

Mycosphaerella marasasii sp. nov. and its *Pseudocercospora* anamorph on leaves of *Syzygium cordatum*

P. W. CROUS

Department of Plant Pathology, University of Stellenbosch, 7600 Stellenbosch, South Africa

M. J. WINGFIELD

Department of Microbiology and Biochemistry, University of the Orange Free State, PO Box 339, 9300 Bloemfontein, South Africa

A prominent leaf spot disease was found to occur on *Syzygium cordatum* in South Africa. A *Mycosphaerella* was associated with these symptoms and proved to be different from other species occurring on genera in the Myrtaceae. The names *Mycosphaerella marasasii* for the teleomorph and *Pseudocercospora marasasii* for the anamorph are formally introduced for this fungus. The connexion between the anamorph and teleomorph was proven through cultural studies.

Eucalyptus spp. are currently being planted extensively in South Africa as important sources of mining timber and pulp (Directorate National Forestry Planning, 1988). All diseases occurring on this genus are, therefore, regarded as potentially important to the forestry industry. The first report of *Mycosphaerella* leaf-spotting and defoliation of *Eucalyptus* spp. was made early this century (Doidge, 1950). Since then, *Mycosphaerella* Leaf Blotch (MLB) has become one of the most important diseases of *Eucalyptus* spp. in South Africa (Crous, Wingfield & Park, 1991). A measure of its importance is that *E. globulus* and certain progenies of *E. nitens* can no longer be planted commercially in this country (Lundquist & Purnell, 1987).

A detailed examination of MLB on *Eucalyptus* (Crous *et al.*, 1991) has shown that only one *Mycosphaerella* sp., namely *M. molleriana* (Thüm.) Lindau is associated with the disease on *Eucalyptus* in South Africa. During subsequent collections, however, a MLB not unlike that occurring on *Eucalyptus* was noticed on leaves of *Syzygium cordatum* Hochst. Unlike *Eucalyptus* spp., *S. cordatum* is a tree native to South Africa. Because it also belongs to the Myrtaceae, the question has been raised as to whether the MLB could be the same as the one that affects *Eucalyptus* spp. The aim of this study was, therefore, to determine the identity of the *Mycosphaerella* sp. occurring on *S. cordatum* and to compare it with *M. molleriana* on eucalypts.

MATERIALS AND METHODS

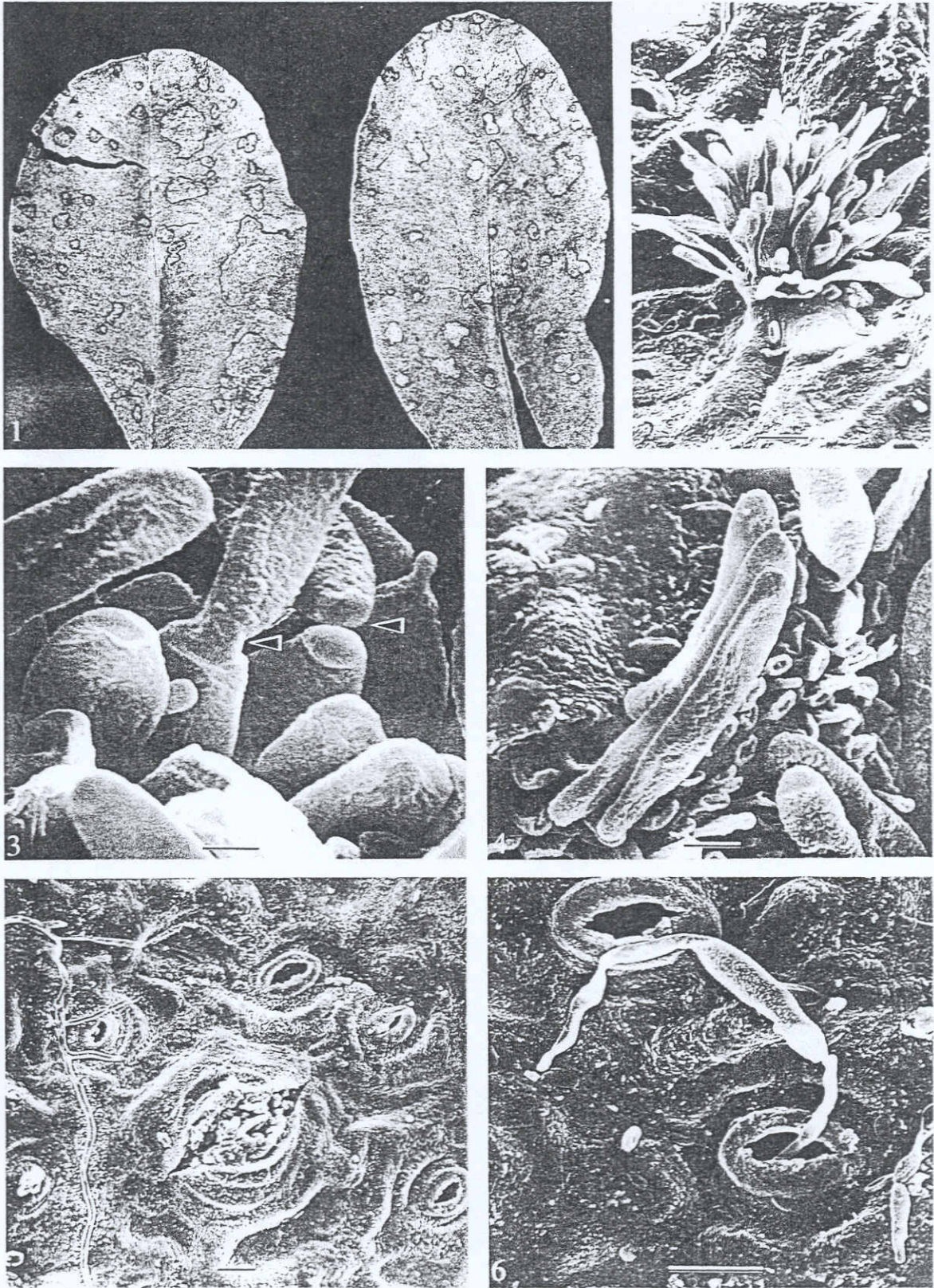
Leaves of *S. cordatum* with MLB symptoms were collected in Kwambonambi (Northern Natal coast), near Barberton (Eastern Transvaal) and near Tzaneen (Northern Transvaal) and examined microscopically. Single-ascospore isolations were

