

## Nau mai, haere mai

Welcome to the 10th issue of PHELosophies. We celebrate this milestone by highlighting the diversity of work being undertaken at PHEL and beyond by our dedicated team.

After years of disruptions from the pandemic, we have welcomed the latest opportunities to invite students (page 1) and other science professionals (page 5) into our laboratory. As international borders reopened, PHEL scientists were back in the Pacific Islands delivering training workshops (page 5) and helping set up pest surveillance (page 6).

PHEL is growing for the future. This includes designing a purpose-built facility in Mt Albert (page 8), developing our own herbarium (page 10) and refurbishing our current facility to create new laboratory spaces (page 11).

We have been working with New Zealand's tomato industry throughout the PSTVd biosecurity response (page 3) and conducting greenhouse trials to develop early-detection methods from wastewater (page 4).

We hope you enjoy this issue!

- Eloise Hollins



Little fire ants (*Wasmannia auropunctata*) are extremely tiny, barely visible in the field. They have a notoriously strong sting for an ant of its size. This is an unwanted ant. It is not present in New Zealand, but is present in Australia and the Pacific. Photo: Jiawei Shen.

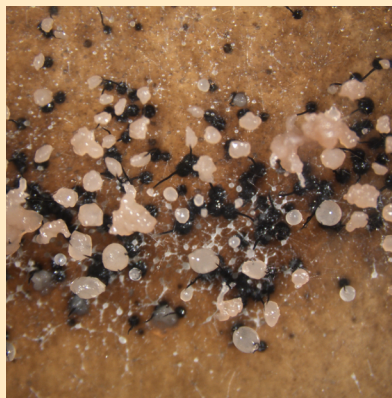
## PATHOGEN PROFILE: *Ceratocystis* species

**Status:** Exotic, many species in this genus of fungi are unwanted organisms. To date, only a *C. fimbriata* strain that infects kūmara is known to be present in New Zealand.

**Symptoms:** *Ceratocystis* species generally infect trees, exhibiting cankers and wilting, which can lead to sudden tree death. Characteristic streaking can often be observed inside the trunks of infected trees.

**Description:** *Ceratocystis* spp. can be weak to aggressive plant pathogens, colonising mostly the sapwood. While similar disease symptoms can be caused by other pathogens, *Ceratocystis* can be recognised by their characteristic fruiting bodies and spores. Most species produce fruity volatiles to attract insect vectors that help to spread these pathogens to other plants.

**Host range:** A wide range of hosts, mostly tree species. Some examples include kiwifruit decline in Brazil, caused by *C. fimbriata* (different from the kūmara pathogen); 'ohi'a dieback in Hawaii, caused by *C. lukuohia* and *C. huluohia*; canker stain of plane



Left: Black *Ceratocystis* fruiting bodies, producing sticky cream-coloured spore masses (Photo: PHEL).

Right: Characteristic wood discolouration caused by *Ceratocystis* (Photo: Manfred Mielke, USDA Forest Service).



trees, caused by *C. platani*; and mango wilt disease, caused by *C. manginecans*. While host specificity has been observed for some species, recent research has also demonstrated numerous host shifts.

**Impact:** Several species of *Ceratocystis* have been reported to cause significant dieback. They are most effective in infecting wounded trees and greatest damage is often associated with insect and mechanical damage. Therefore, maintaining good tree health is critical to reduce the impact of these pathogens.

**MPI's actions:** Strict controls are in place to prevent *Ceratocystis* species from entering New Zealand. PHEL tests all imported host plant material and local samples that are suspected to be infected with *Ceratocystis*, using a [sensitive real-time PCR assay](#) that was developed at PHEL. This assay enables detection and identification of any species in the genus.

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