Manaaki Whenua
Landcare Research

TRADESCANTIA YELLOW LEAF SPOT FUNGUS

Kordyana brasiliensis

The Biological Control Of Weeds Book - Te Whakapau Taru: A New Zealand Guide ISBN 0-478-09306-3

History in New Zealand

The tradescantia yellow leaf spot fungus is native to Brazil. Permission to release this fungus was granted by the EPA in 2013. The fungus was imported from a CSIRO containment facility in Australia by Manaaki Whenua - Landcare Research in 2017. This fungus was introduced to New Zealand to complement the three beetles already working on reducing tradescantia biomass. Although the beetles have established well, it is expected that this fungus will assist in cooler areas, and those prone to flooding, where the insects struggle to establish. Field releases began in March 2018 and are on-going. The fungus has established and is showing early promise. This is the first time this biocontrol agent has been used anywhere in the world.

How would I find tradescantia yellow leaf spot fungus?

Infection begins when spores germinate on the surface of tradescantia leaves. This requires some moisture to be present. The fungus penetrates leaves through stomata present on the undersides, and about 10 days later, diffuse leaf spots appear on the upper leaf surface. These spots develop, expand and turn yellow to brown as the infected leaves die, but generally remain attached to the stem. Look for these distinctive yellow spots on the leaves, especially after wet, humid weather. Within 15 days of infection, the spot centres turn white underneath, and if humidity is high enough, new basidiospores form there. These spores are very small and lightweight and are easily spread through air turbulence. The whole cycle starts again as soon as they land on a new tradescantia leaf.

Occasionally, other pathogens are found damaging tradescantia leaves in New Zealand. Some pathogens, such as species from the genus *Colletotrichum*, produce brown to black lesions with sometimes a yellow border. Other pathogens exhibit brown to black lesions spreading from the leaf tip towards the base. However, the characteristic white spots on the lower leaf surface and the yellow spots on the upper leaf surface caused by the tradescantia yellow leaf spot fungus should prevent any confusion with other pathogens. You are also unlikely to confuse damage from the tradescantia beetles with the yellow leaf spot fungus.

Yellow leaf spot symptoms

Yellow leaf spot

The tradescantia leaf beetle (*Neolema ogloblini*) causes notching and skeletonisation of leaves, and the tip beetle (*Neolema abbreviata*) damages leaf tips. Adult tip beetles and adult stem beetles (*Lema basicostata*) make small holes in the leaves, and the stem beetle larvae cause stems to turn brown, shrivel and collapse.

See *Tradescantia leaf beetle*, *Tradescantia stem beetle*, *Tradescantia tip beetle*.

How does the fungus damage tradescantia?

The infection process damages the epidermis of the leaves causing them to shrivel and die prematurely.

Will the fungus attack other plants?

The yellow leaf spot fungus is highly host-specific and highly unlikely to attack anything other than tradescantia (*Tradescantia fluminensis*).

Tradescantia thinning out at a fungus release site

How effective is it?

It is too soon to know what impact the tradescantia yellow leaf spot fungus will have, on its own or in conjunction with the tradescantia beetles. However, the four agents are expected to complement each other,
and a monitoring programme has been set up to measure their effectiveness. Laboratory studies suggest that the tradescantia smut grows best at temperatures around 20˚C. Some promising early results have also been seen in the field.

How can I get the most out of this agent?

The yellow leaf spot fungus will disperse naturally via spores on air currents. However, if help is needed to establish the fungus, especially in more remote areas, then it will be necessary to put potted, infected plants out at these sites. Firstly, put healthy plants out at sites where the fungus is present until symptoms appear on them. Infection should occur readily in this manner (note that it is not possible to work with the tiny fragile spores as they cannot be grown on artificial media).

The fungus can infect tradescantia plants most effectively at temperatures between 16 and 22°C, and it requires a long period of high humidity. A release during high rainfall will assist with the successful establishment of this pathogen. Note that if you wish to propagate and move tradescantia plants around in this manner you will need an exemption from the Ministry for Primary Industries.

How do I select a release site?

Read *Guidelines for selecting release sites for biocontrol agents.*

Tradescantia is usually present in damp shaded areas but choose release sites that are sheltered from wind and sun where the leaves are more likely to remain sufficiently moist. Sites should also be safe from frost, fire and human interference such as spraying and slashing.

How do I manage the release sites?

Avoid any activities that will interfere with the yellow leaf spot, such as herbicide or fungicide application. If you need to undertake control measures, then avoid this site.