

DPI Primefact

Guava root-knot nematode

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Guava root-knot nematode (*Meloidogyne enterolobii*) is a serious pest of many agricultural crops. It has a very wide host range and attacks plant roots, causing galling and reducing yields. The damage it causes increases the plant's susceptibility to secondary diseases such as root rots.

Where is it?

Guava root-knot nematode (GRKN) was discovered for the first time in Australia in the Northern Territory (NT) in October 2022, then in Queensland in December 2022 and again in February 2023. It is currently not present in New South Wales. Countries with the pest include Central and South America, Africa, Asia, and some European countries.

Crops affected

Guava root-knot nematode attacks a wide range of crops including:

- sweet potato
- soybean and common beans
- cotton
- coffee
- cucumber
- tomato
- eggplant
- capsicum
- chilli
- zucchini
- melons
- ginger
- guava
- pumpkins.

Guava root-knot nematode has been identified as a high priority pest in the biosecurity plans for the sweet potato, ginger, papaya, potato and vegetable industries.

What is it?

Guava root-knot nematode is a plant-parasitic nematode (roundworm) that attacks the roots of many crops. It is considered a significant pest because of its wide host range and high reproduction rate. It causes severe abnormal growths and affects crop yield.

GRKN is microscopic, making it extremely difficult to detect early in the soil or before symptoms appear on infected host plants.

What are the symptoms?

The most typical symptoms are severe gall formation on roots and stunting or wilting of plants that looks similar to water stress. The damage caused by GRKN affects the plant's ability to uptake nutrients and leaves it susceptible to secondary pathogens.

Symptoms to look for include:

Knots or galls on roots: the most noticeable symptom of GRKN is knots or galls on the roots of the plant (Figure 1 to Figure 3). These knots are caused by the nematodes burrowing into the roots and reproducing, which causes the plant to respond by producing thickened root tissue.

Stunted growth: plants infected with GRKN often show stunted growth with smaller leaves.

Wilting and yellowing of leaves: plants might have yellow and wilted leaves. This is caused by the nematodes damaging the root system, making it difficult for the plant to absorb enough water and nutrients.

Root tip discoloration: the root tips of the infected plant might appear brown, black, or discoloured.

Reduced yield: plants often produce smaller and increasingly fewer vegetables or fruits, resulting in reduced yield. Underground crops, such as tubers, are directly affected as galls and knots reduce product quality.



Figure 1. Sweet potato infected with guava root-knot nematode, showing galls, knots and cracking. Nematode egg masses are inside the root (right). Photo: Hare (2019).



Figure 2. Guava root-knot nematode damage on the base of a vegetable plant. Photo: NT Department of Industry, Tourism and Trade, 2022.



Figure 3. Tomato infected with guava root-knot nematode, showing severe root galling. Photo: QLD Department of Agriculture and Fisheries, 2023.

Spread and dispersal

The main way the pest is spread is by moving infested plant material (host plants with roots) or soil (on its own or attached to equipment, machinery or plant parts). It can also be spread from one property to another through infested soil attached to footwear and hand tools. Good biosecurity hygiene practices are essential to reduce the likelihood of spread. The GRKN itself can move a few metres every year in the soil.

Irrigation water can also be a dispersal mode.

How to reduce the risk of getting GRKN?

- Good biosecurity and hygiene practices are essential.
- Manage people, machinery, equipment, plant and soil material coming on and off your property. This could be done by implementing a Biosecurity Plan for your farm. An example can be found on the [NSW DPI website](#).
- Adopt a 'come clean, go clean' approach on your property, especially when using foot baths and vehicle washdown stations.
- Understand the early symptoms.
- Only source clean seeds, planting material, and growing media from trusted plant material and equipment suppliers.
- Reduce all soil movement on and off the farm to a minimum.

What to do if you suspect GRKN?

1. If you suspect GRKN, call the Exotic Plant Pest Hotline on **1800 084 881** and report it.
2. Stop all movement to and from the area of the farm that is potentially infected until you receive laboratory confirmation.
3. Ensure staff follow on-farm biosecurity hygiene practices.
4. If requested, collect plant samples and send them to the laboratory for testing.
5. The test results might come back negative but until then, think about:
 - where those plants came from and any other tracing information that might be useful
 - any interactions between those plants and other plants on the farm; were the same stock used in other blocks?
 - any information that might assist
 - how to limit the spread of infection.



Further information

Business Queensland. 2023. [Guava root-knot nematode](#).

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- Liu C, Grabau ZJ, and Desaeger J. 2022. [Guava root-knot nematode *Meloidogyne enterolobii*: EENY-793/IN1372](#), 9/2022. *EDIS*, 2022 (4).
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