

Development of molecular diagnostic tools for the detection of *Phytophthora cinnamomi* from cryptic soil samples in southern Australia

Nari Williams, Emer O’Gara,
Phillip O’Brien and Giles Hardy

Centre for Phytophthora Science and Management
School of Biological Science and Biotechnology, Murdoch University
Western Australia

n.williams@murdoch.edu.au

cpsm.murdoch.edu.au

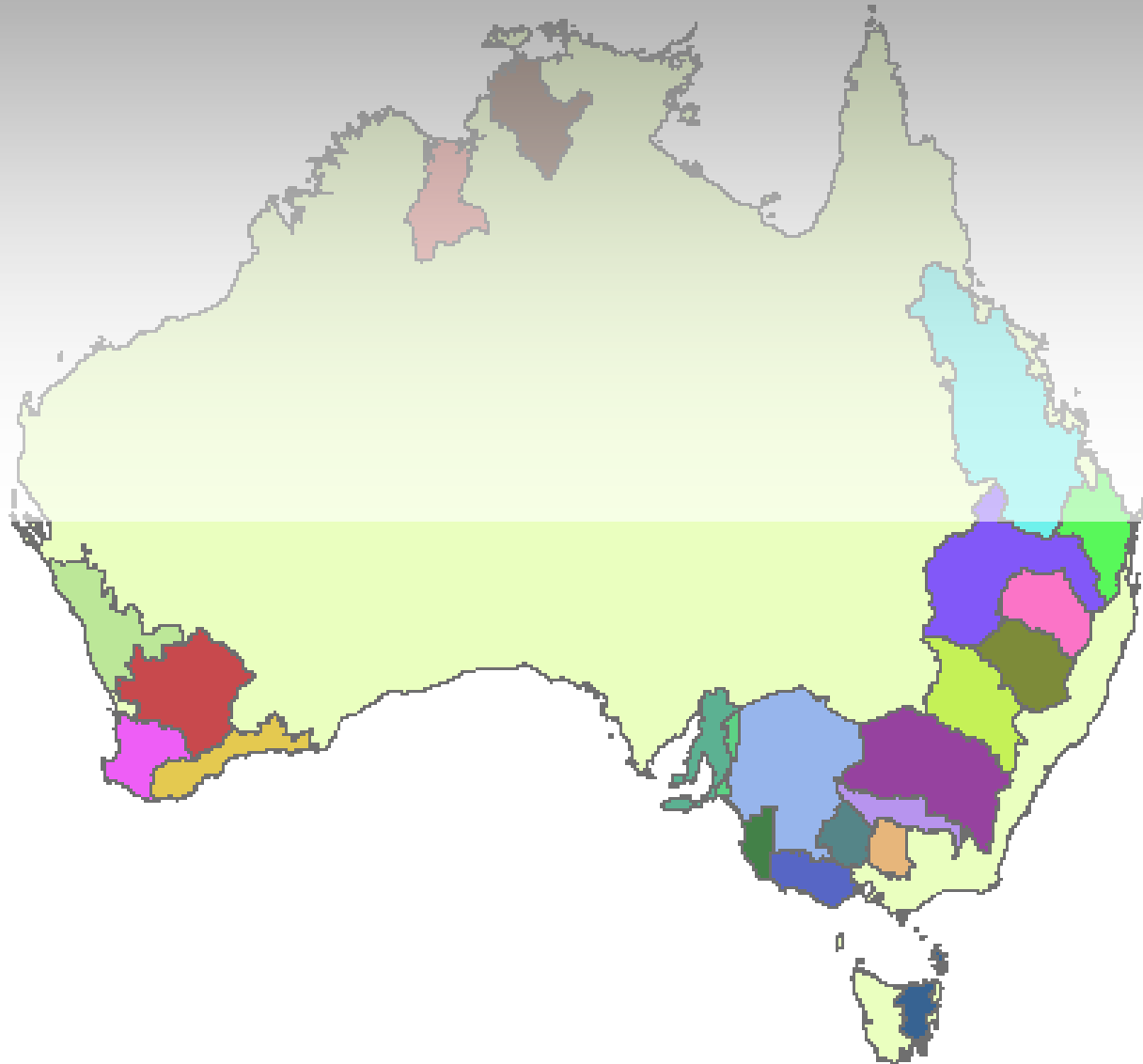


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Role of pathogen diagnosis in disease management

- Effective management of *P. cinnamomi* is reliant on the identification of dieback boundaries and detection from soil samples.

