

Fact Sheet—Isolation of New Fungal Species

September 2015

Summary

KVH is working with MPI on an ongoing investigation into symptoms recently identified on a Northland orchard. Three fungal species have been isolated from these vines and research will determine whether these fungal species have resulted in the symptoms observed. KVH is working with the orchard manager to minimise impacts and spread by ensuring good hygiene practices are followed and plant material does not leave the orchard. Growers are encouraged to monitor their orchards and report any similar symptoms.

Background

In early June 2015, a Northland grower observed Psa-like canker symptoms on kiwifruit vines. Samples from these cankers were tested for Psa but returned a non-detected result. Further analysis by MPI revealed the presence of three fungal species:

1. *Neonectria microconidia* (possibly pathogenic, i.e. disease causing)
2. *Clonostachys rosea* (possibly pathogenic)
3. *Pestalotiopsis telopeae* (unlikely to be pathogenic)

This is the first time *N. microconidia* has been formally identified in New Zealand, however the investigation has revealed that it has been here for at least two years. In 2013, Plant and Food Research (PFR) observed similar symptoms in Te Puke and isolated similar-looking fungi which were not identified to a species level at the time but were stored in culture for future analysis. As part of this investigation, MPI confirmed with DNA sequence analysis that these historical PFR isolates are the same species identified from the Northland orchard (*N. microconidia*).

Clonostachys rosea was found in canker samples on the Northland orchard. This fungus has also been previously isolated by PFR. *Clonostachys rosea* is known worldwide, including in New Zealand, but has not been reported from kiwifruit.

Pestalotiopsis telopeae is considered to be a species that exists in the general environment and is unlikely to be pathogenic to kiwifruit.

It is still uncertain whether either *N. microconidia* or *C. rosea* cause disease in kiwifruit and whether they have potentially contributed to the observed symptoms.

Description of symptoms seen

Northland:

- Symptoms were Psa-like exudate with swelling and splitting on and around the graft and surrounding bark (refer Figure 1).
- Cutting into the vine showed discolouration localised to within 10cm either side of the graft.
- Three plants died soon after the symptoms were observed and the remainder were removed.
- The location of infected vines within each block appears random with no obvious pattern of spread.

Te Puke:

- Red “fruiting bodies” were observed on the vine prompting scientists to collect a sample (see Figure 1). These were not seen in Northland, however are visible to the naked eye so are a key feature for growers to look for.
- In Te Puke there were no obvious symptoms around the graft, stem cracking was observed higher up the vine towards the canopy.
- This orchard was Psa-V positive, so typical Psa symptoms were also present.



Figure 1. Symptoms observed on infected vines. (Clockwise from bottom left) Bark splitting (Northland); Swelling around the graft (Northland); discolouration of the infected vine when cut into (Te Puke); the red “fruiting bodies” that were the most distinguishing feature in Te Puke but not seen in Northland. (Te Puke photos Joy Tyson PFR).

Determining the biosecurity threat

Pestalotiopsis telopeae is considered an environmental fungus which means it is not known to attack plants and is unlikely to present a biosecurity risk.

It is not known if the *Nectria*-like fungi (*Neonectria microconidia* and *Clonostachys rosea*) are causing the cankers, or if they are secondary invaders (colonising a plant that has already been infected by something else). *Neonectria microconidia* has been collected from a wide range of woody shrubs and trees in China and Japan but it is not known if it can cause disease in plants. It is also uncertain whether *Clonostachys rosea* causes disease in kiwifruit. Neither of these fungi have been recorded on kiwifruit overseas.

The detection of new fungal species is not unexpected given the advances in DNA technology. There are previous records of other *Nectria*-like species being isolated from kiwifruit in New Zealand. These other species are identical in appearance, and it is only recent advances in DNA technology that has allowed these samples to be distinguished as a new species.

Next steps

KVH continues to work closely with MPI on the ongoing investigation. As *N. microconidia* has been in New Zealand for at least two years, the investigation is not likely to result in a response. KVH is working with the affected orchard manager to minimise impacts and spread by ensuring good hygiene practices and that plant material does not leave the orchard.

KVH proposes commissioning research to determine if the detected species are the primary cause of disease or secondary infections and is working with MPI and PFR to determine what this research will entail.

Growers are requested to report similar symptoms

To better understand these fungi, growers who have observed similar symptoms either recently or historically should report this to Matt at KVH on 0800 665 825 or by emailing matt.dyck@kvh.org.nz.