made from freshly collected leaves on malt-extract agar (10 g Merck malt extract, 20 g Merck agar, 1000 ml H₂O) (MEA), using the method described by Crous *et al.* (1991). Cultures obtained from single-ascospore isolations were transferred to carnation-leaf agar (CLA) (Fisher *et al.*, 1982), and incubated at 25 °C under a combination of near-ultraviolet and fluorescent light.

RESULTS AND DISCUSSION

The *Mycosphaerella* sp. occurring on *Syzygium* leaves caused distinct, light brown leaf spots, surrounded by a prominent, raised border (Fig. 1), not unlike those associated with *M. molleriana* on *Eucalyptus* spp. Furthermore, pseudothecia were also amphigenous, but predominantly hypogenous. The ascus dimensions of *M. molleriana* (30–68 × 9–18 µm) (Crous *et al.*, 1991) and the unknown *Mycosphaerella* sp. on *S. cordatum* (31–50 × 10–17 µm) also overlapped. However, the asci of the latter material differed slightly in shape, tending to be more ovoid to obclavate while those of *M. molleriana* tended to be ellipsoidal (Crous *et al.*, 1991).

Ascospores of the *Mycosphaerella* sp. on *S. cordatum* germinated with the germ-tube parallel to the long axis of the spore, similar to ascospore germination in *M. molleriana* (Park & Keane, 1982a). Ascospores, however, had thinner walls and germ-tubes were not as wide as those found in *M. molleriana*. In general, the size of the ascospores in *M. molleriana* (9–20 × 2.5–4.5 µm) (Crous *et al.*, 1991) and the unknown species (10–20 × 2.5–4 µm) were similar, making it difficult to distinguish between them on the basis of these structures. Ascospore shape in the unknown species tapered more prominently to the one end than observed for *M. molleriana*. The basal cells of the ascospores (as they are arranged in the



Figs 1–6. Symptoms and morphological characteristics of *M. nurasii* and its *Pseudocercospora* anamorph on *S. cordatum* leaves. Fig. 1. Leaf spots with necrotic centres. Fig. 2. Fascicle of conidiophores protruding from a stoma (Bar = 10 μ m). Fig. 3. Conidia (arrows) attached to conidiophores (Bar = 2 μ m). Fig. 4. Conidia showing slightly roughened surface (Bar = 3 μ m). Fig. 5. Substomatal pseudothecium (Bar = 10 μ m). Fig. 6. Ascospore with germ-tube infecting through a stoma (Bar = 10 μ m).

