

FIRST RECORD OF *BOTRYOSPHAERIA RIBIS* ASSOCIATED WITH LEAF SPOTS ON *MAGNOLIA* AFF. *CANDOLLEI* IN BRAZIL

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SHORT COMMUNICATION

ABSTRACT

A leaf spot disease was observed attacking some *Magnolia* aff. *candollei* plants grown in a private garden in the city of Rio de Janeiro, RJ, Brazil. Such leaf spots coalesced and led to extensive blight of foliage. A fungus was clearly associated to the disease symptoms and was identified as *Botryosphaeria ribis*. Its anamorph, *Fusicoccum ribis*, was also present, although less abundant than the teleomorph. This is first report of this fungus on this host in Brazil and the first record of any fungal disease on a member of the genus *Magnolia* in Brazil.

Key-words: Magnoliaceae, ornamental plant, plant disease, plant pathology, taxonomy.

Several members of the Magnoliaceae became popular worldwide as garden shrubs and trees because of their large flowers having a very pleasant scent. In Brazil some species of *Magnolia* are relatively commonly grown as ornamentals, particularly *Magnolia ovata* (A. St.-Hil.) Spreng, *M. grandiflora* L., *M. liliflora* (L.) Baill. and *M. champaca* (L.) Baill. ex Pierre (14).

A small group of shrubs recognized as belonging to the Magnoliaceae were found to be attacked by a foliar disease in a private garden in the city of Rio de Janeiro (September, 2004). The disease appeared to have a fungal etiology since fungal stromata were closely associated to the advance of tissue necrosis. Photographs of symptoms were taken in the field and Botanical specimens as well as specimens of diseased foliage were collected for further study in the Mycology Lab at the Departamento de Fitopatologia (Universidade Federal de Viçosa). The botanical specimen was mounted and sent to the expert in the taxonomy of the Magnoliaceae (Dr. Stephen Smith, Smithsonian Institution) who identified it as *Magnolia* aff. *candollei* (Blume) H.Keng. (= *M. liliifera*).

Free hand sections of fungal structures on leaves as well as sections made with a freezing microtome (Criostat - Leica CM

1850) were prepared and mounted in water or lactophenol for observation under a light microscope (Olympus BX 50) fitted with camera. An ascomycete accompanied by two anamorphic stages was recognized forming stromata on the diseased leaves and readily identified with the keys provided in (13) as a member of the genus *Botryosphaeria*. A representative specimen was deposited in the local herbarium (Herbarium VIC 27786). As no record of a fungal disease was found for this host in Brazil a complete elucidation of the identity of the fungus involved was prepared and is presented below.

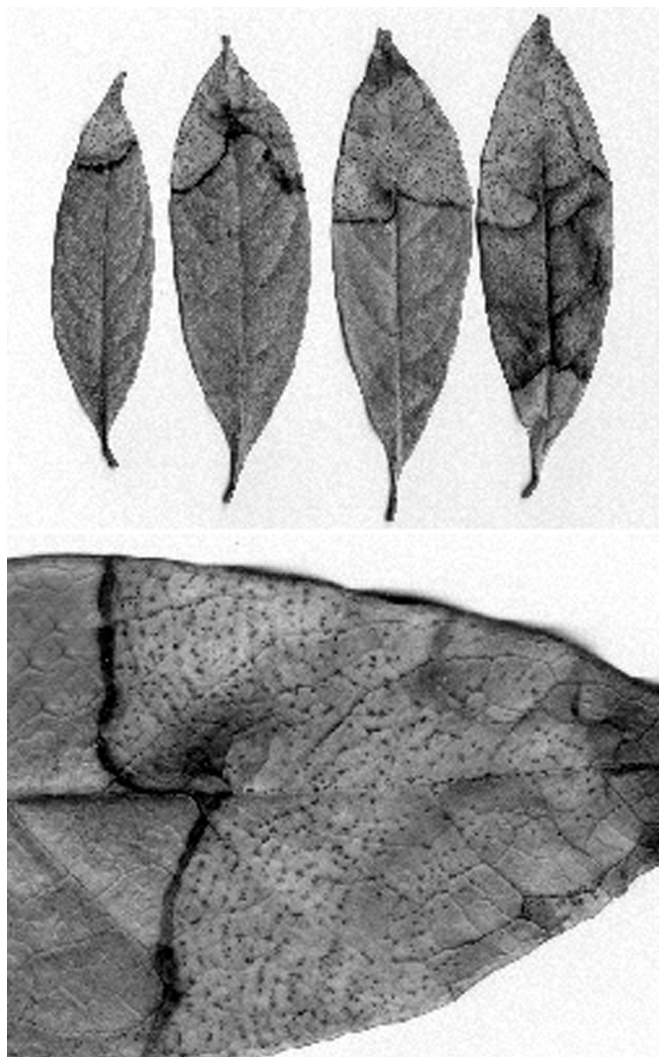
Botryosphaeria ribis Grossenbacher & Duggar (teliomorph) and *Fusicoccum ribis* Slippers, Crous & M.J. Wingf (anamorph) on *Magnolia* aff. *candollei*:

