Surviving in warm environments as close as Australia, Brown root rot can be difficult to manage and can rapidly kill entire trees. Here is a guide on what to look for and how to control it.

What is brown root rot?

Brown root rot (Phellinus noxius) is a soil-borne fungal disease that is not present in New Zealand but is widespread in regions of Asia, Africa, Oceania (including Australia), Central America and the Caribbean. The fungus has a very broad host range, is difficult to control and can result in the death of multiple trees within an orchard.

As the fungus does not survive or spread at low temperatures, the disease is most prevalent in the warmer subtropical and tropical regions of New South Wales and Queensland Australia, making orchards in the far north of New Zealand most at risk if this pathogen was ever to be found in our growing regions.

What should I look for?

The name ‘Brown root rot’ refers to the brown to black mycelial crust formed by the fungus on the surface of infected roots. The most characteristic symptoms of this disease are seen at the base of the trunk where mycelial ‘stocking’ can be seen extending from the ground which looks like a dark coloured fungal sheath girdling the lower trunk, however this is not always present. This infection stocking may be bordered with a white margin during active fungal growth which turns dark brown with seasonal changes or as the disease progresses.

In most cases the whole canopy will suddenly wilt and die within just a few weeks. Leaves and fruit suddenly wilt and turn brown yet may remain attached to the tree for many weeks. Brown root rot can cause a rapid decline in trees of all ages yet foliage symptoms may take longer to develop in mature trees. By the time fungal stocking symptoms are seen around the trees base a rapid collapse of the tree may follow due to a girdling of the vascular system and widespread impacts to the trees roots and lower conductive tissues. When roots are able to be inspected these can appear encrusted with soil held together by the brown mycelium of the fungus.

Other root rots, like Verticillium wilt, can have similar canopy symptoms yet these will often be confined to a single branch or section of the tree. However, in Brown root rot the entire canopy will be uniformly affected which could also be confused with waterlogging or severe frost damage.

How is it spread and controlled?

The fungus usually spreads via root to root contact and through healthy roots coming into contact with infested woody material in soil. In some environments the fungus has the potential to spread through airborne spores when fungal fruiting bodies are present although this appears rare in avocado where fruiting bodies are seldom seen. Infected soil and plant debris could be easily spread within and between orchards through contaminated machinery/tools and infected wood movement.

With the ability for the fungus to survive for many years within wood debris in the soil, infected wood should not be chipped and used as mulch but isolated and burnt. When an infected tree is discovered the apparently healthy tree on either side of it should be removed as it is likely to be already infected in order to prevent them infecting the trees next to them. Root barriers are recommended around affected areas to prevent roots from healthy trees coming into to contact with contaminated root material. When attempting to replant affected areas the soil must be thoroughly worked and any tree wood or roots from infected trees must be removed and then the site fallowed to allow any remaining material to completely break down.

Who can I call?

Any unusual plant symptoms or plant pests you have noticed on your orchard can reported in confidence to the Ministry for Primary Industries (MPI) on 0800 80 99 66 info@mpi.govt.nz or by contacting NZ avocado 07 571 6147.