



Saving Queensland's Myrtaceae from myrtle rust

Fiona Giblin, Tracey Menzies, Geoff Pegg
Department of Agriculture and Fisheries



DAF proudly acknowledges all First Nations peoples (Aboriginal peoples and Torres Strait Islanders) and the Traditional Owners and Custodians of the country on which we live and work. We acknowledge their continuing connection to land, waters and culture and commit to ongoing reconciliation. We pay our respect to their Elders past, present and emerging.



Queensland
Government



Myrtle rust in Australia



- Rust fungus *Austropuccinia psidii*
- Originates from S. America - host is *Psidium guajava* (guava)
- Australia has 1 of at least 8 strains of myrtle rust
- Infects plants in the Family Myrtaceae
- Over 10 Myrtaceae species in severe decline
- Urgent need for conservation of species along eastern Australia

Myrtle rust conservation project (Qld/DAF/DESI)

Activities

1. Survey for survivors and potentially pathogen-resistant individuals or populations of *Rhodamnia rubescens* and *Rhodomyrtus psidioides* (Critically Endangered - listed in 2020 - EPBC* (*Environment Protection and Biodiversity Conservation Act 1999))
2. Collect germplasm for *ex situ* collections for insurance conservation, genetic analysis, and further research.
3. Examine the genetic diversity in populations to underpin species rescue programs.
4. Many others to collect: *Lenwebbia* spp. *Rhodamnia maideniana*, *Gossia inophloia*, *Archirhodomyrtus beckleri*, *Decaspermum humile*, *Tristaniopsis exiliflora* etc.



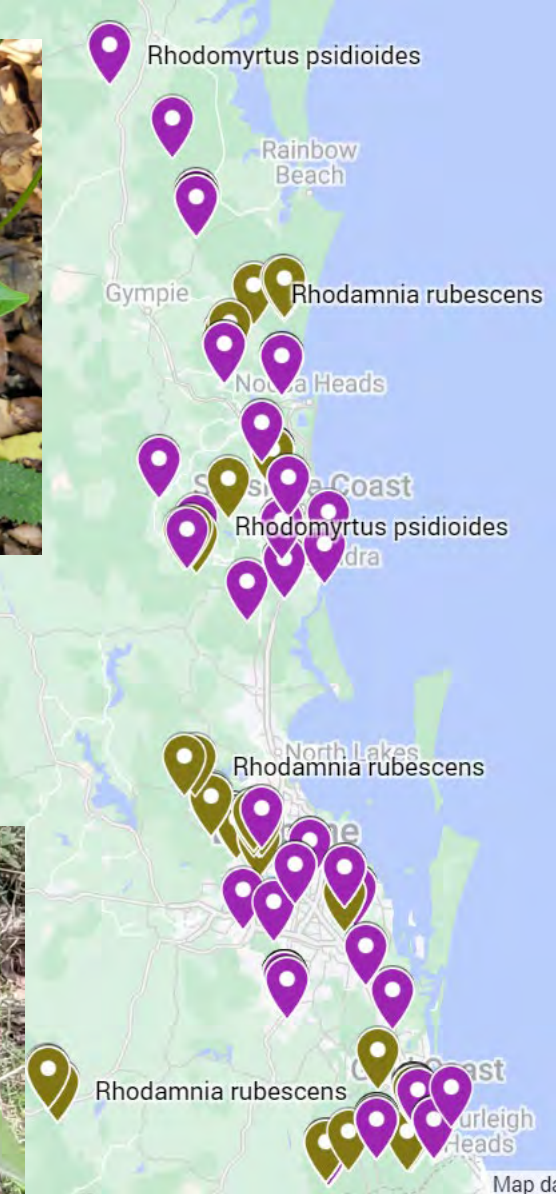
Germplasm collections (Qld)

Rhodomyrtus psidioides and *Rhodamnia rubescens*

- Collecting just in time
- Very few flowers and fruit
- Extensive dieback limiting cutting material
- Myrtle rust present at most sites

Rhodomyrtus psidioides: ~100 leaf samples and plants from 30 main sites. No mature trees.

Rhodamnia rubescens: ~50 leaf samples, 20 plants from 30 main sites. Some mature trees.



Screening germplasm under controlled conditions for potential resistance to myrtle rust

Previous work on species of commercial interest

- *Eucalyptus* and *Corymbia* spp.: Forestry industry
- *Backhousia citriodora*: Lemon myrtle industry
- *Melaleuca alternifolia*: Tea tree industry

Environment

- *Melaleuca* species (*M. quinquenervia*, *M. cardiophylla*)
- *Eucalyptus* species (*E. gomphocephala*, *E. xerothermica*)



Threatened species (*Rhodomyrtus psidioides*)

- Spore suspension ($\sim 5 \times 10^5$) sprayed onto plants (x3 each) as fine mist
- Plants moved into controlled environment room: 20°C, 80% RH for 24hrs
- Plants moved to shadehouse and assessed after 12 days and then 16 days

