

KVH Information Sheet

Neonectria: Symptom identification, monitoring and management advice for growers



Background:

A significant increase in the incidence of vine symptoms in Gold3 was reported from a block in a Motueka orchard in late 2018. Similar symptoms including trunk and leader cankers and cane dieback have been reported in other regions.

Neonectria microconidia is one fungal organism that was found to be commonly associated with the cankers seen in these vines. It is important for growers to identify and manage vines with these symptoms to avoid disease spread.

How does it spread?

Disease spreads when fungal spores on cankers enter vines through open wounds (e.g. girdling and pruning wounds). *Neonectria* spores can spread short distances naturally under the right conditions via wind and rain/rain splash or can spread further through the use of contaminated tools or by moving infected plant material. There appears to be a strong association with canker symptoms and old, unprotected pruning wounds.

Tool hygiene is key in helping minimise disease spread. Pruning in dry conditions and using wound protectants is also important. Windy or wet conditions allow for spores which sit on the external surfaces of the plant to be moved onto wound surfaces and neighbouring vines.

Sources of inoculum: Cankers are the main source of inoculum on the orchard. Infected plant material on the ground can also be an inoculum source so it is important to remove all infected material from the orchard. Mulching of infected material is not recommended as it can facilitate spread.

Symptom guide: What to look out for

There appears to be a higher incidence of *Neonectria* symptoms in Gold3 but it is also found in Hayward and male varieties. Vines of all ages have shown symptoms and should be monitored.

Typical symptoms include trunk and/or leader cankers. These cankers are often close to old pruning wounds. Other symptoms associated with *Neonectria* include cracking along infected trunks and leaders and cane and leader dieback. Patchy budbreak, and reduced leaf and fruit size can be an indicator of infection. See more detailed symptoms over the page.



Trunk cankers are often associated with *Neonectria*, although other organisms can also cause trunk cankers/swelling.

Leader cankers (swelling) and dieback

Leader cankers are a primary symptom. Cankers can be identified as swollen areas, often accompanied with cracking. These are usually associated with old, unprotected pruning wounds. Leader dieback can also develop when cankers have been present for some time.



Red spores

Distinctive red (fresh) and rusty brown (aged) fungal fruiting bodies may be found on pruned branch stubs and the bark of infected vines. These may be seen throughout the growing season but do decay quickly and so can be hard to find. However, disease is often present without evidence of red fruiting bodies. Also not all red *Perithecia* are *Neonectria*.



Cracking

Cracking on its own may not be a result of *Neonectria* infection but it is recommended to tag and monitor vines showing bark cracking.



Monitoring: How and when to monitor

Monitoring an orchard is important for several reasons.

By becoming familiar with what is “normal” for the site, anything new or different can be identified early allowing early symptom removal, as required.

Monitoring is a critical component of establishing disease presence, location, and extent so that it can be managed. It also provides feedback on the success of applied management strategies.

When:

- Regular monitoring is advised, starting shortly after budburst (October/November).
- Continued monitoring throughout the season is recommended.
- A second concerted monitoring round in autumn/winter should be completed to understand the level of risk on orchard and highlight any hot spots of infection.

How:

- Walk both sides of the vines, inspecting trunk and leaders for signs of swelling and/or cracking. Cane or leader dieback could be an indicator of vines that need closer inspection.
- All vines that are showing symptoms should be clearly tagged and labelled with date etc.
- Where cankers are obvious, it is recommended to spray paint/or tag to clearly identify where cankers should be removed (see image to the right).
- Plot where tagged vines are found to better understand the pattern of infection. This will help inform a management action plan.



Symptoms are usually found around the graft union – this includes cracking around the graft and swelling.



Why are we seeing an increase in symptoms?

Increase in symptoms may be due to a combination of factors, including:

- new cultivars
- environmental factors e.g. frost
- combination of pathogens
- stressed or aging vines
- build-up of inoculum

Management Advice: What to do if you see *Neonectria* on your orchard

Inoculum removal from the orchard the is key management action to prevent canker spread.

Current good practice advice is:

- monitoring and tagging rounds in spring and autumn to identify disease presence
- on-orchard hygiene, including a strong focus on tool hygiene. Methylated spirits or 10% chlorine bleach are suitable sanitiser options
- prune in dry weather
- protect wounds to prevent disease entry
- remove and burn infected material as soon as practicable. Do not mulch
- canker removal rounds will reduce spread through spores
- spring and autumn applications of copper are likely to help minimise risk of spread. Applying copper immediately before winter pruning will help suppress inoculum spread
- consider putting in a replacement plant in areas with higher disease incidence

Cut-out advice:

- a good time for cut out is during the spring monitoring round before fruit set, and before winter pruning rounds, ideally soon after fruit is harvested
- for leader and trunk cankers, cut back to clean wood. Recommended practice is to cut back 50cm beyond the canker to ensure infected material is removed
- disinfect tools after canker removal
- paint wounds after removing cankers

Propagation material (budwood, cuttings etc) must not be collected from vines showing any symptoms as this may mean wood from unhealthy vines is distributed to other orchards and may result in disease transfer. It is good practice to also have a buffer zone around infected vines, where material is not collected. Where symptoms are widespread across a block, propagation material should not be collected. Refer to the KVH budwood protocol available at www.kvh.org.nz.

*Note: This information sheet has been developed from current knowledge and assumptions, and recommendations will be updated as more is learnt about the life cycle of *Neonectria* in kiwifruit.*