Disease: On living leaves, always starting apically as a necrosis at the leaf margins expands towards the midrib irregularly and occasionally advanced towards the base and leading to a complete blight of the leaf; adaxially, infection front is a diffuse zone of chlorotic tissue followed by a distinct band of dark brown necrotic tissue which is substituted later by an area of grayish brown tissue, where black stromata are visible arranged in concentric rows, as infection advances; abaxially the infection front is as seen adaxially but it is either

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followed by an area of homogeneous pale brown necrosed tissue or additional irregular dark brown bands subdivide the areas of dead tissue, no stromata are normally visible abaxially (Figs. 1-2).

Fungus morphology: *Internal mycelium*, 4.5-10.0 µm diam, branched, septate, dark brown. *Stromata* erumpent adaxially, organized in concentric rows on necrotic tissues, sub-pulvinate, botryose, 0.4-0.8 mm diam, composed of dark brown pseudoparenchyma. *Pseudothecia* immersed, subsphaerical to pyriform, 180.0-285.0 x 150.0-290.0 µm, walls 35.0-58.0 µm thick composed of brown textura angularis; dehiscence ostiolate, circular. *Pseudoparaphysis* filiform, 1.5- 2.0 µm diam, 1-3 septate, hyaline. *Asci* bitunicate, clavate, 8-spored, 72.5-100.0 x 12.5-

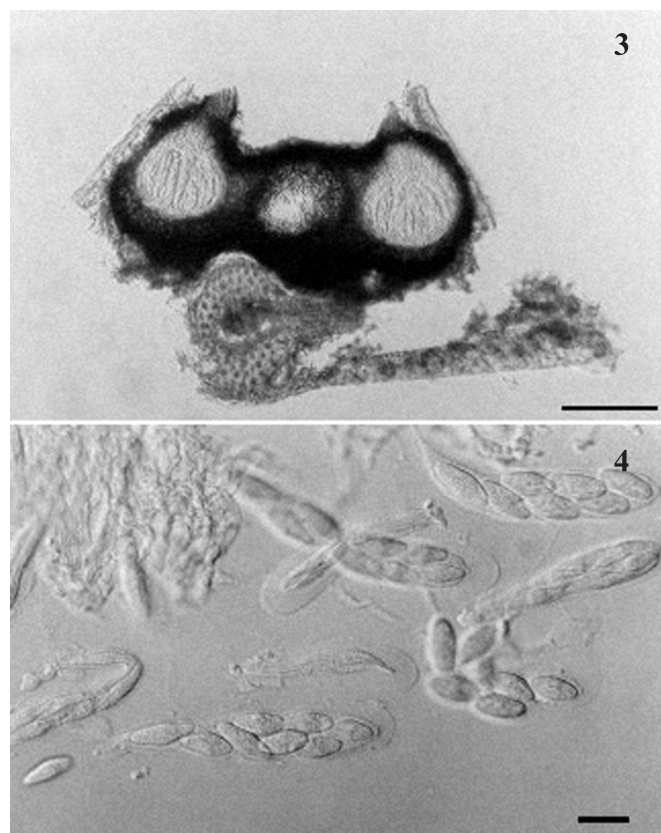


Figures 1-2. Diseased foliage of *Magnolia aff candollei* showing progressive development of necrosis into almost complete leaf blight.