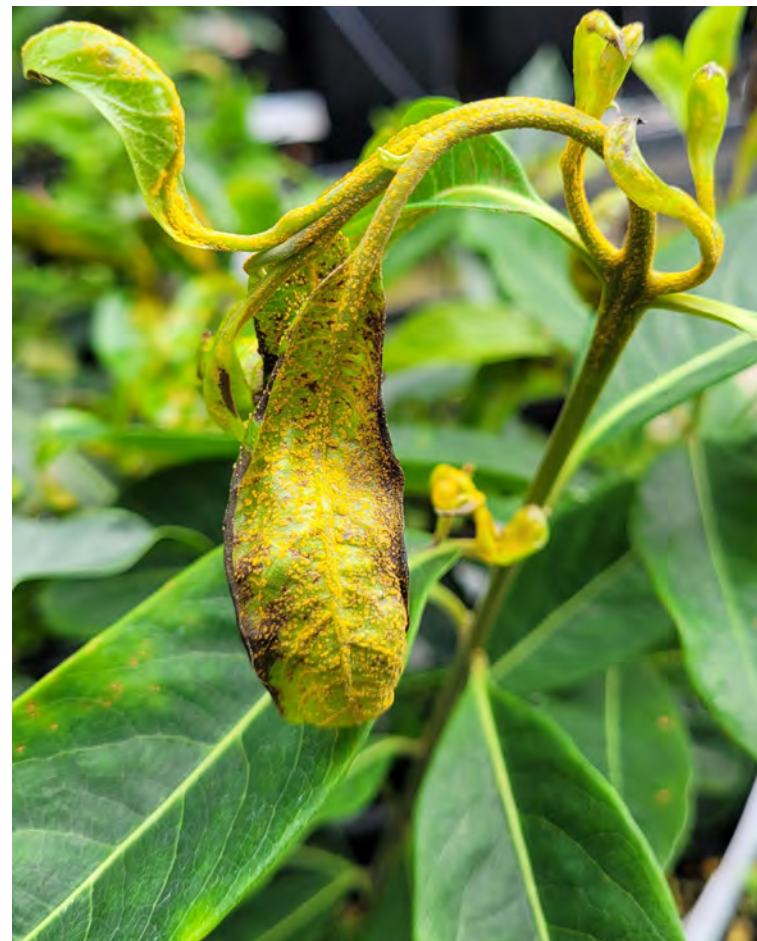
Preliminary Results



Rhodomyrtus psidioides

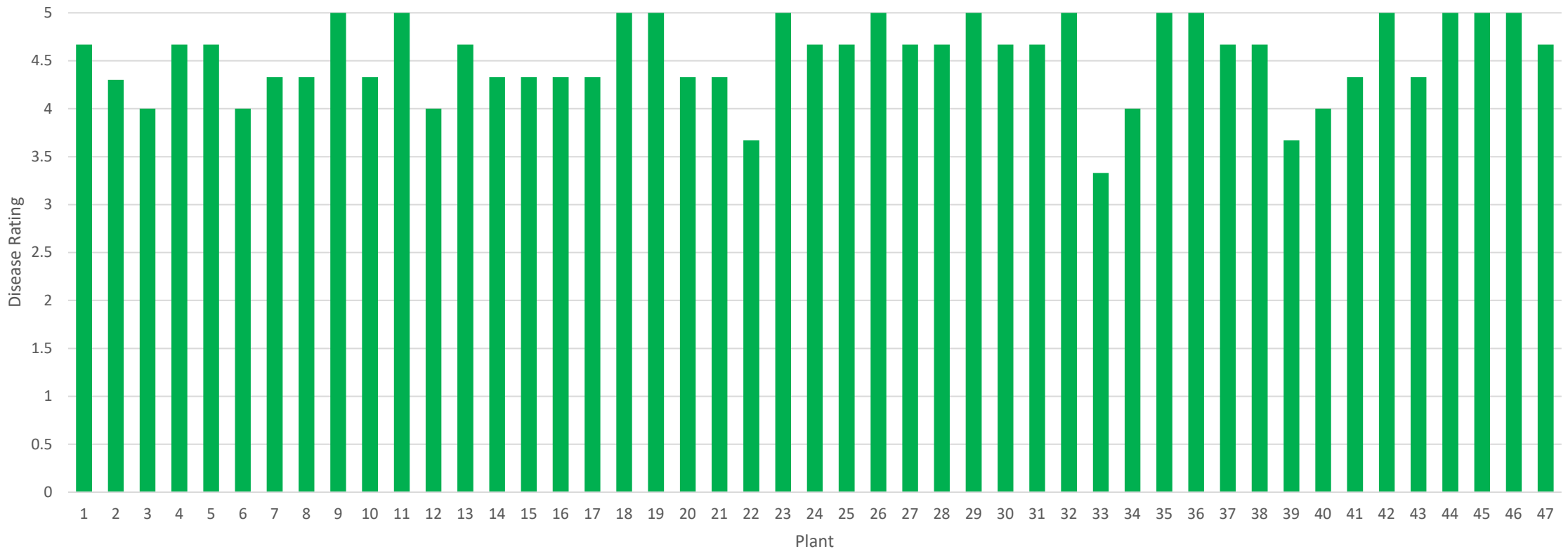
After 12 days
Pustules over entire leaf
surface

After 16 days
Large pustules, leaf curl,
necrosis



Results

Disease assessment for *Rhodomyrtus psidioides* 16 days post-inoculation with *Austropuccinia psidii*



22=1149764 Lamington NP
33=1149786 Jimboomba
39=1149822 Sunnybank

Considerations

- ❖ Is there evidence of tolerance or resistance to myrtle rust within populations?
- ❖ Are healthy plants just survivors or escapes (due to timing of new flush and presence of fungal spores)
- ❖ Can we develop a breeding strategy for this species?
- ❖ Hopefully other species show more variability in susceptibility



Jimboomba SE
Qld

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Logan City Council

Noosa Landcare

Land for Wildlife SEQ

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Holcim Australia PTY Ltd

Thank you

