

## **NOTAS CIENTÍFICAS**

### Leaf blight and defoliation of *Eugenia* spp. caused by *Cylindrocladium candelabrum* and *C. spathiphylli* in Brazil

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#### **ABSTRACT**

Poltronieri, L.S.; Alfenas, R.F.; Verzignassi, J.R.; Alfenas, A.C; Benchimol, R.L.; Poltronieri, T.P.S. Leaf blight and defoliation of *Eugenia* spp. caused by *Cylindrocladium spathiphylli* and *C. candelabrum* in Brazil. *Summa Phytopathologica*, v.37, n.2, p.147-149, 2011.

Leaf blight and defoliation of *Eugenia stipitata* Mc Vaugh and *Eugenia patrisii* Vahl, caused respectively by *Cylindrocladium candelabrum* (*Calonectria scoparia*) and *C. spathiphylli* (*Calonectria spathiphylli*) are reported in the state of Pará, Brazil. On both host species, the disease is characterized by dark brown lesions of different sizes and shapes. A whitish bright sporulation, resembling *Cylindrocladium* is observed on the necrotic lesions by using a stereomicroscope or a pocket lense (10-20 X). Under

favorable conditions and depending on the level of infection, intense premature tree defoliation may also be found. Although the conidial germination and mycelial growth were higher at 25°C for both species, *C. candelabrum* was more sensitive to the variation of temperature (10, 20, 30 and 40 °C) than *C. spathiphylli*. This is the first report of *C. candelabrum* and *C. spathiphylli* on *Eugenia stipitata* (araçá-boi) and on *Eugenia patrisii* (ubaia-da-amazônia), respectively in Brazil.

**Keywords:** foliar lesions, Myrtaceae.

#### **RESUMO**

Poltronieri, L.S.; Alfenas, R.F.; Verzignassi, J.R.; Alfenas, A.C; Benchimol, R.L.; Poltronieri, T.P.S. Lesões foliares e queda de folhas em *Eugenia* spp. causadas por *Cylindrocladium spathiphylli* e *C. candelabrum* no Brasil. *Summa Phytopathologica*, v.37, n.2, p.147-149, 2011.

Relata-se a incidência de mancha, queima foliar e desfolha, causadas respectivamente por *Cylindrocladium candelabrum* (*Calonectria scoparia*) em *Eugenia stipitata* Mc Vaugh (araçá-boi) e *C. spathiphylli* (*Calonectria spathiphylli*) em *Eugenia patrisii* Vahl (ubaia-da-amazônia), no Estado do Pará, Brasil. Em ambos os hospedeiros, a doença caracteriza-se por lesões necróticas de diferentes dimensões e formas, coloração marrom escura, contendo uma massa branca brilhante de esporulação típica de *Cylindrocladium*, facilmente observada sob microscópio

estereoscópico ou com o auxílio de uma lente de bolso de 10 – 20 x de aumento. Sob condições favoráveis à infecção, as plantas podem sofrer intensa queda prematura de folhas. Embora, o maior número de conídios germinados e o maior crescimento micelial foram obtidos a 25°C para ambas as espécies, *C. candelabrum* foi mais sensível às variações de temperatura (10, 20, 30 e 40 °C) que *C. spathiphylli*. Este é o primeiro relato de *C. candelabrum* em *Eugenia stipitata* e *C. spathiphylli* em *Eugenia patrisii* no Brasil.

**Palavras-chave adicionais:** lesões foliares, Myrtaceae.

Plants of *Eugenia stipitata* Mc Vangh (araçá-boi) and *Eugenia patrisii* Vahl showing leaf blight and defoliation were found in the Experimental field of Emb 0 x 4,5-5,0 µm and globose vesicle typical of *Cylindrocladium spathiphylli* Schoult., El-Gholl & Alfieri (*Calonectria spathiphylli* El-Gholl, J.Y. Uchida, Alfenas, T.S. Schub., Alfieri & A. R. Chase) (Figure 2), sensu Crous (3).

