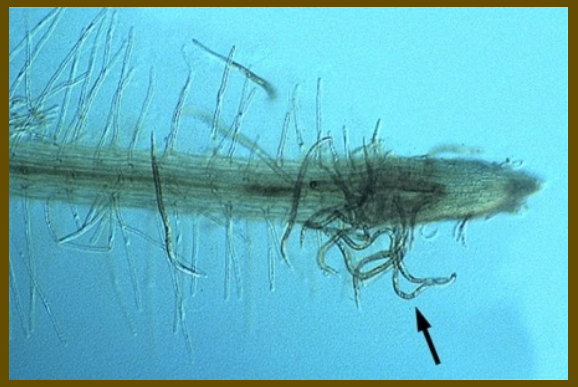
CHS3403 Principles of Plant Pathology in Cannabis and Medicinal Plant



Plant disease from Nematode

Mr.Chawalit Yongram, Ph.D.

Division of Cannabis Health Science,

College of Allied Health Sciences, Suansunandha Rajabhat University

1. Nematode

1.1 Nematode

Nematode in Phylum Nematoda: Nematode comes from the Greek Nema (meaning yarn)+oid (similar or similar), so Nematode. This means an animal shaped like yarn.

1. Nematode

1.1 Nematode

Characteristics of nematodes

- It's a vertebrate.
- It has two identical sides and shapes.
- Gender difference (gender difference): adult women are larger than men.
- There are three walls, including the outer layer (epiblast) and the middle layer (mesoblast) Internal (low explosion)
- Most of them live in fresh and salt water and eat plants and small animals.

1. Nematode

1.1 Nematode

There are four types of nematodes:

1. Marine nematodes (brine nematodes) account for about 50% of the bus worms.

1. Nematode

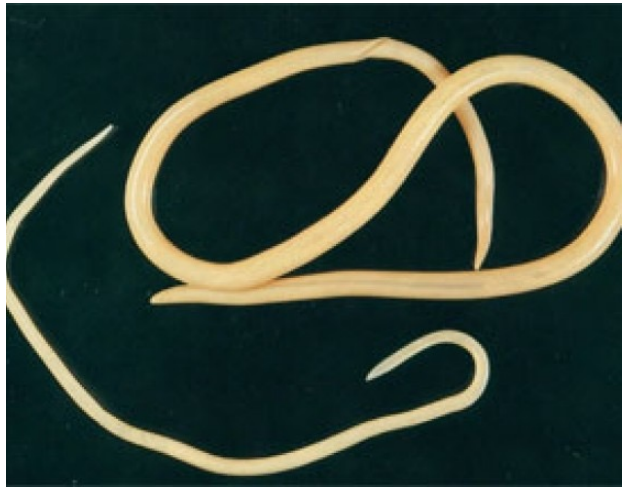
1.1 Nematode

2. Soil and freshwater nematodes (soil and freshwater nematodes) are naturally independent, free from pests and beneficial to the ecosystem. The food fed to other animals accounts for about 25% of all nematodes.

1. Nematode

1.1 Nematode

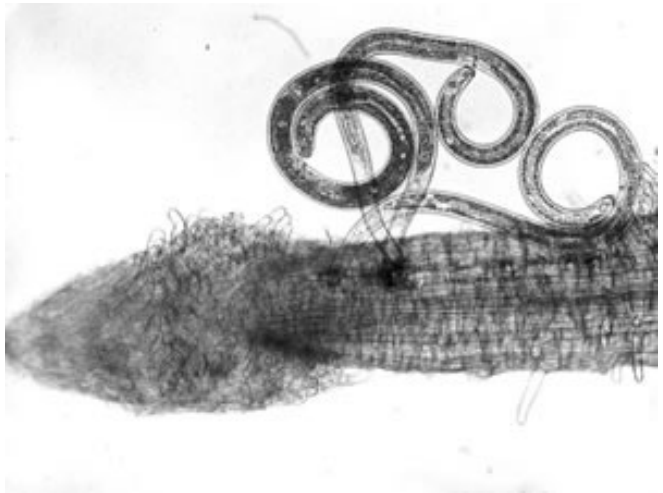
3. Animal parasitic nematodes, such as parasites, account for about 15% of bus worms.