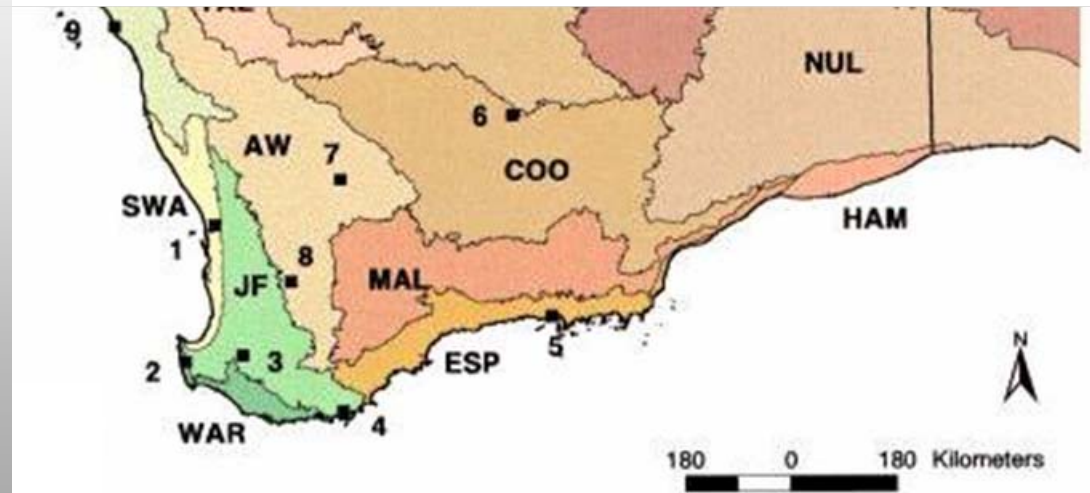
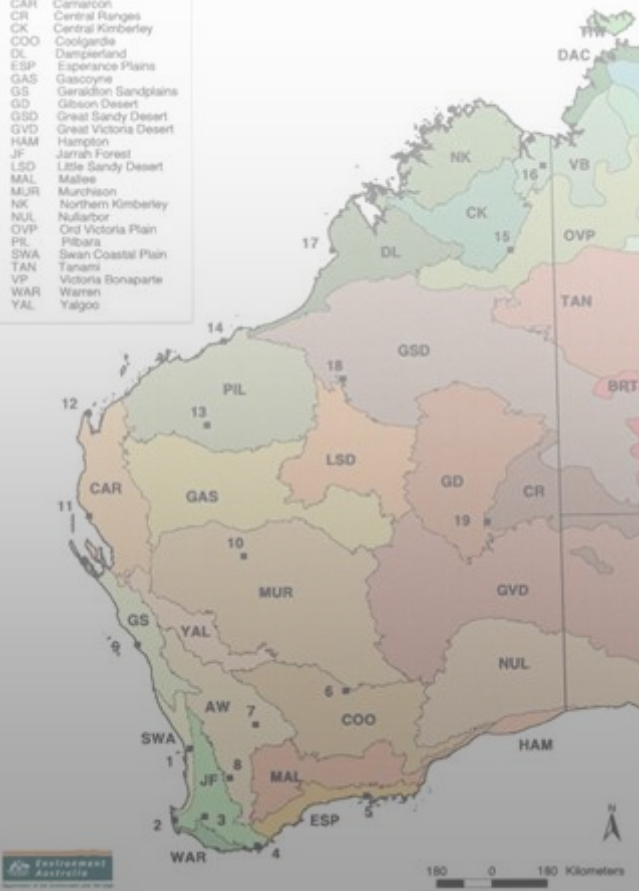
NRM Regions of Southern Australia



Eco-systems of Western Australia affected by *P.cinnamomi*

IBRA CODES:

AW	Avon Wheatbelt
CAR	Carnarvon
CR	Central Ranges
CK	Central Kimberley
COO	Coolgardie
DL	Dampierland
ESP	Esperance Plains
GAS	Gascoyne
GS	Geraldton Sandplains
GD	Gibson Desert
GSD	Great Sandy Desert
GVD	Great Victoria Desert
HAM	Hampton
JF	Jarrah Forest
LSD	Little Sandy Desert
MAL	Mallee
MUR	Murchison
NK	Northern Kimberley
NUL	Nullarbor
OVP	Old Victoria Plain
PIL	Pilbara
SWA	Swan Coastal Plain
TAN	Tanami
VP	Victoria Bonaparte
WAR	Warren
YAL	Yalgoo



Diagnostics in native ecosystems

Environmental factors have a direct affect on inoculum potentials and hence detection.

