

Pest

Meloidogyne enterolobii (Guava root-knot nematode)

Date

8 November 2022

Location

Middle Point, Northern Territory



5384245

Situation

Meloidogyne enterolobii (Guava root-knot nematode) was first detected in a sample of cucumber roots from a property at Middle Point, approximately 60km south of Darwin, in the Northern Territory in mid-September 2022. The subsequent delimiting surveillance by Northern Territory Biosecurity and Animal Welfare officers has found the nematode on three other properties infesting sweet potato, capsicum, butternut pumpkin, snake bean, zucchini, and chilli. The four properties so far confirmed positive for the nematode are located across an area up to 50km apart, with no known links between properties at this time, therefore the infestation may be widespread due to the unknown entry pathway.

On initial confirmation of this pest, the Northern Territory (NT) government re-tested a historical sample that was collected in 2021, using the specific PCR primers that were not available at that time. This sample, from a chilli plant, was confirmed as *M. enterolobii*. The location of this sample is 50km from the farm identified in September 2022 therefore tracing links will be investigated by the NT government. The NT government is conducting further surveillance on the infected premises and undertaking additional surveillance of other commercial properties to better understand the distribution of the pest. This information will inform future decision making.

The NT government is undertaking an assessment of the movement pathways for host plants and related materials to determine the likelihood of spread of *M. enterolobii* from the NT to other jurisdictions. The risk of spread from the NT for the commodities currently traded into other jurisdictions is considered very low as NT growers do not trade large quantities of ex-inground nursery stock, bulbs or corms, and the pest is not spread in fruit providing there is no soil attached.

Consideration is being given to the next steps in the response by industry and government Parties under the Emergency Plant Pest Response Deed through the *M. enterolobii* Consultative Committee on Emergency Plant Pests (CCEPP).

Hosts

The risk for plants in the nursery industry is likely to be higher particularly from sources that are growing crops on 'soil' and not meeting industry best management practice such as using gravel growing beds, concrete or benches plus having overland water flow diversion from growing areas. Machinery that is used for handling nursery stock or production inputs e.g., growing media, must not be used to handle soil without being disinfested before coming back into the production areas.

Guava root-knot nematode is recorded as having a large range of host plants, noting those listed above, including tomato, capsicum, cucurbits, banana, beet, cotton, beans, potato, soyabean, coffee, ginger, guava, onions, papaya, parsley, brassica, sweet potato, vegetables, and watermelon. There are also many non-food crops (ornamentals) that are recognised as potential hosts of guava root-knot nematode based on experts suggesting that guava root-knot nematode is the synonym of *Meloidogyne mayaguensis* (Brito *et al.* 2010), which is not recorded in Australia (refer **Table 1**).

Table 1. *Meloidogyne mayaguensis*: a range of ornamental hosts (2010)

Genus	Genus	Genus	Genus	Genus	Genus
Amaranthus	Brugmansia	Buddleja	Callistemon	Caladium	Canavalia
Caryopteris	Clerodendrum	Dichondra	Enterolobium	Euphorbia	Ficus
Gardenia	Hibiscus	Lagerstroemia	Lantana	Ligustrum	Myrica
Penta	Plectranthus	Salix	Solandra	Tecomaria	Tibouchina

For useful identification information and images, please use the on-line pest identification platform www.pestid.com.au.

Biology

M. enterolobii (Guava root-knot nematode) is an emerging plant pathogen (nematodes are classed as pathogens) in many crops worldwide causing a range of symptoms including chlorosis (leaf yellowing), stunting, wilting, yield losses and large numbers of root galls forming on host plant root systems.

M. enterolobii is a sedentary endoparasite. Its life cycle is very similar to other root-knot nematodes and can be summarised as follows. The worms hatch in the soil as second-stage, infective juveniles (J2s) and migrate towards the root of their host plant, which they invade in the zone of elongation. There, they migrate intercellularly, first to the root apex and then to the vascular cylinder, where permanent feeding sites (i.e., giant cells) are established.

Now sedentary, J2s further undergo three successive moults to develop into adults. The saccate (pyriform) females remain sedentary, producing large egg masses that are extruded in a gelatinous matrix out of the root, while males (if any) migrate out of the plant tissues (Abad *et al.* 2003). The life cycle of *M. enterolobii* takes 4-5 weeks under favourable conditions and females produce around 400-600 eggs (CABI 2022).

As a root-knot nematode species, *M. enterolobii* can easily be transmitted with soil and plant material. Infested soil and growing media, plants for planting, bulbs, and tubers from countries where *M. enterolobii* occurs are the most probable pathways of introduction into different regions. Soil attached to machinery, tools, footwear, or plant products is also another possible pathway (CABI 2022).

Further information

Exotic Pest Hotline: 1800 084 881

Pest ID: www.pestid.com.au

Technical Info: www.nurseryproductionfms.com.au

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