



First report of *Thielaviopsis paradoxa* causing palm fruit rot of *Butia capitata* in Uruguay

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Received: 28 Jan 2013. Published: 02 Apr 2013. Keywords: *Ceratocystis paradoxa*, fungal plant disease

Butia capitata palms are endemic to southern Brazil and eastern Uruguay, but the original palm forests that covered extensive areas are disappearing due to lack of regeneration in areas used for cattle, rice or other agricultural purposes (Rivas & Barilani, 2004). The fruit is consumed fresh or processed by the local inhabitants to supplement their incomes, providing vitamin C and carotenoids and having antioxidant properties (Crosa *et al.*, 2011). Research is being carried out in an effort to conserve this natural resource by increasing its commercial utility. In April 2011 ripe fruit was harvested near Castillos in southeastern Uruguay and stored at different temperatures. After seven days at 20°C and 90% relative humidity, 24% had rotted with 80% rotten after 21 days (Zaccari *et al.*, 2012). The fruit lost their yellow-orange colour, becoming brown, and then black and shrivelled due to loss of moisture (Fig. 1). At high relative humidity they were covered by white mycelium that became black with age (Fig. 2).

Pieces of rotten tissue were plated out on potato dextrose agar (PDA) and a fungus, which rapidly became black, was isolated. It produced individual elongated conidiophores which extrude chains of short cylindrical conidia through the open end: colourless, dimensions 3.1 x 8µm at first, later golden brown, 10.5 x 18µm; together with chains of dark brown, thick walled chlamydo spores (9 x 12.4µm) also forming in terminal chains (Fig. 3). These features are characteristic of the *Thielaviopsis paradoxa* anamorph of *Ceratocystis paradoxa* (Ellis, 1971; Morgan-Jones, 1967). This identification was confirmed by sequencing the internal transcribed spacers (ITS1, 5.8S, ITS2) region of rDNA of a representative isolate (BUTIA-1) with ITS1/ITS4 primers (White *et al.*, 1990). The sequence was compared with those deposited in GenBank. The isolate BUTIA-1 (Accession No. JX629245) had 100% of homology with *Ceratocystis paradoxa* (JQ387728).

Three banana fruit and six *B. capitata* fruit were wounded and inoculated with mycelial plugs from the *Ceratocystis paradoxa* isolate BUTIA-1 grown on PDA and incubated at 25°C and 100% relative humidity.

Wounding was accomplished by inserting a sterile scalpel (5 mm) into the fruit. As a control three banana fruit and six *B. capitata* fruit, were wounded and incubated in the same way. A black rot developed on both hosts, on banana after 10 days and on palm fruits in only five days (Fig. 4) and the pathogen was re-isolated from them confirming Koch's postulates. Control fruit remained symptomless. This is the first report of *Ceratocystis paradoxa* in Uruguay and, to our knowledge, the first identification of this pathogen causing disease on *Butia* sp. palms.

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Figure 1



Figure 2



Figure 3

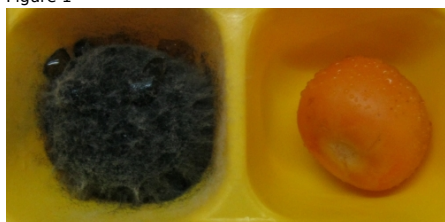


Figure 4

To cite this report: Gepp V, Hernández L, Alaniz S, Zaccari F, 2013. First report of *Thielaviopsis paradoxa* causing palm fruit rot of *Butia capitata* in Uruguay. *New Disease Reports* 27, 12. [http://dx.doi.org/10.5197/j.2044-0588.2013.027.012]

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