



A trunk canker disease of *Tectona grandis* induced by *Lasiodiplodia theobromae* in Brazil

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Tectona grandis (teak) is currently expanding as a commercial timber crop in tropical Brazil. Teak trees displaying unusual canker lesions with abundant exudation of a viscous resin were observed in field inspections in Cáceres, Mato Grosso (MT) State, Brazil. Other symptoms observed were the presence of brownish vascular tissue discoloration, heartwood rot (Fig. 1) and dieback. The incidence of affected trees ranged from 5 to 10% across all inspected commercial fields.

Affected vascular tissue segments were cultivated in water agar medium aiming to isolate the organism potentially associated with these symptoms. Agar plugs of fungal mycelia growing from the tissue were transferred to sterile petri dishes containing potato dextrose agar (PDA) to isolate pure cultures. All resulting cultures were similar, initially white, turning gradually grey on the upper side of the plate and black on the reverse side. The cultures displayed holoblastic, hyaline conidiogenous cells, subcylindrical to cylindrical to ampulliform ranging in size from 4-7 x 1-2 µm. Immature conidia were hyaline, ovoid and unicellular that upon maturity became thick-walled, dark brown with one septum and conspicuous longitudinal striations. Mature conidia ranged in size from 23-29 x 13-15 µm (Fig. 2). According to these characteristics, the fungus was identified as *Lasiodiplodia theobromae* (Alves *et al.*, 2008). In order to confirm the morphological identification, portions of the rDNA region were sequenced. The obtained sequences were deposited in the GenBank database. The resulting sequence of the ITS1-5.8S-ITS2 rDNA region, using ITS1-ITS4 primers (White *et al.*, 1990) of the Brazilian isolate from teak (Accession No. KP642037), shared 100% identity with the *L. theobromae* isolate from *Jatropha curcas* reported in Malaysia (HM466960.2). In addition, the targeted conserved portion of the translation factor 1- α (TEF-1 α) gene (O'Donnell *et al.*, 1998) of the Brazilian isolate (KP642038) shared 100% identity with the sequence from one *L. theobromae* isolate CMW9971 from *Schizolobium parahyba* (KF886731).

Three elite teak clones were inoculated with two *L. theobromae* isolates (RB01 and RB05) in order to fulfil Koch's postulates. Pathogenicity assays were conducted under greenhouse conditions using an inoculation methodology essentially as described by Silveira *et al.* (2006). Inoculation was carried out on plants, 180 days after being transplanted, by placing 2 mm diameter mycelial plugs of the isolates grown on PDA for 14 days in artificially made wounds (2 cm diameter) in the vascular cambium tissue (5 cm above the crown region). For the control treatments, the vascular

cambium was inoculated with PDA plugs free of fungal growth. All three elite clones displayed canker symptoms identical to those observed in natural infections in the commercial fields 90 days after inoculations (Fig. 3). The fungus was re-isolated from all inoculated plants, fulfilling Koch's postulates. *Lasiodiplodia theobromae* has been reported in a number of species in Brazil, such as *Acacia* sp., *Eucalyptus* sp., *Hevea brasiliensis* and *Mangifera indica* (Mendes *et al.*, 1998). However, only one report of this fungus infecting teak was found, from India, in 2007 (Murali *et al.*, 2007). Hence, to our knowledge, this is the first formal report of *L. theobromae* causing canker disease teak in Mato Grosso State, Brazil. This new disease represents a serious threat to the commercial industry, since the affected trees are unsuitable for timber purposes.

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Figure 1

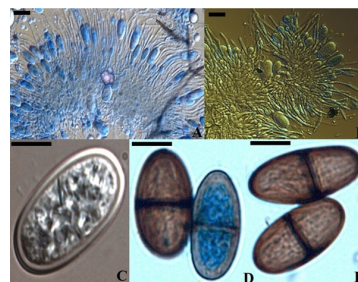


Figure 2



Figure 3

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