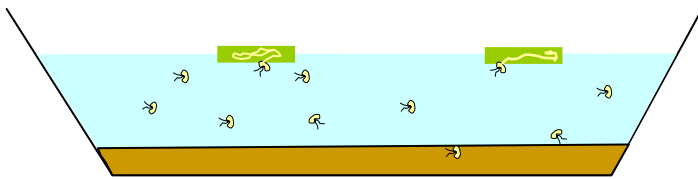
- Soil moisture
- Host species
- Geological substrate
- Soil microbial activity
- Hydrology
- Soil structure
- Soil chemistry

Targeted sampling

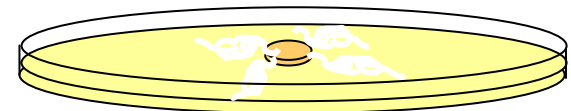


Current Testing Methods

- Culture based detection
- Limited throughput and sensitivity



Days 2-10

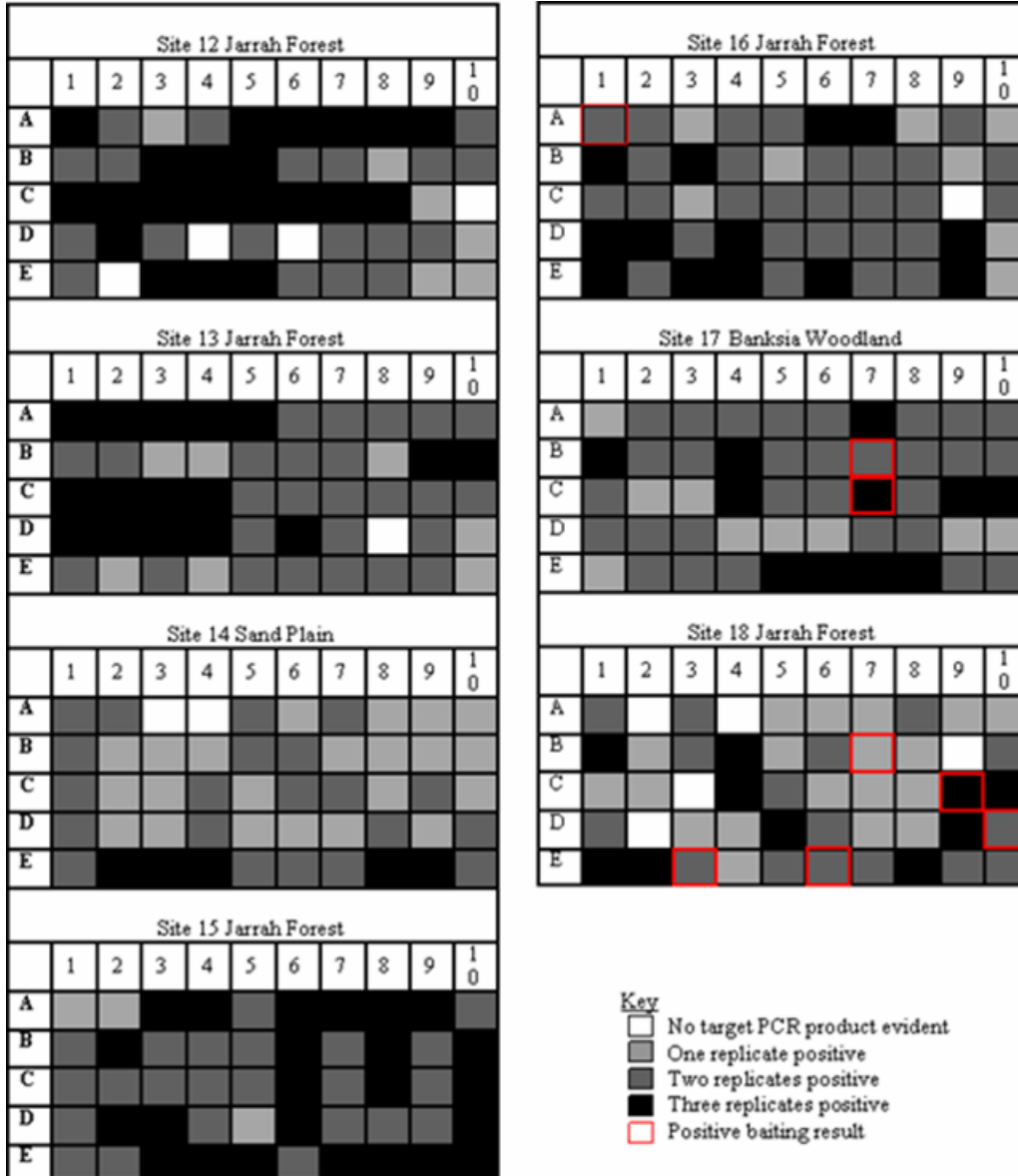


Days 7-14

Non-targeted sampling on cryptic sites



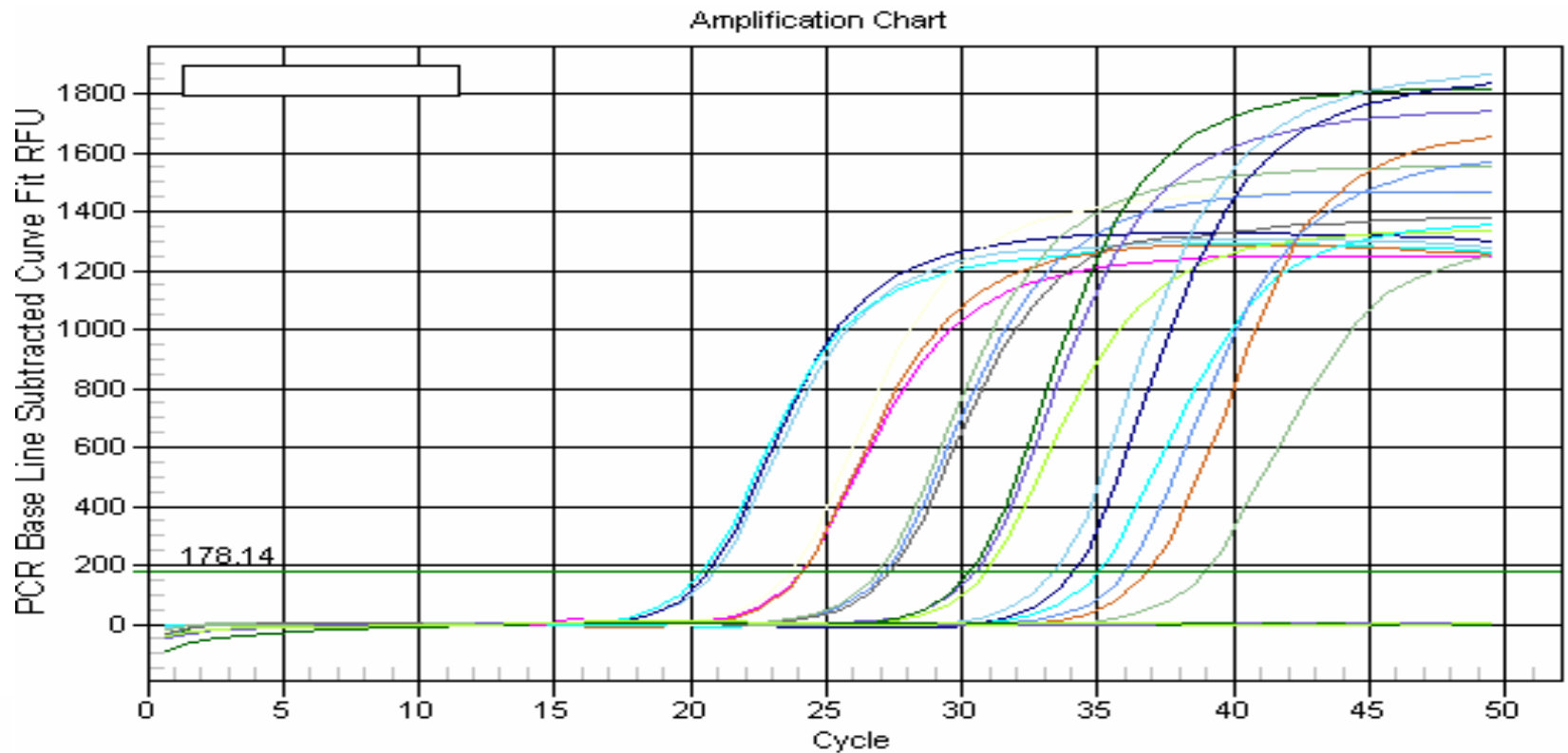
Baiting vs Nested PCR



Frequency of detection of *P. cinnamomi* from soil samples by baiting and nested PCR.

Real Time PCR

Quantification of target DNA



Where to from here?

- Testing on naturally infested soils
- Validation of TaqMan PCR by comparison with baiting.
- Variation in detection
 - Variation in inoculum levels
 - Seasonal
 - Vegetation types
 - Soil types
- Application of TaqMan PCR as a research tool

Where to from here?

- Expansion of the diagnostic tool box
 - Establish probes generic for all species of *Phytophthora*
 - New and emerging species
 - Multi-plex reactions
 - Targeting more than one species within a single assay

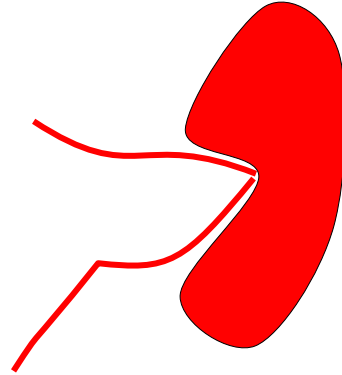


Thank you



♥ A

*Phytophthora
cinnamomi*



*Phytophthora
cinnamomi*

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