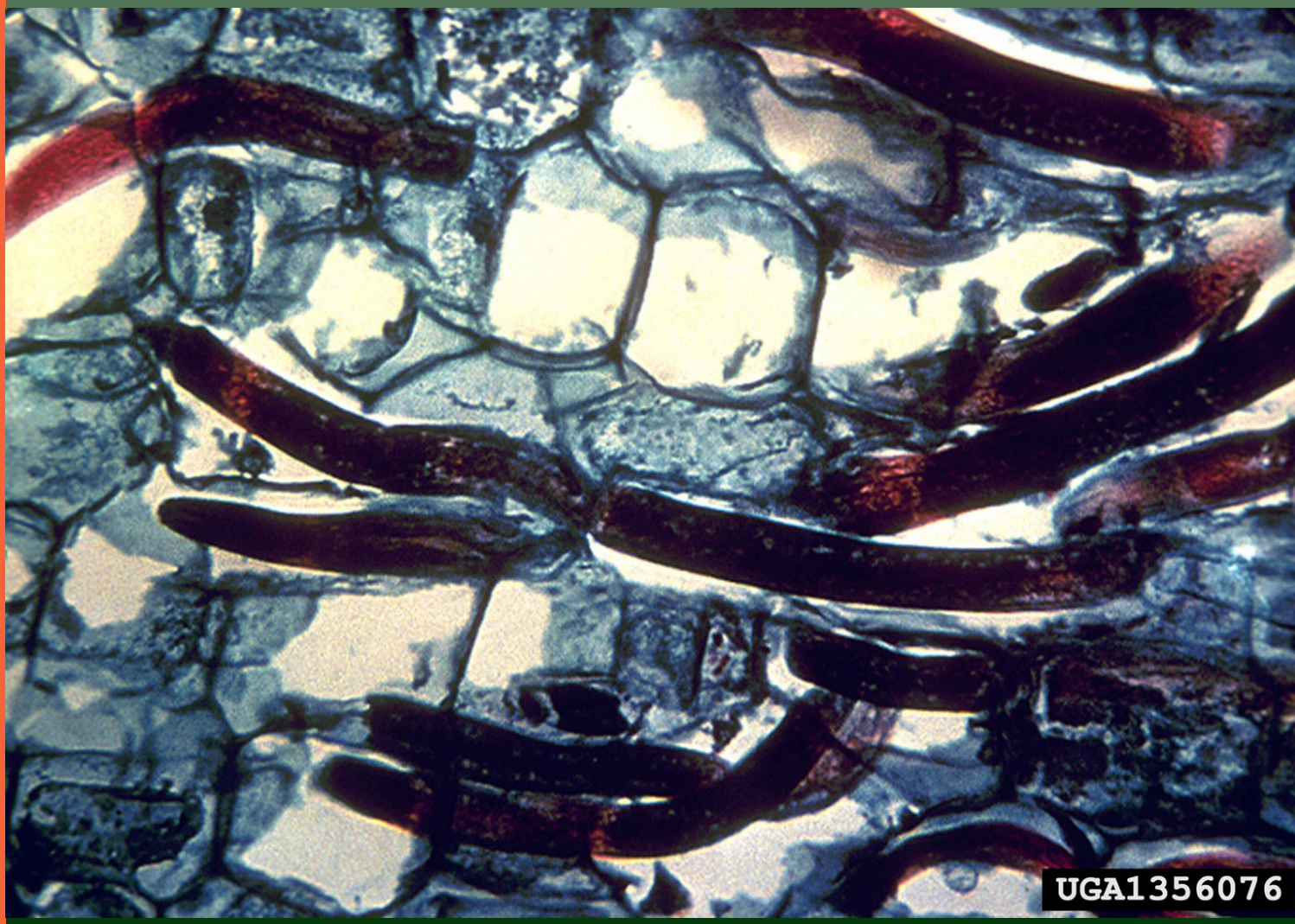
EXOTIC PEST - FOR SUSPECT DETECTIONS CALL THE HOTLINE ON 1800 084 881

Burrowing nematode (exotic pathotype)

(*Radopholus similis*)

EXOTIC PEST DETECTION & SAMPLING GUIDE



This resource has been developed as part of the collaborative program 'Boosting diagnostic capacity for plant industries'. Funding for this project is from the Rural R&D for Profit Program, Federal Department of Agriculture and Water, and the Grains Research and Development Corporation, with funds from other RDC's – Sugar RDC, Wine Australia, Cotton RDC, Forestry RDC, and Hort Innovation.

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Background

The Burrowing nematode is a significant parasite of banana and tropical fruit. It is commonly found in tropical regions of Africa, the Americas and the Asia Pacific region, including Australia. Although this species is present in Australia, exotic pathotypes represent a biosecurity risk. This includes Fijian pathotypes, which can parasitise a more expansive range of host plants, including ginger, potato, tea, and maize (this is not the case for Burrowing nematode populations currently found in Australia). Introduction of an exotic pathotype of Burrowing nematode could result in a broadened host range and distribution, and higher yield impacts in comparison to what is currently observed from Australian populations.

