Scientific paper

A Summary of Fungal Leaf Pathogens of *Eucalyptus* and the Diseases they Cause in South Africa*

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Eucalyptus leaf disease surveys conducted since 1984 in the Cape, Eastern Transvaal and Natal Forest Regions (Crous, Knox-Davies and Wingfield. 1988, 1989a, b, c) revealed a number of fungal leaf pathogens previously unreported in South Africa. This paper combines information gained during these surveys with records from previous sources (Doidge, 1950; Doidge *et al.*, 1953; Lundquist and Baxter, 1985). We also include a key to these *Eucalyptus* leaf pathogens. Opportunistic fungi such as *Botryosphaeria ribis* Grossenb. & Duggar, *Botrytis cinerea* Pers., *Cylindrocladium* spp. and *Hainesia lythri* (Desm.) Höhnel., which are commonly found on *Eucalyptus* leaves under stress conditions and which have a wide host range, have not been included.

Where possible, comment is made on the relative significance of the pathogens to *Eucalyptus* propagation. These evaluations are based on field observations, the relative importance of the *Eucalyptus* spp. affected, and reports from other countries.

Aulographina eucalypti (Cooke & Massee) von Arx & Muller

Anamorph: *Thyrinula eucalypti* (Cooke & Massee) Swart.

Occurrence. Most common in the Transvaal and Natal; not reported further south than the Eastern Cape.

Symptoms. Causes a severe leaf spotting of mature leaves *(Figure 1)*. Lesions seldom penetrate through the leaf lamina and are distinct, brown, circular and corky. *A. eucalypti* often occurs in association with *Mycosphaerella nubilosa* (Cke.) Hansf.

Pathogen. Amphigenous hysterothecia and pycnidia occur on older lesions *(Figure 2)*. Ascospores are hyaline, 2-celled, constricted at the septum, rounded at both ends and measure 9-(13)-16x3,5-(4)-5μm *(Figure 3)*.

Hosts. E. andrewsii Maid., *E. coriaceae* A.Cunn., *E. dalrympleana* Maid., *E. elata* Dehnh., *E. fastigata* Deane & Maid., *E. gigantea* Hooke f., *E. globoidea* Blakely, *E. globulus* Labill., *E. hemiphloia* F. Muell., *E. macarthurii* Deane & Maid., *E. muelleriana* Howitt, *E. nitens* (Deane & Maid.) Maid., *E. obligua* L. Heritier, *E. oreades* R.T. Bak., *E. pilularis* Sm., *E. quadrangulata* Deane & Maid., *E. regnans* F. Muell., *E. resinifera* Sm., *E. saligna* Sm.

Relative importance. Causes extensive defolation, and can thus be of economic importance.

Pseudocercospora eucalyptorum Crous, Wingfield, Marasas & Sutton

Occurrence. Widely distributed throughout the Cape Province and Natal. Infects a number of *Eucalyptus* spp., although it occurs most commonly on the older leaves of *E. nitens* (Crous, Wingfield, Marasas & Sutton, 1989).

Symptoms. Symptoms vary on the different hosts. Leaf spots range from subcircular and discrete to confluent, but on *E. nitens* they are always angular and confined by the leaf veins *(Figure 4)*. Variable in colour from chlorotic to light brown and grey-brown, depending on age.

Pathogen. Grey to brown tufts of conidiophores are found on older lesions *(Figure 5)*. Conidia are olivaceous, cylindrical, straight to slightly curved, indistinctly 1–6 septate *(Figure 6)*, measure 23-(42)-65x2,5-(3,5)-4μm.

Hosts. E. bridgesiana R.T. Bak., *E. deanei* Maid., *E. nova-anglica* Deane & Maid., *E. nitens, E. pellita* F. Muell.

Relative importance. At present *P. eucalyptorum* does not seem to be of any economic importance.

Coniothyrium ovatum Swart

Occurrence. As yet, only found in the Western and Southern Cape.

Symptoms. Occurs on immature leaves on young growth and the lower branches of mature trees. Lesions are irregular, dark purple to black on the upper leaf surface, and light to dark brown on the lower surface *(Figure 7)*.

Pathogen. Of the five *Coniothyrium* spp. occurring on *Eucalyptus* (Sutton, 1971, 1975; Swart, 1986), only *C. ovatum* has been reported from South Africa (Crous, Knox-Davies and Wingfield, 1988). Substomatal pycnidia, which are prominent on the lower leaf surface, exude long black cirri of slightly roughened, dark brown conidia *(Figure 8)*. Conidia are obovate with truncate bases and measure 7-(8,5)-10x5-(5,2)-6μm *(Figure 9)*.

Hosts. E. cladocalyx, E. lehmannii Preiss: Schauer.

Relative importance. It seems likely that trees will outgrow this pathogen owing to its inability to infect actively-growing mature foliage. The relative unim-

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* *Part of an M.Sc. Agric. thesis submitted by the first author to the University of Stellenbosch.*

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