

Extension Fact Sheet 10: Taro Mitimiti Disease



Common name: Mitimiti disease

Scientific name: *Hirschmanniella miticausa*. It is only known from Solomon Islands.

Host: *Colocasia taro*. It is not known from any other crop.

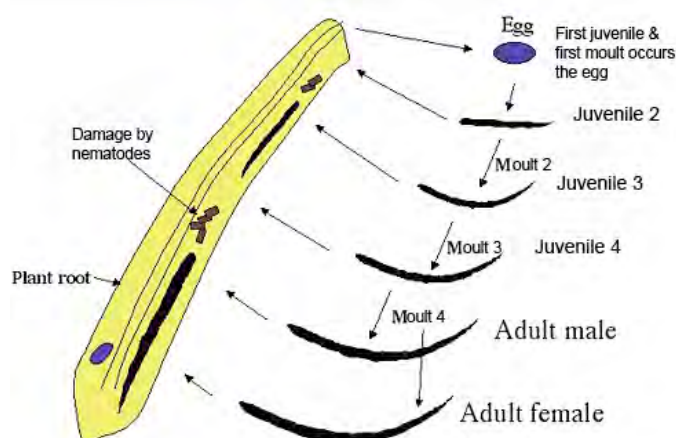
Damage

The nematode causes a corm rot. Corms show irregular zones of dry, brown rot, 1-10 mm wide, developing from the base. At first, the lines of rot follow the water and food transport systems inside the corm. Healthy tissue alongside the rots is red and corms look similar to uncooked fatty meat (hence the name 'mitimiti' in Solomon Islands). Often, the bottom part of the corms is completely decayed by secondary, brown soft rots.

The nematode reduces plant growth and corm size. However, dryland taro often fail to show signs of the disease until harvest. In Rennell and Ontong Java, where taro are grown in swamps, cultivation has been abandoned, as damage is severe.

Biology and Life Cycle

There is little known about the biology of this nematode: it has not been studied. However, the life cycle is probably typical of other migratory nematodes, with eggs, juveniles (4) and adults of both sexes (see diagram). The eggs are laid in the soil or in the roots, and any of the stages can move in and out of the root. In this way, it is similar to the lesion nematode, *Pratylenchus*.



It is likely that in dryland situations, nematodes move short distance by swimming in films of water around soil particles or are moved greater distances in ground water. In swamps, the nematode spreads by swimming and in water currents.

Spread to new areas is on infected planting material, either in roots and corm pieces or in contaminated soil. How long the nematode can survive in the soil after plants have been harvested is not known.

Signs and Symptoms

Look for the reddening of corms and brown, dry rots at the base of the plant. Nematodes need to be extracted from corms and roots for confirmation. Note, that this disease has only been found in Choiseul, Kolombangara, Ontong Java and Rennell.

Management

Quarantine:

The spread of mitimiti disease from one island to another should be prevented by local quarantines.

Cultural control:

The most effective and practical control measure is to 'clean' the planting material free from nematodes. Remove the outer leaves and trim the corm back to white healthy tissue, leaving a few centimeters without roots; this will ensure freedom from nematodes. It is best to avoid planting suckers with corms attached as it increases the risk of spreading the nematode, as it is not possible to see if rots are present.

On hillsides, avoid planting down the slope from gardens where *Hirschmanniella* was present before, as nematodes may be carried in soil or run-off water.

Resistant varieties:

There is no information on resistance of varieties, except that a semi-wild variety known as Tiko on Malaita had resistance when planted on Ontong Java. This variety was crossed with variety Luhu from Guadalcanal. Other varieties were crossed with wild variety Bangkok. How well the seedlings grew on Ontong Java is unknown.

Hot water treatment:

- Hot water treatment of planting material has been suggested for the control of *Hirschmanniella*. Hot water treatment of 'tops' at 50°C for less than 30 minutes did not damage them, but at 55°C for 15 and 30 min some were killed;
- If it is done, there is a need to carefully measure the temperature and time. Also, the 'tops' must have more and 1 cm of corm tissue;
- DO NOT use the method except to establish a source of nematode-free planting material.