andiroba (*Carapa guianensis*) is a medium to large tree belonging to the family Meliaceae, widespread in tropical South America, used for timber, furniture, and oil from seeds for cosmetic and ethnomedicinal purposes. Despite its economic importance only one disease caused by *Pestalotiopsis macrochaeta* has been reported (Halfeld-Vieira & Nechet, 2006). In August 2008, during the course of surveys in a native forest in São João da Baliza municipality in Roraima state, Brazil, dying seedlings of *C. guianensis* were observed with symptoms of a fungal infection on stems (Fig. 1) and petioles.

Only one fungus species was isolated from perithecia present in infected tissue, forming olive brown cultures on potato dextrose agar (PDA). The following morphological features were observed. Perithecia were dark brown, globose, 112-200 µm, neck erect, 431-680 µm, with divergent ostiolar hyphae (Fig. 2A, 2B); perithecial width at the base was 27-34 µm and 20 µm at the apex. Ascospores were "hat" shaped, hyaline, 5-7 x 4-5 µm (Fig. 2C). The anamorph corresponded to *Chalara* with hyaline, cylindrical, catenulate endoconidia with truncate ends, 10-20 x 3.7-5 µm; chlamydospores were pale to dark brown, ovoid, thick-walled, 10-15 x 10-12 µm (Fig. 2D). Based on these morphological characteristics the fungus was identified as *Ceratocystis fimbriata* (Wingfield *et al.*, 1993). To confirm the identity of the pathogen, the internal transcribed spacer (ITS) region of a representative isolate was amplified using ITS 1 and ITS 4 universal primers and sequenced (GenBank Accession No. JN051277). Ribosomal DNA-ITS sequence data were found to have up to 98% identity with *C. fimbriata*. To fulfil Koch's postulates, pathogenicity tests were performed in a greenhouse on two-month-old *C. guianensis* seedlings. Stems were wounded with one superficial puncture with a needle tip, a mycelium plug inserted and the wound covered with Parafilm. A PDA disk was used as control and each treatment consisted of six plants kept under greenhouse conditions. Seven days later the Parafilm was removed and the progress of the symptoms was evaluated. After 10 days, the pathogen was re-isolated from the stem lesions only on plants inoculated with mycelium

plugs, presenting symptoms and signs similar to those occurring in the original infection. The culture of *C. fimbriata* was deposited in the fungal collection of Embrapa Roraima, a unit of the Brazilian Agricultural Research Corporation (access number CPAFR515).

Ceratocystis fimbriata is a native soilborne pathogen in some parts of Brazil and causes mortality in many economically important plants. In recent years, significant damage on *Eucalyptus* and *Tectona grandis* (teak) by this pathogen has been reported (Ferreira *et al.*, 2010; Firmino *et al.*, 2012). These exotic species are commonly planted in agroforestry systems with *C. guianensis* in Brazil. The high number of seedlings of *C. guianensis* affected by this pathogen observed in the field indicates its potential to have a significant impact on natural populations of this host and to be a threat to this species in agroforestry systems.

References

- Ferreira EM, Harrington TC, Thorpe DJ, Alfenas AC, 2010. Genetic diversity and interfertility among highly differentiated populations of *Ceratocystis fimbriata* in Brazil. *Plant Pathology* **59**, 721-735. [http://dx.doi.org/10.1111/j.1365-3059.2010.02275.x]
- Firmino AC, Tozze Jr HJ, Furtado EL, 2012. First report of *Ceratocystis fimbriata* causing wilt in *Tectona grandis* in Brazil. *New Disease Reports* [http://ndrs.org.uk] **25**, 24. [http://dx.doi.org/10.5197/j.2044-0588.2012.025.024]
- Halfeld-Vieira BA, Nechet KL, 2006. First report of *Pestalotiopsis macrochaeta* on *Carapa guianensis*. *Plant Pathology* **55**, 304. [http://dx.doi.org/10.1111/j.1365-3059.2005.01274.x]
- Wingfield MJ, Seifert KA, Webber, JF, eds, 1993. *Ceratocystis* and *Ophiostoma*: taxonomy, ecology, and pathogenicity. St. Paul, MN, USA: The American Phytopathological Society.



Figure 1

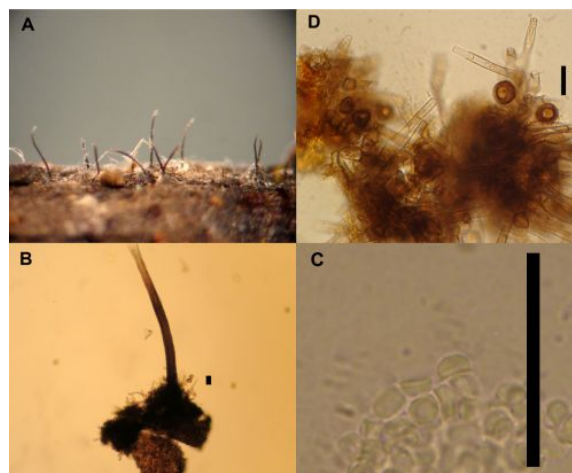


Figure 2

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