Symptoms and Signs of Fungal Diseases in *Corymbia ficifolia* in Urban and Natural Environments in Western Australia

Endah Yulia        Bernard Dell
Giles Hardy         Paul Barber

Murdoch University,
Perth, Western Australia
C. ficifolia are commonly planted as street trees and produce a range of different coloured flowers.
Nevertheless...

Canker leading to *C. ficifolia* decline on mature trees in urban environment.
*C. ficifolia* death caused by severe canker on mature trees in urban environment.
*C. ficifolia* bark crack/splitting sporulation (arrowed) of *Quambalaria coyrecup.*
Extensive perennial canker of *C. ficifolia* caused by *Quambalaria coyrecup*. 
Shoot dieback and leaf spot symptoms and signs on *C. ficifolia* in the southwest WA and Perth urban.
± 2 years

± 14 years

± 23 years

Approximate ages of *C. ficifolia* trees and the development of decline symptoms.
Aims of the study were to determine:

• and compare the incidence and severity of fungal diseases of *C. ficifolia* in the urban and native vegetation in Western Australia,

• the fungi causing cankers in *C. ficifolia*, and

• the relationship between tree crown structure and DBH and disease incidence.
Methods:

*C. ficifolia* in Perth urban and Albany, Denmark, Walpole, Augusta and Margaret River town centre were sampled.
Methods:

*C. ficifolia* in natural stands located at Walpole Nornalup National Park were sampled.
• DBH, tree height and crown indices were assessed and correlated with fungal diseases.

• Symptoms and signs were recorded.

• Samples above and below ground were collected.

• 405 trees were assessed.
Results:

- Percentage of canopy density ranged from 38.6 to 100%; and crown density 5 to 95%.

- DBH and height in urban area ranged from 5-90 cm and 2-16 m; and from 8-104 cm and 2-18 m in natural stands.

- No correlation between disease incidence and crown indices.
Cankers were mostly linked to older trees.

Most mature trees in urban areas suffered from cankers. Cankers were commonly associated with symptoms of flagging and dieback.

No cankers were found in natural stands.

Target-shaped perennial cankers were caused by *Quambalaria coyrecup*. 
Correlation of tree DBH with cankers

DBH class

- 1 = 5-30 cm
- 2 = 31-50 cm
- 3 = 51-70 cm
- 4 = 71-90 cm
- 5 = >90 cm

Frequency (%)

Trees with cankers

Trees without cankers
Pathology trial:

Canker *C. ficifolia* seedlings 12 weeks after inoculation with *Q. coyrecup*. 
Results: foliar disease

- Foliar diseases were present on all age classes of *C. ficifolia*.
- The most common symptom was leaf spot.
- Insects were frequently observed within foliar fungal lesions.
- Shoot blight was observed only in the southwest region.
• Insect galls on *C. ficifolia* associated with dead stems occurred in urban areas and in native vegetation.

• Some species of oomycetes and soil-inhabiting fungi were isolated from *C. ficifolia* rhizosphere.
Results: isolated fungi

Fungal genera associated with diseased *C. ficifolia*:

- *Acremonium*
- *Eucasphaeria*
- *Blastacervulus*
- *Paraconiothyrium*
- *Quambalaria*
- *Teratosphaeria (Kirramyces)*
- *Neofusicoccum*
- *Lazia*
- *Pseudoplagiostoma*
- *Sydowia*
- *Phoma*
- *Amphilogia*
- *Penidiella*

- *Phytophthora* (oomycete)
- *Pythium* (oomycete)
**Conclusion:**

- *C. ficifolia* in urban areas are in decline, with 33.3% of trees in severe decline.

- Cankers were the most significant disease in the urban environment.

- Trees are frequently removed due to severe cankers in urban areas.

- Canker was caused by *Quambalaria coyrecup*.

- Fungal leaf diseases although widespread were less important in the urban environment and were rare in natural stands.
Thank you