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# RADOPHOLUS SIMILIS

# THE BURROWING NEMATODE OF BANANA

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## INTRODUCTION

The burrowing nematode, *Radopholus similis*, is a very serious and widespread nematode pest in the tropics and sub-tropics. It is an endoparasite. An endo-parasite is an organism which lives and feeds inside another organism called the host. In tropical areas this nematode is often found with Panama disease of bananas caused by the fungus *Fusarium oxysporum*. It is an important pest in Australia, Central and South America, Africa, the Pacific and the Caribbean.

There have only been a few reports of the burrowing nematode in Papua New Guinea. For example in 1949, it was reported at two different sites in the lower Markham Valley, Morobe Province; and in 1978 it was found at Bomana, Central Province. At these three places the nematode was associated with banana plants.

Although *R. similis* is present here, Papua New Guinea is still one of the few countries where bananas can grow with few problems caused by this nematode. However, growers should be aware of the nematode, the diseases it causes and the control measures.

## BIOLOGY

The life cycle of the burrowing nematode is similar to the life cycles of most nematodes. It consists of the egg, four larval (young) stages, and the adult. From egg to adult worm takes about 20 to 25 days at 24-32°C. This period varies with the temperature of the soil and root tissue.

All stages of the burrowing nematode are infective and are found inside the cortex (outer layer) of the roots of bananas. However, under un-favourable conditions the adults may move out to the root surface and into the soil.

## DISEASES

There are two 'biotypes' of the burrowing nematode. Each type attacks different hosts.

1. The 'Banana race' biotype is widespread throughout the banana growing areas of the world. It attacks banana plants only, causing a disease called 'black-head disease'. Other names for the same disease include root rot disease, blackhead toppling disease and decline disease. The banana race is widespread throughout the banana growing areas of the world.

2. The 'Citrus' biotype attacks both banana and citrus plants. At present the citrus race is found only in Florida, U.S.A.

The burrowing nematode attacks other plants including coffee, maize, sugarcane, ornamentals, vegetables, coconut, grasses and weeds. The nematode is also found associated with yellow disease of black pepper in Indonesia.

*Toppling-over in banana caused by R. similis infection.*

## SYMPTOMS

Symptoms of diseases caused by the burrowing nematode on banana are: reduced size of the bunch and individual bananas; and the banana plant does not grow well; in wet or windy weather, infected plants may easily fall over because damage to the roots and rhizomes causes poor anchorage in the ground. These symptoms are often not easy to see in the plant crop (first crop).

However they become more obvious in the ratoon crop (later crops from the suckers).

The first symptoms of infections are found below ground level. If the roots and rhizomes are dug up, washed and then split open, reddish brown spots can be seen in the infected areas. Later, holes and pink-red streaks (feeding tracks) appear in the roots. On the rhizomes, the outer tissues above infected areas turn black.

In severe infections, the roots rot.

## CONTROL

The burrowing nematode is spread by planting infected planting material (suckers). Care should be taken not to transfer suckers from infested soil to farmland free of the nematode. To be quite sure that sets are free of the nematode, trim off any discoloured tissue with a knife. Then dip the sets in hot water (53°C to 55°C) for 20 minutes.

## FURTHER INFORMATION

For further information about nematode diseases, contact the Chief Plant Pathologist, Plant Pathology Section, D.P.I., P O Box 417, Konedobu.

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