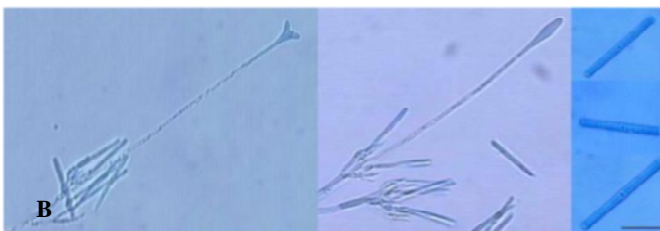
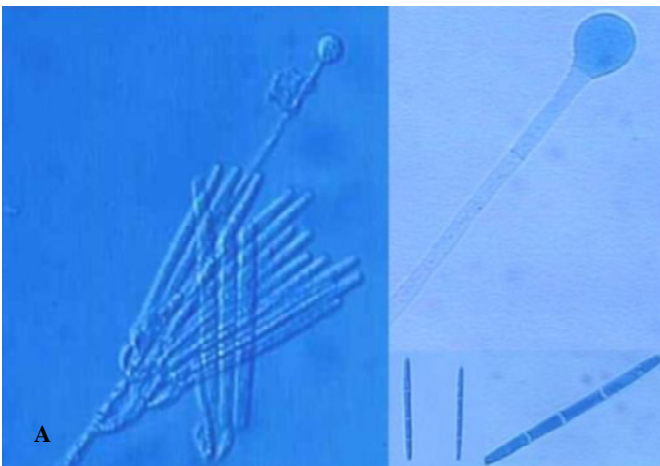
Inoculations to confirm the pathogenicity of both fungi were made by placing inoculum plugs (5 mm diameter) on the adaxial portion of the leaf limb of the respective plant species. After inoculation the plants were maintained in a moist chamber for 48 h and then transferred to a green house. Three days later typical symptoms of the disease were observed and re-isolations of the fungi to PDA confirmed their pathogenicity on the respective host species. This is the first report of *C. candelabrum* on *E. stipitata* and *C. spathiphylli* on *Eugenia patrisii*

in Brazil, although *C. scoparium* Morgan and *C. gracile* (Bugn.) Boesew. were already found causing fruit and root decay in araçá-boi in Pará State and in Federal District, respectively (4, 5). The two fungal species reported here have an ample geographic distribution and a wide host range (3).

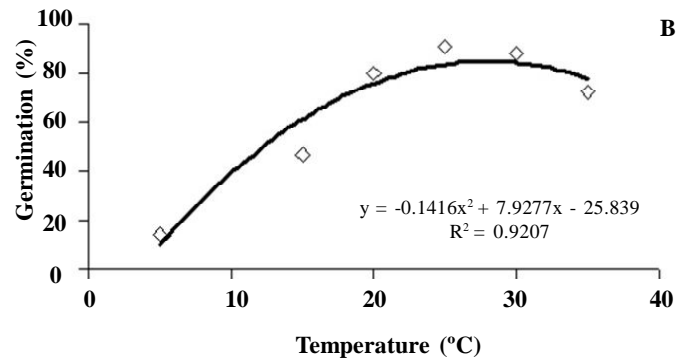
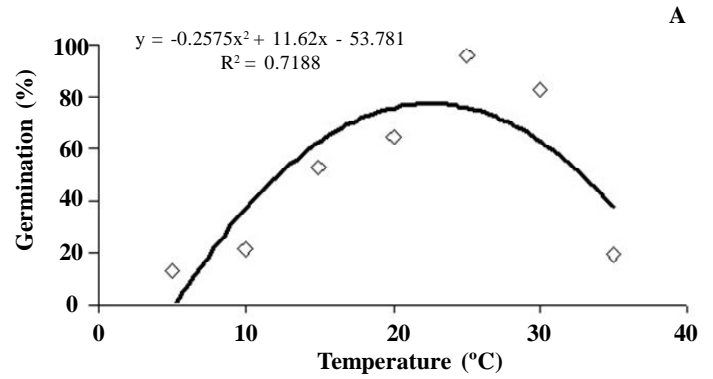
Conidial germination and the mycelial growth of both fungi were evaluated at 5, 15, 20, 25, 30 and 35°C in the dark. For germination, 25 µl of a 1x10<sup>4</sup> conidia.mL<sup>-1</sup> suspension were added into three cavities of a sterile glass slide. Each treatment contained three replicates, in a completely randomized design. After 4h of incubation in the dark, germination was interrupted by addition lacto phenol-cotton blue and the percentage of germination was estimated by scoring 600 randomly chosen conidia per treatment, under a optical microscope (200 X). Conidia presenting differentiated germ tubes, independently on their