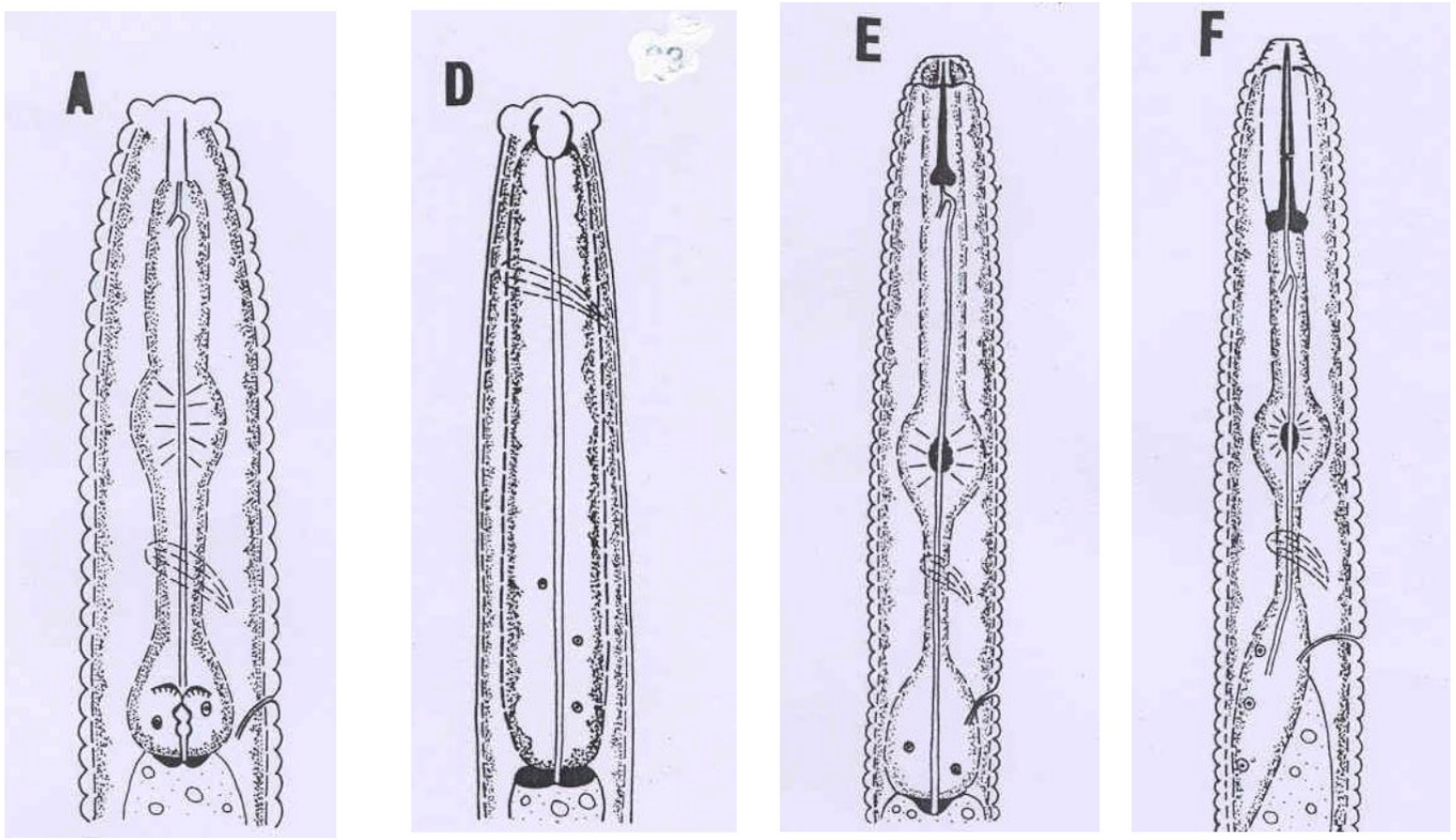
1. Nematode

1.1 Nematode

4. Plant parasite nematodes account for about 10% of all nematodes.



1. Nematode

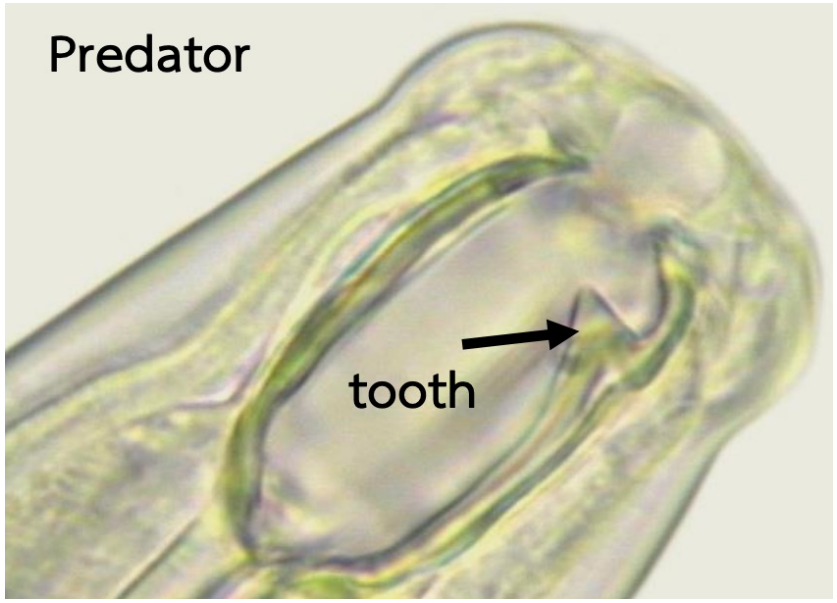


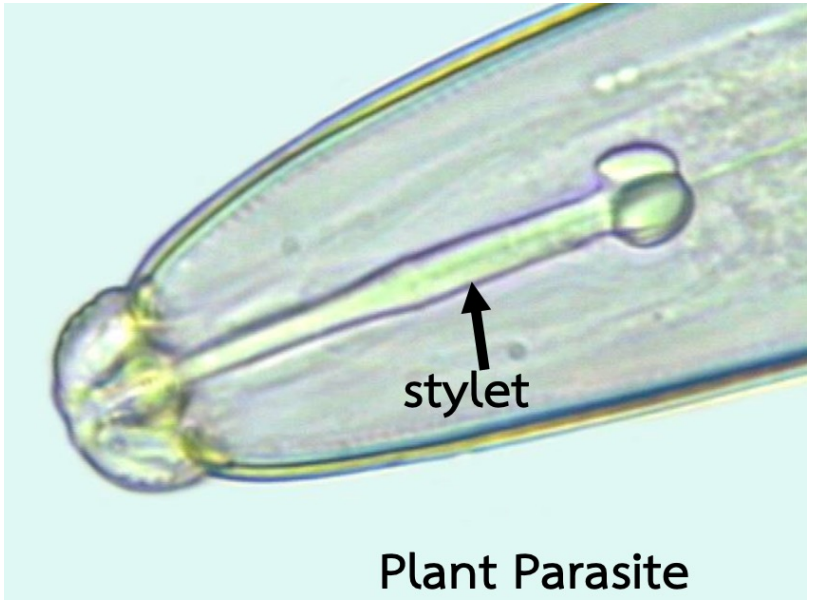
Free living

Predator

Plant Parasite

1. Nematode


Predator
tooth


stylet
Plant Parasite


Rhabditis sp.
female head 1000X
ช่องปากกลวง
© Peter Mullin/2000
10 µm
Free living

1. Nematode

1.2 Effects of nematodes on plants

1) Abnormal plant growth

Plants on the ground often wither.

