



Fig. 1. Severe defoliation of juvenile foliage of *Eucalyptus globulus* (a); Juvenile *E. globulus* leaf symptoms of *M. fori* (b); Conidiophore of *Pseudocerospora fori* (c); and *M. fori* on 2% MEA (d). Photo credits: Sarah Jackson, Murdoch University.

Disease: Mycosphaerella Leaf Disease; *Mycosphaerella fori* G.C. Hunter, Crous & M.J. Wingf.; *M. ellipsoidea* Crous & M.J. Wingf.; *M. aurantia* A. Maxwell; *M. suberosa* Crous, F.A. Ferreira, Alfenas & M.J. Wingf.; *M. mexicana* Crous.

Classification: K: Fungi; P: Ascomycota; C: Loculoascomycota, O: Dothideales, F: Mycosphaerellaceae.

The Disease: Mycosphaerella Leaf Disease (MLD) is the most serious foliar disease of eucalypts in WA. The pathogenicity and etiology of most of these species remains unknown.

World-wide distribution: There are at least 100 species of *Mycosphaerella* and associated anamorphs recorded on eucalypts worldwide. Thirteen species of *Mycosphaerella* are recorded in WA and of these, 5 do not occur elsewhere in Australia; *M. aurantia*, *M. suberosa* (syn. *Teratosphaeria suberosa*) and *M. mexicana* (*T. mexicana*), *M. fori* and *M. ellipsoidea*. *M. fori* and *M. ellipsoidea* are previously described from South Africa (*E. grandis* and *E. cladocalyx*), *M. mexicana* from Mexico (*Eucalyptus* sp.), *M. suberosa* from Brazil, Columbia and Indonesia (*E. dunnii*, *E. globulus*, *E. grandis*, *E. molluccana*, *E. saligna*, *E. viminalis* and *Eucalyptus* sp.). *M. aurantia* was originally described from WA (*E. globulus*), however, is phylogenetically close to *M. africana* from South Africa.

Host Range in WA: With the exception of *M. ellipsoidea* these 5 species have only been isolated from *E. globulus* in WA. The former has also been isolated from *E. grandis* x *resinifera*.

Impact: MLD remains the primary cause of premature defoliation in *E. globulus* in WA. Levels of up to 75% disease intensity of juvenile foliage have been recorded. The full impact on growth has yet to be determined in WA, however, other studies from the eastern states suggest that MLD has a negative impact on growth and biomass.

Occurrence in WA: *M. ellipsoidea* and *M. aurantia* are widely distributed and have been frequently isolated from juvenile foliage of *E. globulus* in the south-west. *M. fori* has a limited distribution and to date has only been isolated from one plantation each in Albany and Esperance. Only the anamorph has been identified in WA. *M. suberosa* and *M. mexicana* have been isolated less frequently, from older juvenile leaves.

Detection and Management: The detection of several new species of *Mycosphaerella* raises a number of questions including the possibility that these are new incursions caused by the movement of planting material within Australia and globally. This highlights the need for strong biosecurity measures to manage the movement of eucalypt planting stock. Diagnosis includes morphology and specific PCR primers based on the ITS region. Control options are limited and good silvicultural practices are the best option.

Further Reading: Crous (1998) *Mycologia Memoir* 21:1-170; Jackson, *et al.* (2008) *Forest Ecology and Management* 255: 3931-3937; Maxwell *et al.* (2003) *Mycological Research* 107: 351-359.

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