



# plant disease

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## DISEASE NOTES

### First Report of *Lasiodiplodia brasiliense* Causing Postharvest Fruit Rot of Custard Apple (*Annona squamosa*) in Brazil

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Custard apple is a perennial tropical plant cultivated in Brazil for its fresh consumed fruit, which is commercially sold all over the country. Custard apple is a climacteric fruit so it is harvested and commercialized at an early maturation stage; therefore, it must be incubated for a few days to ensure ripening and consumption. Although it can be found in the market throughout the year, its production peaks during May to July in Northeast Brazil. In June 2016, in Aracoiaba County, Ceará State, Brazil, a fungal fruit rot was observed on approximately 20% of fruits within stored containers for wholesale market. Rotten fruits were taken to the Laboratory of Plant Pathology, Embrapa, to isolate the causal agent. Externally, symptoms were darkening of the grooves, beginning in the peduncle. The lesions expanded rapidly, reaching the entire fruit within 2 to 3 days. Internally, there was discoloration of the pulp, invading the whole fruit. Upon complete infection, which takes approximately 10 days, the whole fruit was covered with an intense mass of pycnidium immersed into a stromal fungal tissue. The fungus was isolated from symptomatic tissues, and cultivated on potato dextrose agar (PDA). The single fungal colony showed a white aerial mycelium that turned dark gray after incubation at 26°C for 1 week. Pycnidia were produced easily on pine needles immersed into 2% water agar under 12 h photoperiod at 26°C for 2 weeks. Conidia were hyaline at a young stage, thick-walled, and ovoid to ellipsoid with a round and slightly tapered apex, continuing with the same form when mature, dark brown color, and with longitudinal striations and one single septum. Measurements of 50 conidia ranged from 20.21 to 27.28 µm in length and 10.44 to 16.70 µm in width. These morphological characteristics matched previous descriptions for *Lasiodiplodia brasiliense* (Netto et al. 2014). The sequencing of the complete internal transcribed spacer rDNA (ITS), β-tubulin2 (βT), and translation elongation factor 1-α (EF1)

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genes regions after amplification by PCR using primers ITS1F/ITS4R,  $\beta$ T2a/  $\beta$ T2b, and EF1-688F/EF1-1251R, respectively, confirmed the identity of the isolate. These sequences were deposited in GenBank as accession numbers KY643656 (ITS), KY711348 ( $\beta$ T2), and KY711349 (EF1- $\alpha$ ). Nucleotide BLAST analysis showed a 100, 99, and 100% identity with *L. brasiliense* matching for ITS,  $\beta$ T2, and EF1- $\alpha$ , respectively. Pathogenicity tests were made by placing a 20  $\mu$ l drop of a conidial suspension ( $2.8 \times 10^5$  conidia  $\text{ml}^{-1}$ ) on four fresh, unwounded immature fruits (cv. Crioula), two onto the peduncle and two directly onto the fruit surface. Four control fruits were inoculated in similar places with sterile distilled water. Similar symptoms began to be observed after 3 days only on fungus inoculated fruits, evolving to complete rot by 7 days after inoculation. Fruits inoculated on the peduncle developed symptoms faster than the ones inoculated directly on the fruit grooves, suggesting this to be the natural site of infection, but no distinctions were observed in the symptoms between inoculated sites. Isolation from inoculated fruits was done to confirm pathogenicity tests. This is the first report on *L. brasiliense* causing fruit rot of custard apple in Brazil. This disease requires sanitation measures during harvesting and handling to ensure an extended storage period, and monitoring its spread into other Brazilian regions.

**Reference:**

Section:

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**Netto, M. S. B.,** et al. 2014. Fungal Divers. 67:127. <https://doi.org/10.1007/s13225-014-0279-4> [Crossref] [ISI]

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