Plant Treasures - in conversation

Disease precautions along the acquisition/maintenance/end-use spectrum

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What sort of collection? What sort of risks?

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Living plant collections can take various forms such as

- **potted collections,**
- **botanic gardens,**
- **arboreta,**
- **plantations,**
- **field genebanks**
- **seed production areas**

Which one, or which combination, will be factors in shaping your disease risk and response framework.

New flush on *Rhodomyrtus psidioides*, TABG Mount Annan, 2019.
Image: RO Makinson.

Disease planning and response will also be influenced by:

- **Your plant species and their bio-ecological characteristics**
- **The likely diseases and their characteristics (e.g. host-range, mode of action, vectors)**

Which diseases threaten your collection because they are just ambient in your area and climate?

Which diseases come mainly via your supply-chain?

Which diseases depend on (or are vulnerable to) your collection's housing, composition, and management?

How much can you do? It depends …

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Physical size, layout, and extent of the collections

Ambient and micro- environments, incl. controlled aspects (e.g. watering regime)

End-uses for which you are managing (current, and potential – may change!)

Neighbour, visitor, and manager considerations

Effects of disease prevention and treatment options

Is genetic and demographic (e.g. age) management required to meet end-use/s?

Collection refreshment strategy: will recollection from the wild be needed?

End-user client needs or stipulations, e.g. if supplying for eco-restoration

Your institutional/corporate philosophy: some have a 'no chemical' ethos.

… and of course, **budget, staffing, and competing priorities**.

Armillaria Root-rot fruiting bodies. Image: RBG Sydney.

It's all about anticipating risks.
Prevention is better than cure – but when that fails, a prepared response will count.

- Factor disease risk into plant acquisition, planting layout, collection management, collection end-use.
- Manage to reduce disease incidence.
- Study likely or high-impact diseases ahead of time – designate someone to do this (an in-house knowledge broker).
- Cultivate connections – with experts, knowledge hubs.
- Train and prepare:
  - Who will do what?
  - Under what conditions will we use chemicals?
  - Have we got the gear?
  - Is everyone trained and on board?
  - What are your parameters for triage and salvage?

Chemical use: depends on the problem. But always safety first. Get information, training, and permits before you need them.

Image: BM.

Disease precautions along the acquisition/maintenance/end-use spectrum

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Collection, exchange, donation, purchase

Avoid transport of disease: to or from the collection site and between target plants (e.g. soil on car and boots, *Phytophthora*; spores on clothes, Myrtle Rust; sap on cutters, phytoplasmas and viruses).

Disinfect equipment between sites, sometimes also between plants.

Particular precautions if going from a contaminated area to a 'clean' one (e.g. for Myrtle Rust, from east coast to western Australia – disinfect all gear, clothing, boots, hats).

Don't trust to luck or rely on people doing the right thing – audit processes, and make sure that they are.

If buying stock: Retail outlets, community nurseries, major wholesalers, and often botanic gardens. Assume risk in all supply chains.

Know your supplier and their systems. Ask to see their process or SOP documentation.

Quality control: Audit UPWARDS along the supply chain. Stipulate hygiene in all contracts. Monitor for problems and stay informed about what they might mean. Problem resolution may need senior management involvement and be awkward but necessary.

End-user perceptions: If you are a provider, audit DOWNWARDS. How is your stock health after end-use? Can you better advise the end-user? How do problems affect their views of your business/institution?

The Spectrum … continued

Reception, propagation, incorporation

Ensure sound hygiene practices:
e.g. disinfecting tools between plants to reduce the risk of disease (alcohol wipes)

Direct delivery of incoming plant material reduces the risk of pest/disease spread across sites or institutions.

All incoming material should be quarantined, monitored and treated if necessary, before introduction to other plant material.

Monitor regularly – develop a checklist of pests and disease symptoms relevant to the species you have. Train staff/volunteers on what to look for.

Bare-rooting and bleach-dipping incoming material. TABGMA 2019. Image: BM.

Depending on space, resources, and risks:

- **Pre-acquisition risk assessment**: What diseases are possible? Are staff equipped to recognise them?
- **Materials as vectors**: soil, fibre, old pots, etc.
- **Ambient risks** (e.g. airborne spores) and **Stage-related risks** (e.g. for propagation vs maintenance locations.
- **Develop a shortlist** of infrastructure, equipment, and training upgrades and costings (think EOFY!)
- **Broad-spectrum low-level disease** – what's trivial for some species may be significant for others, or for end-user perceptions.
- **Do some routine practices promote some diseases on some hosts?** e.g. misting vs drip.