The ratio of the upper weight to the root weight changes, for example:

Common sweet lettuce

Top weight ratio available: root weight=60:40

Seriously damaged sweet lettuce

Top weight ratio available: root weight=38:62

It can be seen that the weight of diseased plants does not always decrease, depending on the type of disease. In this case, the weight of roots increases due to the button. Knot and stem weight reduction

1. Nematode

1.2 Effects of nematodes on plants

2) Low crop yield

- In diseased plants, the fluidity of water and food decreases during fruit or seed stage.
- Photosynthesis decreases, causing damage to productivity.
- Sometimes plants will prolong the flowering period.
- Nematodes directly destroy flowers.

1. Nematode

1.2 Effects of nematodes on plants

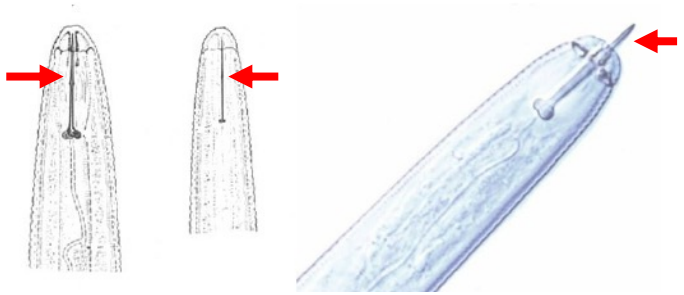
3) There are three types of organizational changes.

- Destructive changes. Most nematodes destroy cells by absorbing all components in cells during feeding. Cause the organization to be unable to work normally.
- The tissue has adaptive changes, cell enlargement and cell activity increase to maintain cell survival. This is a response to nematodes.
- With the increase of tissue growth (neoplastic changes), the cells attached to the nematode may become larger and divide. Nodules are caused by the stimulation of nematodes.

