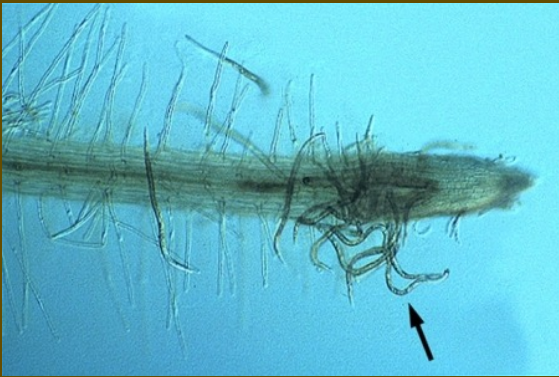


# CHS3403 Principles of Plant Pathology in Cannabis and Medicinal Plant



Characteristic plant disease from Nematode



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## 4. Disease symptoms caused by nematodes

Plants suffering from nematode disease can also see the roots and parts of plants above the soil. The symptoms found at the root are hypertrophy, necrosis, abnormal growth, and the following symptoms:

- **Below ground symptoms**

1. root knots or root galls

Due to the ingestion of nematode, the swollen root may expand. The size of swelling may be between 0.1 and 2.0 cm.



# 4. Disease symptoms caused by nematodes

## 2. root lesions

This is a root area where cells are damaged by nematode feeding. The wound may be small and invisible, or it may be the wound around the whole root.



## 4. Disease symptoms caused by nematodes

### 3. excessive root branching

The roots have more branches than usual, resulting in more and shorter lateral roots.



## 4. Disease symptoms caused by nematodes

### 4. injured root tips

Nematodes feed on or near the root tip, causing the root to grow, but become larger or the components of the root to fall off separately.



## 4. Disease symptoms caused by nematodes

### 5. root rot

After the nematode destroys the root, fungi or bacteria, regardless of the cause or humus, will aggravate the root decay.



Saprophyte is a kind of fungus or bacteria that secretes enzymes from the cell to decompose organic substances.

# 4. Disease symptoms caused by nematodes

- **Above ground symptoms**

1. Slow growth and withered trunk
2. Blade discoloration, deformation and deformation
3. Nematodes destroy flower buds or withered seed germination points, such as orchid and strawberry buds, causing damage to flower buds and germination points.



# 4. Disease symptoms caused by nematodes

- Above ground symptoms

4. Abnormal distortion or expansion of seeds (seed galls), usually used with grains, nematodes live and eat in grains. In the seeds, the seeds swell abnormally.





# 5. Plant diseases caused by nematodes and their prevention

## Case study of nematode disease

5.1 Root nematode disease

5.2 Root cyst nematode disease

5.3 Root canker nematode disease

5.4 Nematode disease destroys stems and heads.

# 5. Plant diseases caused by nematodes and their prevention

## 5.1 Root nematode disease

**Cause:** root-knot nematode (*Meloidogyne* spp.)

Characteristics and symptoms of disease

- Nematodes destroy root tips.
- There is a knot in the damaged area.
- The ground part withered like dehydration.



## 5. Plant diseases caused by nematodes and their prevention

### 5.1 Root nematode disease

#### Prevent and eliminate diseases

- Plow the soil to reduce the number of nematodes
- Bioavailability of fungi
- Planting renewable crops independent of nematodes, such as jute, marigold, sunflower
- Avermectin 1.8% EC, 30ml per 20 liters of water
- The rate of 20% Carbosulfan is 20 ml per 20 liters of water.
- Fipronil 5% SC 40 ml per 20 liters of wate