Factor these into a value/risk/consequence matrix.

‘Variability’ collections made for other purposes can be invaluable for study of diseases and identifying resistant genotypes

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This Lemon Myrtle (*Backhousia citriodora*) multi-provenance plantation at Beerburrum, Qld, was established in 1995-96 to evaluate the best essential oil genotypes.

It gained new relevance after Myrtle Rust arrived in Australia in 2010. Lemon Myrtle is highly susceptible and industry plantations were severely impacted, but this array allowed a rapid finding that some lineages are more resistant.

If you have ‘diversity’ plantings like this, they may be of great experimental value, or as ‘sentinel’ plantings. Don’t get rid of them lightly!

Get to know researchers with an interest in your species/genus!

Images (2013) courtesy of John Doran

Disease (or pests) and consequences:
Be alert to perceptions: neighbours, visitors, clients.

Figs are doomed to death

By LILLIAN SALEH
Political Reporter

THE controversial "moreton bay massacre" will begin today despite a last-ditch effort last night to save the Domain's historic trees.

Eleven trees will be felled after they were deemed unsafe by the Botanic Gardens Trust.

Bulldozers moved in yesterday digging up the earth at the base of the trees along Hospital Rd in an effort to overturn the decision.

But a spokeswoman for the trust said work on removing the trees would begin today.

Sydney Lord Mayor Clover Moore was not available yesterday. Ms Moore, who is also the State Member for Bligh, is on holiday.

Dr Entwisle said the decision to cull the trees was made in the interests of public safety.

Critics have accused the trust of exaggerat-

Daily Telegraph 20 April 2004 Pg 6

Clover my dead body

Mayor warns developers and Domain tree loppers

By CHARLES MIRANDA
Chief City Reporter

YOU want to build a monstrosity or deprive Sydney of its trees? You'll need to get past Clover Moore first.

The new City of Sydney Lord Mayor staked out her territory at the council's first meeting last night.

Her message was that any vision for change would have to be put to her first.

Fresh from her holiday, Ms Moore entered Town Hall for the first time as Lord Mayor to lengthy applause from community supporters.

She wasted no time, putting developers on notice that traffic and building plans — and their environmental impact — would be firmly controlled by the councillors under a raft of new motions.

Even before the council meeting began a minute was distributed to the public recommending tree preservation orders be amended so the city had the final say on which trees were cut down in the future.

Ms Moore said the attempted destruction of fig trees in The Domain should not have been allowed without public consultation and council approval.

The motion to wrestle full tree-

She's back . . . new Lord Mayor of Sydney Clover Moore marshals her troops last night. Picture: CRAIG GREENHILL

A third item will see council apply his team of two would work construc-

● A STAND-OFF between the State

Sydney 2004: Repeated Psyllid infestations (a pest, not a disease), plus decay fungi, rendered some Moreton Bay Figs unsafe, and they had to be replaced with other species. Despite prior consultations and transparent process, there was strong reaction. Clips courtesy Tim Entwisle.

Leaf-spot (*Monochaetia* sp.) infection on Proteaceae. A broad-spectrum fungus, many hosts. Not necessarily lethal, but can reduce plant fitness, and is not a good look. Spores are spread by raindrop splash. Keeping potted plants on the ground invites this disease. Image: BM.

Finding good information takes time and networking

https://www.rbgsyd.nsw.gov.au/Science/Plant-ID-Disease-Diagnostic-Services (Royal Botanic Gardens, Sydney – similar advice units at some other metropolitan Botanic Gardens)

https://www.lls.nsw.gov.au/help-and-advice/pests,-weeds-and-diseases/disease-control/plant-diseases (NSW Local Land Services – similar advice services with all State/Territory Primary Industry agencies, and some NRM bodies.)

Industry & community sources:

Australian Pesticides and Veterinary Medicines Authority APVMA: https://apvma.gov.au/ (chemical info, off-label permits – but also talk to your local Primary Industry agency)

https://hortjournal.com.au/about/

https://www.greenlifeindustry.com.au/

Australian Native Plants Society http://anpsa.org.au/

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