

Host, Pathogen & Environment

KAURILANDS | 20
SUMMIT 9 - 12 MAY
WHANGĀREI | 23

Looking at the role environmental factors play on disease expression and severity, pathogen spread and establishment, as well as investigating plant pathogen genomes

Key People

Juliane Chetham, Patuharakeke, Ngātiwai, Ngāpuhi; Chetham Consulting Ltd.
Nari Williams, Plant and Food Research

Background

Our research is looking into the role environmental factors and host responses play on disease latency and expression.

Using molecular approaches, our team has investigated how the pathogens that cause kauri dieback and myrtle rust infect their hosts, exploring options to specifically disrupt key pathogen proteins critical to overcoming host defences.

Highlights:

- We have implemented the Climatic Risk Model, allowing public access to myrtle rust weather risk information.
- We have assembled a new, high-quality *Phytophthora agathidicida* genome. This will allow us to progress our understanding of both the pathogen and the disease it causes.
- We have expressed and purified the first *Austropuccinia psidii* effector. This will progress our understanding of how myrtle rust occurs and help find new strategies to stop its spread.
- Grant Smith presented an overview of his *Austropuccinia psidii* effector assay research at the Effector Symposium at the University of Canterbury in 2022.
- We attended the 2022 IUFRO (International Union of Forest Research Organizations) conference in California and were successful in our bid to host the 2024 IUFRO – Phytophthora in forests and natural ecosystems conference in New Zealand.
- We have established glasshouse and field trials to quantify the spread of *Phytophthora agathidicida* both within the host and through the soil.



The Patuharakeke Taiao Unit surveying the ngahere. Image thanks to Host, Pathogen & Environment.

“It’s a whole-of-ngahere approach that coalesces really well with our Te Ao Māori thinking (and sits alongside our own mātauranga). We don’t just want to look at what the pathogen is doing or unhealthy trees, we want to look at what makes the ngahere healthy or unhealthy, and how is the pathogen moving through our ngahere – or not.”

Juliane Chetham

Patuharakeke, Ngātiwai, Ngāpuhi