PLANT PATHOLOGY NOTES: NO.5

ROOT KNOT NEMATODE

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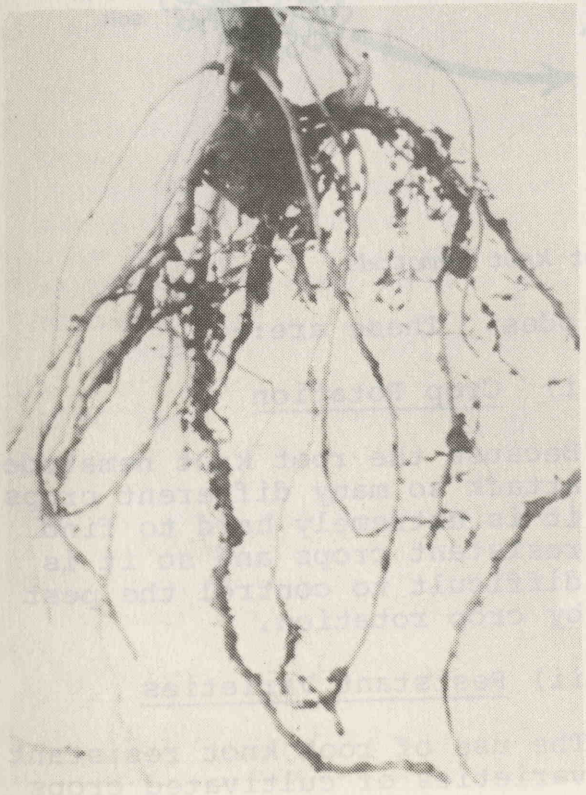
The root knot nematode (*Meloidogyne* spp.) is found all over the world but it is especially troublesome in tropical and sub-tropical regions. In temperate climates it is a pest of crops grown under glass.

Meloidogyne spp. attack over 700 different kinds (species) of plants including tomato, potato, sugar cane, peanut, banana, maize, tea, coffee, many citrus and other fruit trees such as pawpaw and numerous vegetables. It is therefore a serious pest in Papua New Guinea.