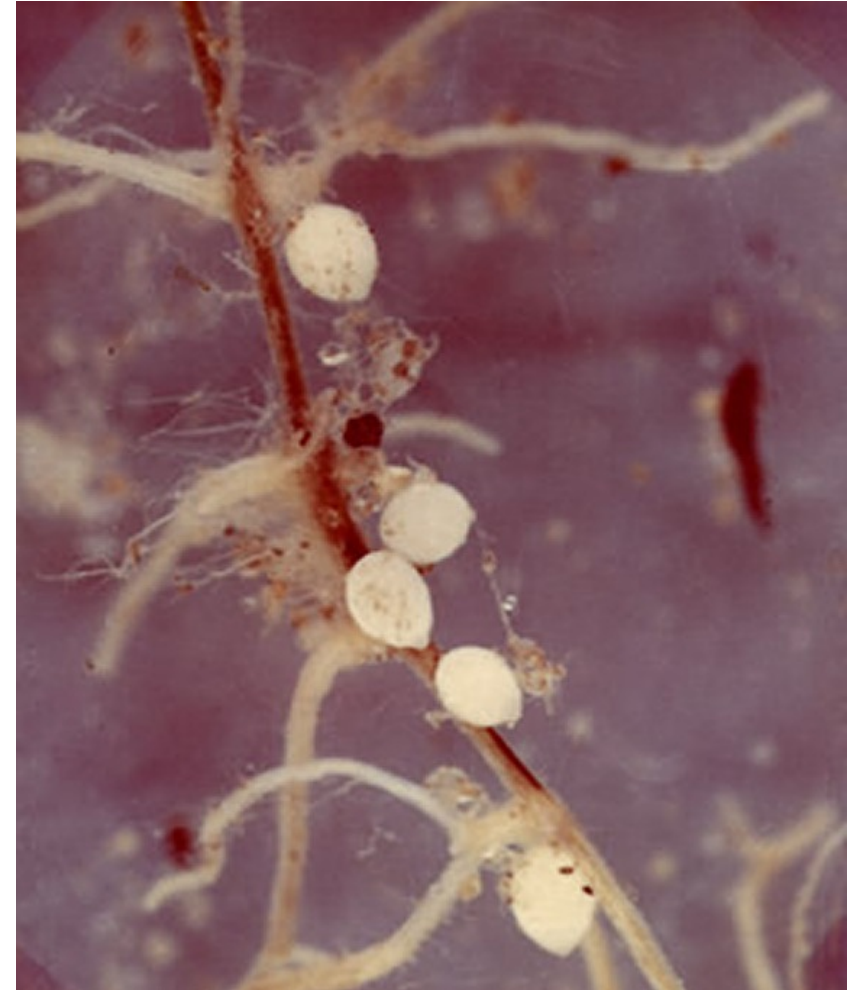
# 5. Plant diseases caused by nematodes and their prevention

## 5.2 Root cyst nematode disease

**Cause :** *Heterodera* spp.

Characteristics and symptoms of disease

- They were mainly born in cold countries.
- The root of the diseased plant has a cyst, which causes the plant to develop slowly.
- Leaves turn yellow and fall off prematurely.
- Fewer flowers and seeds



# 5. Plant diseases caused by nematodes and their prevention

## 5.2 Root cyst nematode disease

### Prevent and eliminate diseases

- Remove nematodes from cysts
- Prevent parasites from spreading to the field
- Rotate once every 2-3 years.
- Use disease-resistant varieties.

## 5. Plant diseases caused by nematodes and their prevention

### 5.3 Root canker nematode disease

**Cause :** *Pratylenchus* sp.

Characteristics and symptoms of disease

- It can destroy all kinds of plants.
- Reduce plant growth
- Fungi and bacteria may destroy and cause root rot, low yield and crop death.



## 5. Plant diseases caused by nematodes and their prevention

### 5.3 Root canker nematode disease

#### Prevent and eliminate diseases

- Before planting plants, kill nematodes by spraying soil.
- Turning over the soil and drying it in the sun will greatly reduce the number of nematodes.

# 5. Plant diseases caused by nematodes and their prevention

## 5.4 Nematode disease destroys stems and heads.

**Cause :** *Ditylenchus* sp.

Characteristics and symptoms of disease

- It often damages scallions, oats, rye and strawberries.
- Causes of plant death in seedling stage
- Plant growth retardation, head damage and distortion.
- The trunk swells, the leaves fall, and the yield decreases.
- There are swollen yellow spots and open wounds on the leaves, and the leaves are curly.





## 5. Plant diseases caused by nematodes and their prevention

### 5.4 Nematode disease destroys stems and heads.

#### Prevent and eliminate diseases

- Rotate once every 2-3 years.
- Soak the seeds in 46 °C water for 1 hour before sowing.
- The plant head should be soaked in formalin at a concentration of 0.5% for 4 hours at 43 °C.
- Before planting plants, kill nematodes by spraying soil.

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**THANK YOU**