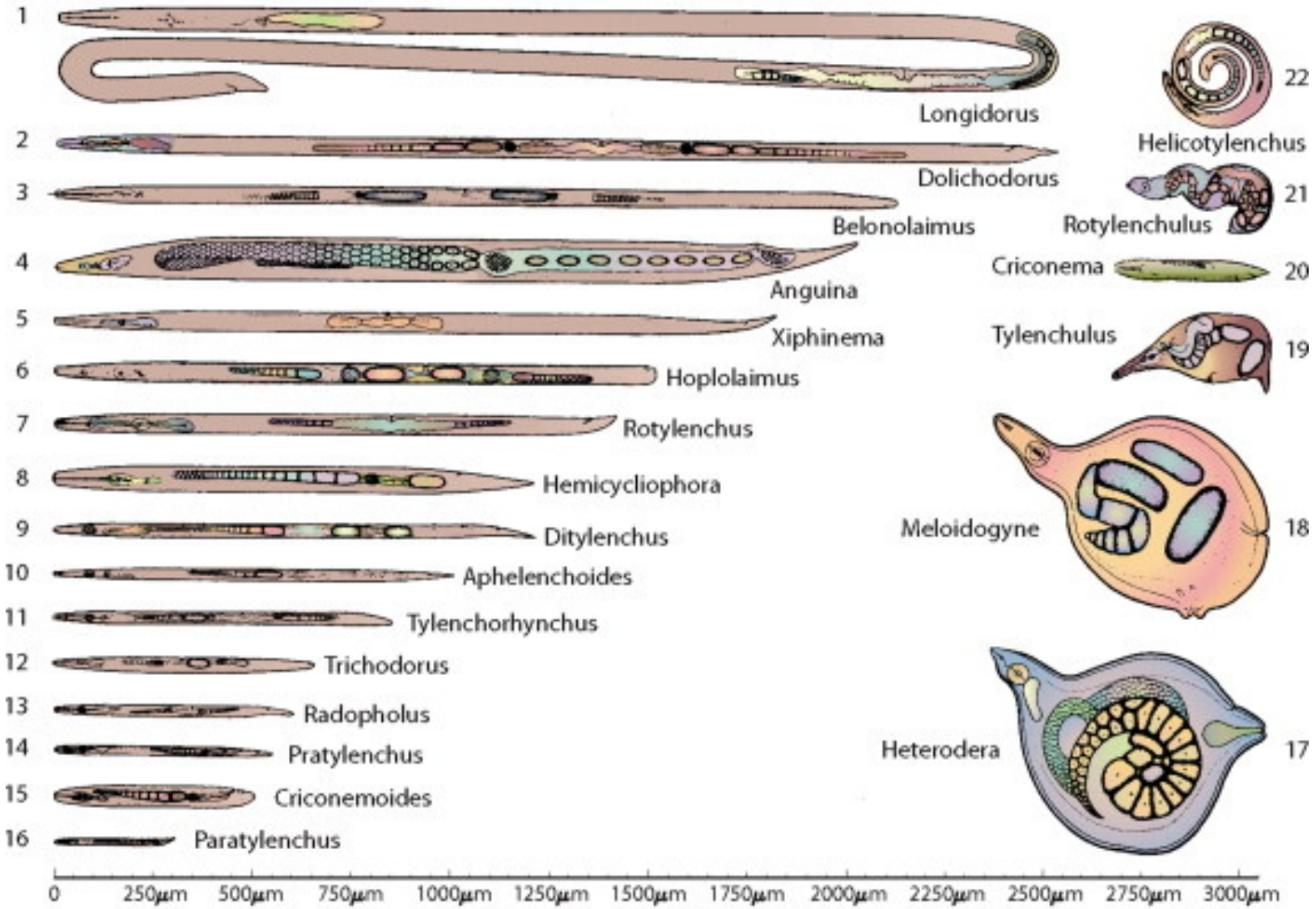
2. Characteristics of pest nematodes

2.1 Appearance and shape of pest nematodes

- Without spine, there is no complete system in the body.
- Bilateral symmetrical torso, long and round, similar to yarn.
- The male and female are the same shape, but the female is larger than the male.
- There are 12 Genus.
- The organs used to destroy plants or absorb food from plant cells are called spears or thorns, which are shaped like spears.

