Pacific Pests, Pathogens and Weeds - Online edition

Giant swamp taro corm rot (203)

Common Name

Giant swamp taro corm rot

Scientific Name

Radopholus similis

Distribution

Asia, Africa, North, South and Central America, the Caribbean, Europe, Oceania. It is recorded from American Samoa, Australia, Cook Islands, Fiji, French Polynesia, Guam, Federated States of Micronesia, New Caledonia, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, and Tonga. On giant swamp taro, the disease has only been recorded from Guam, Palau, and Yap State (Yap island and Ulithi atoll), Federated States of Micronesia.

Photo 1. Extensive rot over the entire corm (right), and plants lacking fine feeder roots (left), caused by the nematode, *Radopholus similis*.

Photo 2. External (right) and internal (left) appearance of corms affected by dry corm rot caused by the nematode, *Radopholus similis*.

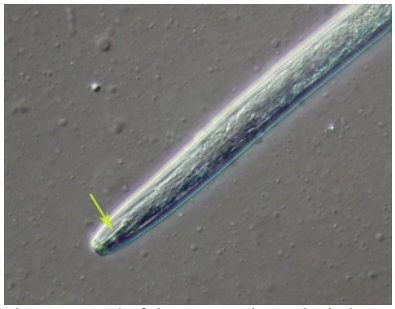

Photo 3. Head of the nematode, *Radopholus similis,* showing the spear in the mouth that is used to pierce plant cells and suck up the contents.

Hosts

Radopholus similis has a wide host range. It is especially common on citrus and its relatives, on coconut and other palms, bananas, black pepper, brassicas, grasses, tea, and members of the coffee, ginger and tomato families. The nematode is associated with a serious corm rot of giant swamp taro, *Cyrtosperma merkusii,* in Yap (**see Fact Sheet no. 257**). It is also a major pest of ginger in Fiji (**see Fact Sheet no. 161**).

Symptoms & Life Cycle

Corm rot of taro has an interesting history. Surveys in 1957/58, in the then Trust Territory of the Pacific Islands, were the first to document "a firm rot of irregular areas around the surface [of the corm] which penetrates about one inch", and control should be sought by having resistant varieties. It was thought that *Pythium*, an oomycete organism, caused the rot. In later reports, the problem was said to be present in Koror and Kayangel (Palau), Pohnpei and Guam.

Plants with corm rot do not show symptoms on the leaves, except farmers say that the leaves die earlier than expected.

Externally, corms look as if insects have attacked them; holes are present, 5-20 mm diameter and 10-20 mm deep (Photos 1&2). Beneath these holes, shallow brown rots are present that occasionally penetrate to the centre of the corms. Plants with corm rot show extensive loss of fine feeder roots (Photo 1).

Radopholus similis was extracted from the corm rots in large numbers, but relatively few were found in the roots. This nematode has a spear in its mouth which it uses to pierce the cells of the roots and corm and suck up the contents (Photo 3).

Impact

In Yap, the corm rot of giant swamp taro is a major disease. The general appearance and growth of the plants is unaffected by corm rot, although growers notice that leaves die more rapidly compared to those of healthy plants. However, the rots are deep, and a considerable amount of corm has to be removed before they are fit for human consumption.

Detection & inspection

Look for the dry corm rots, often shallow over the surface of the corms, occasionally extending as narrow channels to the centre. Look for blackened fine feeder roots on plants with corm rot. Often, roots show considerable decay, but leaves appear healthy.

Management

CULTURAL CONTROL

Cultural control measures offer the only practical ways of reducing corm rots caused by *Radopholus similis* on giant swamp taro. In general, it is extremely difficult to control pathogens attacking underground storage organs of plants growing in a swamp.

At harvest, after the corms have been removed, the planting material - leaf stalks and corm piece - should be 'cleaned' to remove infections by the nematode.

Cleaning the planting material should be done as follows: (i) remove all roots; (ii) remove all the old outer leaves; (iii) check the corm part for rots, and if present cut out the rots using a knife wiped in 1% bleach; and (iv) wash the planting material to remove soil.

After the corms have been prepared for consumption (or for planting), do not leave the rejected parts on the bunds surrounding the swamps or the giant swamp taro pits; otherwise, these pieces will be washed into the swamps or pits together with the nematodes.

Spread of the nematode over short and long distances is on or in the corms and roots of giant swamp taro. Survival occurs in these plant parts, too. It is not known if the nematode is free-living in the soil of the swamps or pits. It is very unusual to find *Radopholus similis* in this situation. It was thought not to survive long in flooded soil. For instance, one of the recommended ways to control the nematode in banana is to flood fallow the soil for 8 weeks. In the case of giant swamp taro, the nematode may live only in the corms and roots and not in the soil.

CULTURAL CONTROL

Not appropriate for this disease.

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Information from Zhao ZQ, Crosby TK (2011) Burrowing Nematode *(Radopholus similis)*: PaDIL - http://www.padil.gov.au; and from Jackson GVH (1986) Preliminary results from surveys of plant diseases in the Federated States of Micronesia and Palau. Proceedings: UNDP/FAO/GTZ/IRETA Regional Crop Protection Workshop. 8-12 September, 1986, Apia, Western Samoa. Photo 3 Fred Brooks, Plant and Environmental Protection Services, University of Hawaii at Manoa, Honolulu.

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