

## Tree ferns (*Cyathea* spp.): reproductive versus fungal spores

*Tree ferns belonging to the genus Cyathea are very large ferns with tall trunks and they are native to eastern Queensland and northern New South Wales.*

The main reproductive structures in tree ferns are spores which are located on the underside of the fronds inside clusters of sporangia called sori. The sporangia which contain the spores are yellow or brown coloured and appear as raised spheres. The different patterns and shapes of the sporangia identify the different families of ferns.

In 2013, I sampled some tree fern fronds from a northern Queensland nursery which had black spots on the underside of the fronds where

sporangia would be expected to be located. These black spots have now been identified by the Department of Agriculture, Fisheries & Forestry in Mareeba as fungal organisms called *Lauterbachia filicina* or *Rhytisma filicina*. The common name for this fungal pathogen of tree ferns is tar spot and the young, dark fungal structures enter the frond through a stoma where they disrupt the frond epidermis. The tar spot dark fungal structure is relatively flat, rather than raised like sporangia.

The photos below show (left) the spherical, raised, brown structures which are the sporangia that contain reproductive spores and (right) the flat, black, fungal structures of tar spot which is caused



*Cyathea* sp. reproductive spore sacs (sporangia) on underside of frond. Cairns, January 2014  
(image supplied by NGIQ)



*Cyathea* sp. with tar spot pathogenic fungal structures on underside of frond. North of Cairns, August 2013  
(image supplied by NGIQ)

by the disease-causing fungi, *Lauterbachia filicina* or *Rhytisma filicina*.

To prevent this fungal disease from infecting tree ferns in production nurseries, good drainage, adequate airflow, and optimal water and nutrition in pot plants is required. Critically important in preventing the disease from spreading throughout the nursery are hygiene practices that remove the dead or diseased fronds and sterilise nursery surfaces and equipment, because these fungal spores can overwinter in decaying material and spread the disease from year to year in the nursery.

Unfortunately, as at January 2014, there are no fungicides registered with the Australian Pesticide & Veterinary Medicine Authority (APVMA) to specifically manage *Lauterbachia filicina*, *Rhytisma filicina* or tar spot.

#### References:

- Australian National Botanic Gardens
- Biosecurity Queensland
- Department of Agriculture, Fisheries & Forestry, Queensland
- International Mycological Association
- New Zealand Journal of Botany
- Australian Pesticide & Veterinary Medicine Authority (APVMA)

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