How would I identify Burrowing nematode?

Identification by morphology

The Burrowing nematode is a small, elongated, parasitic worm of microscopic proportions. Adults are <1mm long with average lengths of 550-800 µm for females, and 500-600 µm for males.

Larval stages of the Burrowing nematode are morphologically similar to adults and are smaller again in size. They are generally found in roots, soil, or rhizomes. Eggs are small, spherical and are deposited within root cortexes. Females lay 3-5 eggs in the cortex of necrotic root cells before migrating to healthy tissue to feed.

Identification by damage

The Burrowing nematode is a root feeder that can be found in soil or in plant root tissue. It is usually found around root tips, however it can be found throughout the root length and in surrounding soil. Infestation can result in slow growing plants with withered or yellowing leaves, red steaks around anchor roots, or root rot.

Other symptoms include toppled plants after rainfall, evidence of stunted growth, chlorosis of plant tissue or premature fruit drop – these symptoms all suggest a compromised root system that may be indicative of Burrowing nematode infection.

How do I scout for Burrowing nematode?

Look for evidence of root damage, slow growing plants, and chlorosis. Inspect roots for evidence of red steaks around anchor roots, or root rot in the area around anchor roots.

Be alert for evidence of Burrowing nematode infecting unusual host plants as this may suggest an exotic pathotype. Plant roots with evidence of Burrowing nematode infestation that are not typically parasitised should be investigated.

Could it be confused with an endemic species?

This species is already present in Australia and it is not possible to morphologically differentiate between exotic and local pathotypes. Growers should be alert for evidence of unusual Burrowing nematode parasitism on crops where activity is not usually observed.

Identification of exotic pathotypes are likely to require molecular analyses or laboratory host trials.

Figure 1. Burrowing nematode on Anthurium (left) compared to non-infected root system (right)

Figure 2. Uprooting of banana plant resulting from roots destroyed by burrowing nematode (*Radopholus similis*)

Cover image: Sthephen A. Lewis, Clemson University, Bugwood.org
Image 1: Roger Lopez-Chaves, Universidad de Costa Rica, Bugwood.org
Image 2: Nemapix , Bugwood.org

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What should I do if I suspect an exotic pathotype of Burrowing nematodes?

Exotic pathotypes of Burrowing nematode are a biosecurity risk to host industries. If nematode damage to an unusual host plant is suspected call the **Exotic Plant Pest hotline on 1800 084 881**. The hotline will divert you to the appropriate state biosecurity agency, which will investigate the suspect detection further. To support an investigation you should take note of:

- The detection location (take a GPS coordinate using your phone);
- The host plant on which the suspect detection has been made;
- Damage symptoms (e.g. root rot); and
- A photo of all life stages observed (a good quality camera macro lens will be needed) and/or photos of plant damage.

Taking a sample

Taking a sample will also assist in a biosecurity investigation. Collect damaged plant parts, in which nematode specimens may be present, and place in a ziplock bag – double bagging of specimens is ideal. Ideally, collect several plant samples from random locations in the paddock. Label the bag with the date and collection location and keep in the fridge in case the sample is needed by the biosecurity agency.

Figure 3. Reporting decision making for Burrowing nematode (*Radopholus similis*)

You have detected signs of nematode damage, including stunted growth, premature fruit drop, and/or withered or yellowing leaves in crops which are not usually affected, including ginger, potatoes, tea or maize. **Should you report it?**

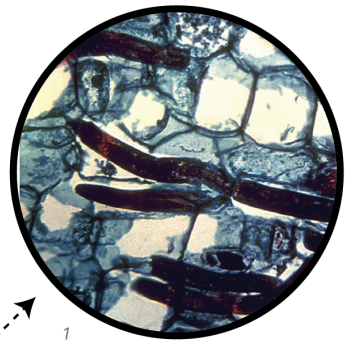
If you answer yes to the following question, it could be an **exotic pathotype of the burrowing nematode** (*Radopholus similis*). Report it!

1. When you dig around the roots of the affected plant, do you find red streaks on roots and/or root rot? **Yes**
2. Have you found this damage at an unusual level in a banana or tropical fruit crop OR have you found this damage at any level in any other type of crop? **Yes**

Additional possible signs

- You won't be able to see any life stage of the burrowing nematodes by eye as a microscope is needed.

Burrowing nematodes are already present in Australia, but our current pathotypes are generally restricted to banana and tropical fruits. Any damage in other crops should be reported!



[1] Sthephen A. Lewis, Clemson University, Bugwood.org, CC BY NC 3.0

Figure design and all other illustrated components: Elia Pirtle, eliapirtle.com

More information

CABI, Burrowing nematode data sheet