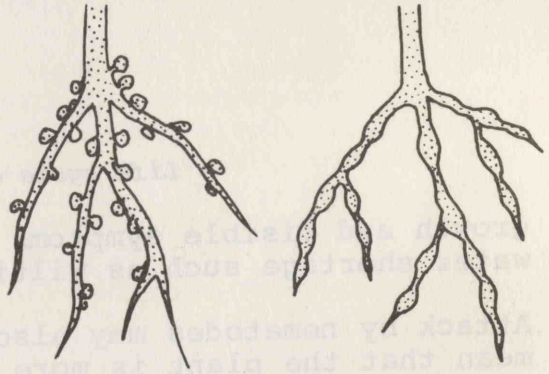


Root swellings caused by root knot nematode

SYMPTOMS

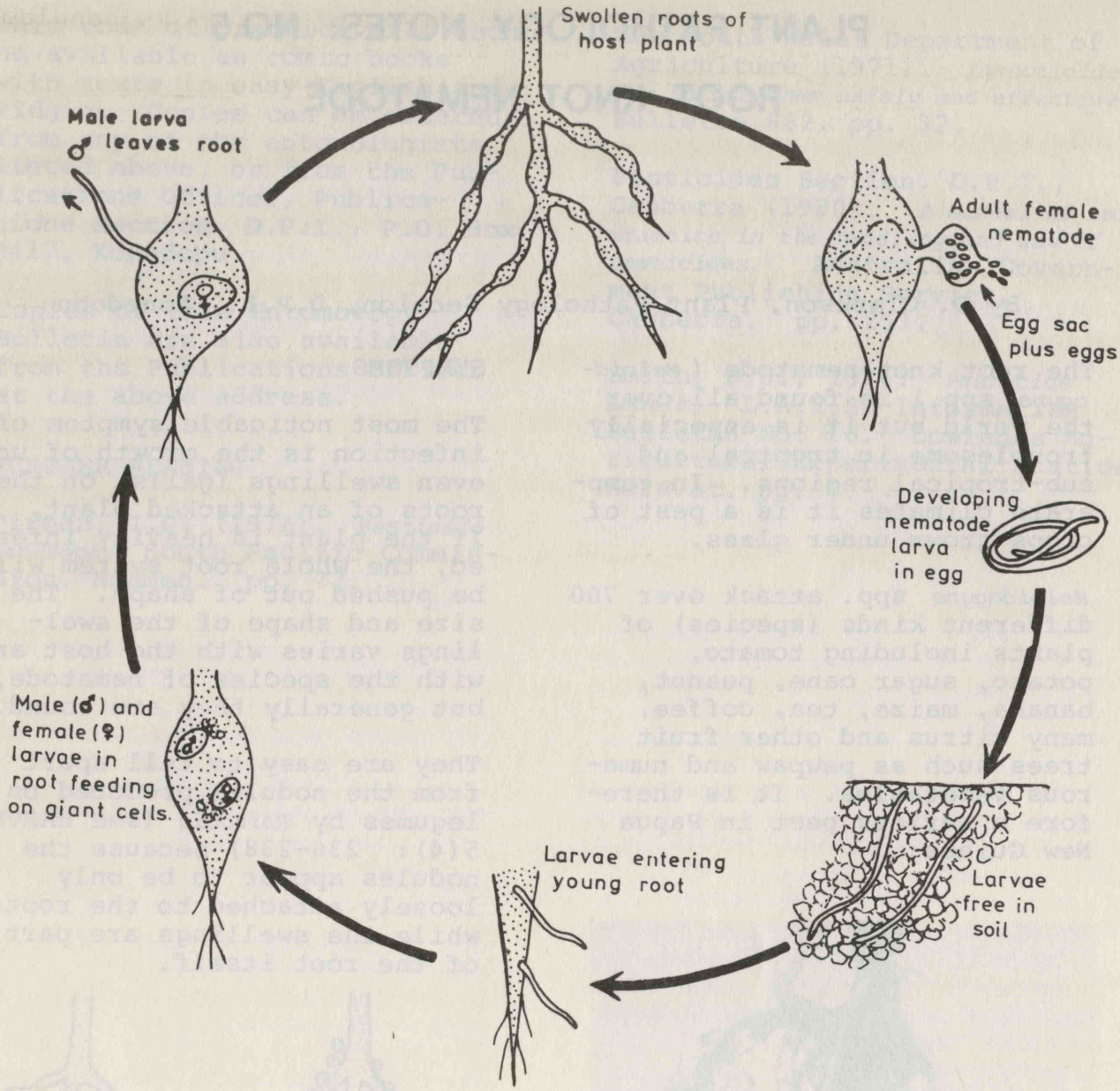
The most noticable symptom of infection is the growth of uneven swellings (galls) on the roots of an attacked plant. If the plant is heavily infested, the whole root system will be pushed out of shape. The size and shape of the swellings varies with the host and with the species of nematode, but generally they are round.

They are easy to tell apart from the nodules produced on legumes by *Rhizobia* (see HARVEST 5(4): 236-238) because the nodules appear to be only loosely attached to the roots while the swellings are part of the root itself.



Nodules *Swellings caused by root knot nematodes*

When nematodes invade the roots they cause the plant to produce "giant" cells. These very large plant cells break the vascular bundles (food and water routes) in the roots and prevent them from working properly. This leads to poor



Life cycle of the root knot nemotode

growth and visible symptoms of water shortage such as wilting.

Attack by nematodes may also mean that the plant is more susceptible to disease due to attack by pathogenic fungi, bacteria or viruses.

CONTROL

There are three main methods of controlling root knot nematodes. These are:-

i) Crop Rotation

Because the root knot nematodes attack so many different crops, it is extremely hard to find resistant crops and so it is difficult to control the pest by crop rotation.

ii) Resistant Varieties

The use of root knot resistant varieties of cultivated crops

is one of the most efficient methods of control and has frequently led to good results.

iii) Chemical

The most promising method of controlling nematodes in the field has been through the use of chemicals called nematicides. These chemicals are available as liquids or granules. When in the soil, the chemicals produce a gas which spreads through the soil and kills the nematodes.

It should be noted that all nematicides are extremely poisonous to humans and animals and that they should be handled with great care.

FURTHER INFORMATION

Further information on crop varieties which are resistant to root knot nematodes and on the application of nematicides can be obtained from the Chief Plant Pathologist, Plant Pathology Section, D.P.I., P.O.Box 2417, Konedobu.

Copies of this Plant Pathology Note and of others in the series are available from: The Publications Officer, Publications Section, P.O. Box 2417, Konedobu.