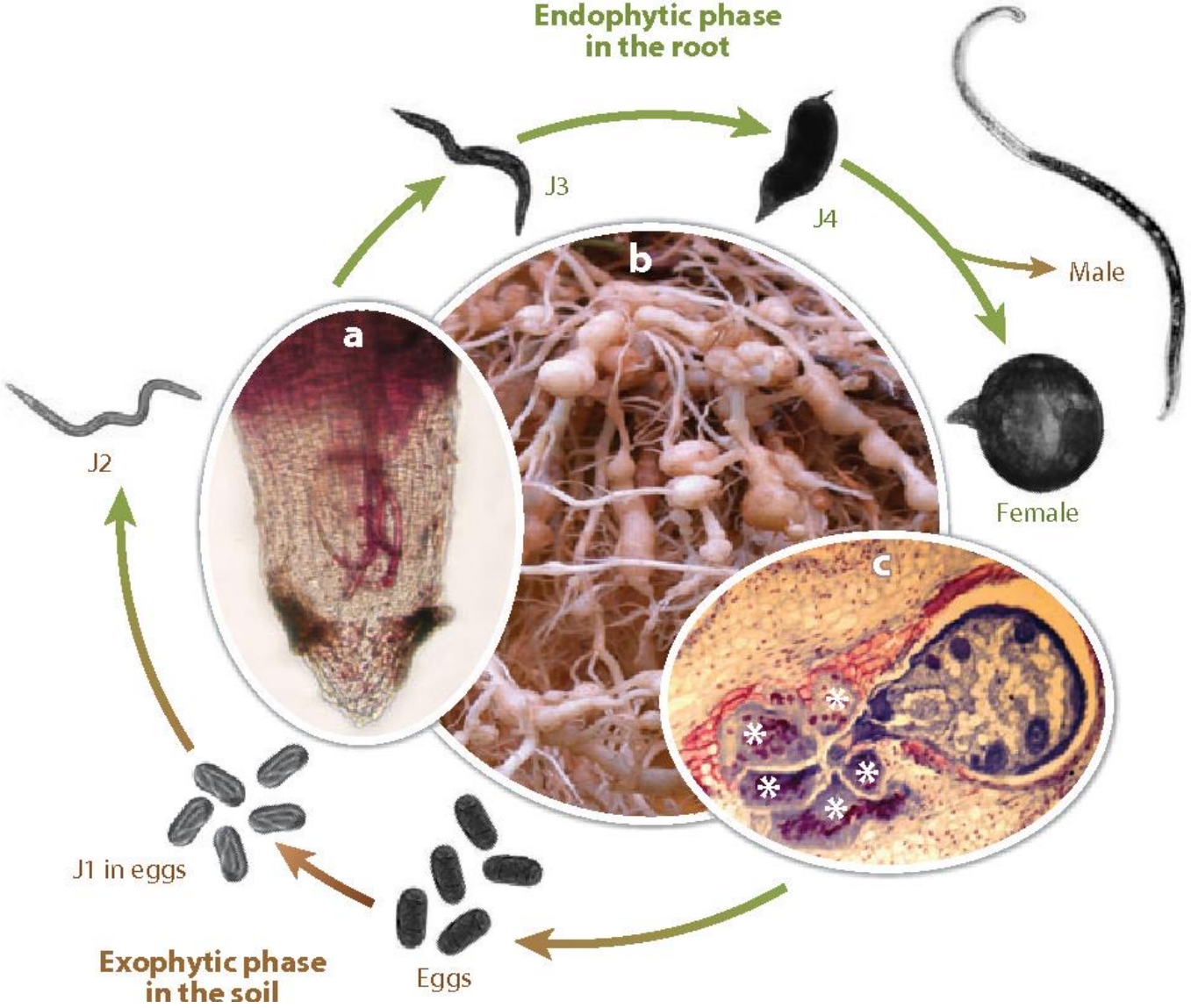


2. Characteristics of pest nematodes



2. Characteristics of pest nematodes

Life cycle of root knot nematodes (*Meloidogyne* spp.)



2. Characteristics of pest nematodes

2.2 The difference between pest nematode and earthworm

Characteristics	nematode	earthworm
Body	The body is not jointed.	jointed body
Size	small - invisible to the naked eye	Big
Desquamate	4 time	no

2. Characteristics of pest nematodes

2.3 Sustainability factors of pest nematodes

There are seven important factors:

- Soil moisture or moisture content

It determines all activities of nematodes. Water is the most important factor. Soil with water can reduce the number of nematodes.

- temperature

In Thailand, the temperature changes little and is suitable for year-round nematode breeding.

- Characteristics and structure of soil

Sand is suitable for the movement and outbreak of various nematodes.

2. Characteristics of pest nematodes

2.3 Sustainability factors of pest nematodes

- Soil organic matter content
- Adding organic matter to the soil will reduce the number of nematodes, because the soil contains a large amount of organic matter. Plants grow well and contain a large number of microorganisms that can remove nematodes.
- The soil layer and terrain, depth and height will affect the nematode.
- PH value, pH
- Lack of food or living plants that the nematode does not like will reduce the number of nematodes.

2. Characteristics of pest nematodes

2.4 Mobility and epidemic

- All nematodes move like snakes, pushing their bodies along rocks or soil particles.
- The epidemic needs carriers, such as:

Water or wind

Attached to agricultural tools

Attached to plant parts for breeding.

Attached to humans or animals.


THANK YOU