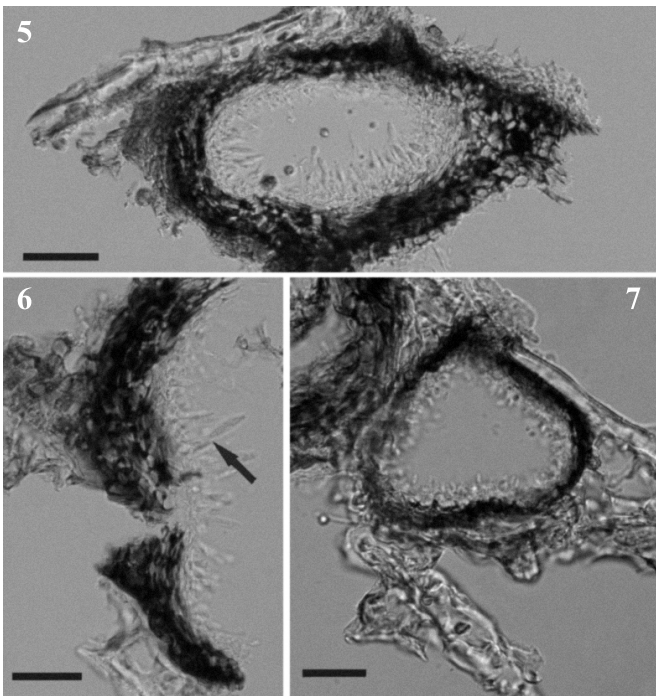
17.5 µm. Ascospores ellipsoid, ovoid to fusiform, 19.5-24.5 x 9.5-12.0 µm, aseptate, hyaline, smooth, with granular cytoplasm (Figs. 3-4).

Anamorph (*F. ribis*): *Pycnidia* globose to peroblate, immersed, isolate, 110.0-250.0 x 89.0-200.0 µm, walls 14.0-25.0 µm thick, smooth; dehiscence circular, 9.0 x 12.0 µm diam. *Conidiogenous cells* holoblastic, subcylindrical, 10.0-20.0 x 2.0-4.0 µm, hyaline; conidiogenous loci minute. *Macroconidia* fusoid, 19.0-25.0 x 4.0-6.0 µm aseptate, guttulate, hyaline, smooth. *Microconidia* alantoid, 1.0-4.0 x 1.0-2.0 µm, hyaline, aseptate, smooth (Figs. 5-7).

Difficulties and controversy have surrounded the delimitation and identification of fungi in the genus *Botryosphaeria* and its anamorphs for very long. One such problem has been the separation of *Botryosphaeria dothidea* (Moug.) Ces. & De Not. and *B. ribis*, regarded by different authors either as synonyms (1,3,5,10) or distinct species (8,12,16,20,21). Nevertheless, recent studies combining information from morphology and molecular markers have resulted in significant advances towards the elucidation of relationships within this ascomycete genus and



Figures 3-4. *Botryosphaeria ribis*: (DIC light micrographs). 3) Pseudothecia (Bar = 140 µm); 4) asci and ascospores (Bar = 20 µm).



Figures 5-6. *Fusicoccum ribis* (DIC light micrographs). 5) Section of a pycnidium showing active production of conidia (Bar = 20 μ m); 6) Detail of a pycnidium wall showing holoblastic conidiogenous cells (arrowed) (Bar = 20 μ m); 7) Conidioma producing microconidia (Bar = 20 μ m).

also including its anamorphs (2,4,15). One such clarification was that *B. dothidea* and *B. ribis* are in fact distinct taxa (11,12,15-17,20,21). Besides molecular evidence for the separation of those two taxa, biometric data, particularly conidial length (conidia on average longer than 25 μ m in *B. dothidea* and shorter than 25 μ m in *B. ribis*) are now recognized as useful for separating the two species (7,9). The fungus on *M. aff. candollei* fits well within the species *B. ribis*. This is regarded as a polyphagous species attacking a wide range of hosts worldwide, including plants in the genus *Magnolia* (12,19). In Brazil this fungus was only recorded attacking *Eucalyptus* spp. (6). In fact there is no record of any fungal disease of a *Magnolia* spp. In Brazil. Therefore, this is the first report of *B. ribis* and its anamorph *F. ribis* on *Magnolia* in Brazil and the first record of any fungal disease on a member of the genus *Magnolia* in Brazil (6,18).

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RESUMO

Primeiro relato de *Botryosphaeria ribis* associada com doença foliar em *Magnolia* aff. *candollei* no Brasil

Neste trabalho são apresentadas observações feitas sobre a etiologia de uma doença foliar encontrada atacando alguns indivíduos da espécie *Magnolia* aff. *candollei* cultivados em um jardim particular na cidade do Rio de Janeiro. Esta doença se apresentava como manchas foliares que tendiam a coalescer levando à queima de áreas extensas das folhas atacadas. Um fungo estava claramente associado a estes sintomas e foi identificado como *Botryosphaeria ribis*. Seu anamorfo, *Fusicoccum ribis*, também estava presente, embora sendo menos comum que o teliomorfo. Este é o primeiro relato deste fungo neste hospedeiro no Brasil e o primeiro relato de uma doença fúngica em planta do gênero *Magnolia* no Brasil.

Palavras-chave: Magnoliaceae, planta ornamental, doença de planta, fitopatologia, taxonomia.

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