

FACT SHEET:

Soft Rot of ginger caused by *Pythium*

by: Plant Protection Section
Koronivia Research Station



WHAT IS KNOWN ABOUT THE DISEASE?

Pythium myriotylum is the most common soil organism, causing root rot on a wide range of crop including ginger. Recently, *P. vexans* and *P. graminicola* have been isolated from ginger locally. At present 3 *Pythium* species causes rhizome rot of ginger.

Pythium has a thick-walled spore (oospore) that enables it to survive adverse environmental conditions and between ginger cropping cycles. Wet conditions usually increase disease occurrence.

Pythium also has a spore (known as zoospore) with appendages that enables it to swim in water. These spores spread quickly in saturated soil and in surface water and are also responsible for serious disease epidemic.

When soil temperature is 30°C and Soil is saturated, *Prmyriatylum* will destroy ginger rhizomes in 1-2 weeks

Pythium moves in soils and in infected planting materials

The disease is particularly worse on ginger when soils have low organic matter (other soil organism that may compete with *Pythium* are absent) or have low water infiltration rates (compacted, degraded soils becomes easily water logged)

During wet conditions, the disease spreads down slopes at rates as high as 5m per day. Some uphill movement also occurs. There is evidence that the disease incidence decreases when soil dries out and/or temperature becomes cooler.

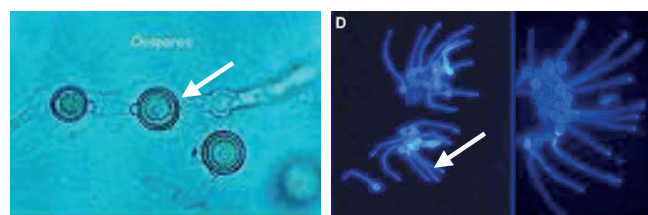
When the disease pressure is high, control measures such as chemicals (metalaxyl, phosphonic acid) and organic amendments to improve the soil

biology are not effective. The disease can be more effectively controlled by these measures when the pathogen loads are lower.

Cassava appears to be a poor host of *Pythium*.



Two weeks after observing yellowing of plants, this plots have reached the stage of rhizomes rotting and stems collapsing



Pythium oospore have thick a wall on left and zoospore, on right, have appendages that enables it to swim (see arrows)



Pythium rhizome rot can cause major losses in ginger (Note yellowing and necrosis of shoots and rejected ginger left to rot in a recently harvested field of immature ginger in Fiji)

HOW TO MANAGE OR CONTROL GINGER SOFT ROT DISEASE?

Use **ONLY** clean planting materials and prevent transferring or moving heavily infested soil

Improve drainage and improve water infiltration rates of soil. This is to prevent soil becoming saturated and should slow the disease spread.

Reduce inoculum level in the soil. Remove all volunteer ginger plants from rotation crops

Once a diseased plant appears, carefully remove the plant and surrounding soil, put in a bag so infected soil does not contaminate the field. Apply a fungicide to plants and surrounding areas.

Improve soil health. Since *Pythium* thrives in soil with low biological activity, healthy soil reduce losses from rhizome rot by the following :

- Integrate organic amendments and crop rotation into the ginger farming system
- Improve the biological environment around the rhizome (with amendments of compost, poultry manure wood chips/saw dust)