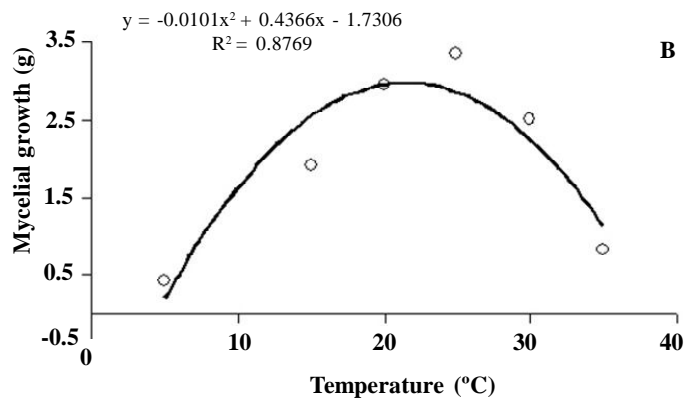
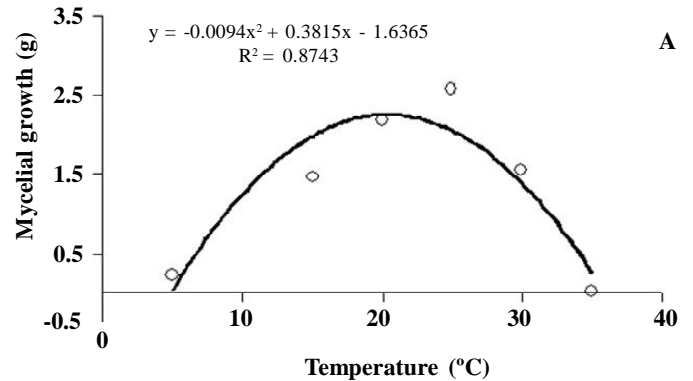
**Figure 1.** Leaf blight caused by *Cylindrocladium* spp. in the field. A - *C. candelabrum* in *Eugenia stipitata*; B - *C. spathiphylli* in *Eugenia patrisii*.



**Figure 2.** Conidiophores containing vesicle and conidia typical of *Cylindrocladium*: A - *C. spathiphylli*; B - *C. candelabrum*.



**Figure 3.** Conidial germination at different temperatures. A - *C. candelabrum*; B - *C. spathiphylli*.



**Figure 4.** Mycelial growth at different temperatures. A - *C. candelabrum*; B - *C. spathiphylli*.

size were considered germinated. Germination of *C. candelabrum* and *C. spathiphylli* conidia varied significantly with the temperature of incubation, but it was higher at 25°C for both species (Figure 3). However, *C. candelabrum* was more sensitive to temperature variation than *C. spathiphylli* (Figure 3). On the other hand, based on the regression equation, the estimated optimum temperature for conidial germination was of 23°C for *C. candelabrum* and 28°C for *C. spathiphylli*.

For the mycelium growth one culture disk (4 mm diameter) of each fungus was transferred separately to each 125 mL Erlenmeyer flask, containing 50 mL of a semi-synthetic liquid growth media (1), following incubation at the same temperatures tested for spore germination. Five replicates in a completely randomized experimental design were employed. At 10 days of incubation the mycelial mat was filtered in a Buchner funnel containing a Whatman no. 1 filter paper. After removal of the water excess by pressing the mycelial mat in germ test filter paper, the fresh weight was determined. The highest mycelial growth of both species was at 25°C. Based on the regression equation (Figure 4), the estimated optimum temperature was 20°C for *C. candelabrum* and 23°C for *C. spathiphylli*. As for conidial germination, *C. candelabrum* was also more sensitive to the temperature variation than *C. spathiphylli*. Generally, the effect of temperature on mycelial growth for both fungi studied in the present

work was similar to that found for *C. ilicicola* isolated from eucalyptus (2). This findings may have important implications on the occurrence of these fungi according to the temperature oscillation around the year and may explain the wide geographical distribution of *C. candelabrum* in less warm southeaster regions in Brazil.

#### LITERATURE CITED

1. Alfenas, A.C. Extração de proteínas para eletroforese. In: ALFENAS, A.C. (Ed.). **Eletroforese e marcadores bioquímicos em plantas e microorganismos**. 2. ed. Viçosa: Ed. UFV, 2006. p. 85-114.
2. Alfenas, A.C.; Matsuoka, K.; Ferreira, F.A.; Hodges, C.S. Identificação, características culturais e patogenicidade de três espécies de *Cylindrocladium*, isoladas de manchas de folha de *Eucalyptus* spp. **Fitopatologia Brasileira**, Brasília, v.4, p.445-449, 1979.
3. Crous, P.W. **Taxonomy and pathology of *Cylindrocladium* (*Calonectria*) and allied genera**. St. Paul: American Phytopathological Society, 2002. 278p.
4. Junqueira, N.T.V.; Fialho, J.F.; Ramos, V.H.V.; Leão, A.J.P. Doenças e potencial de produção do araquá-boi (*Eugenia stipitata*) nos cerrados. **Fitopatologia Brasileira**, Brasília, v.22, p.272, 1997.
5. Nunes, A.M.L.; Stein, R.L.B.; Albuquerque, F.C. Araquá-boi (*Eugenia stipitata*): um novo hospedeiro de *Cylindrocladium scoparium*. **Fitopatologia Brasileira**, Brasília, v.20, p.488-490, 1995.