

# Basic Nematology for Home Gardeners

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- What are nematodes?
- Examples of common (and uncommon) nematodes
- Agriculturally important nematodes
  - Species, hosts, signs and symptoms, thresholds
  - How to use the UF Nematode Assay Lab

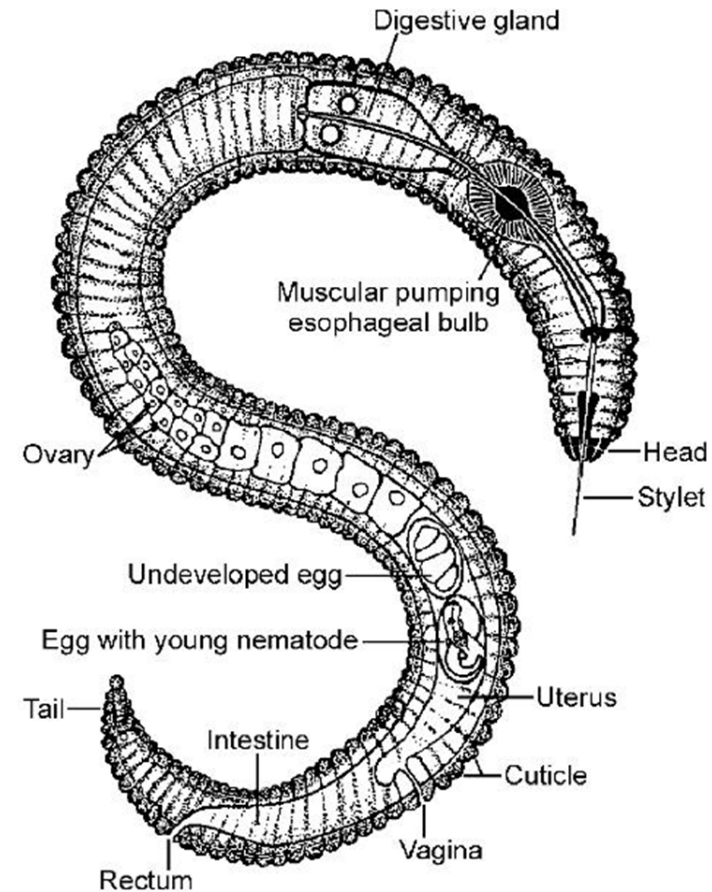
# Today's Topics

- Kingdom: Animalia
- Phylum: Nematoda
- Several classes and many orders
  - ~ 15,000 spp. described
- Microscopic soft bodied unsegmented roundworms

# Nematode Taxonomy

# Nematode Habitat

- **Free-Living**
  - Marine
  - Brackish
  - Fresh Water
  - Wet Soil
- **Parasites**
  - Plant Parasites
  - Animal Parasites
    - Human
    - Insect
    - Vertebrates



- Animal parasitic nematodes (Helminths)
- Intestinal worm (*Ascaris lumbricoides*)
- The guinea worm (*Dracunculus medinensis*)
- The eye worm (*Onchocerca volvulus*)
- The heart worm (*Dirofilaria* spp.)

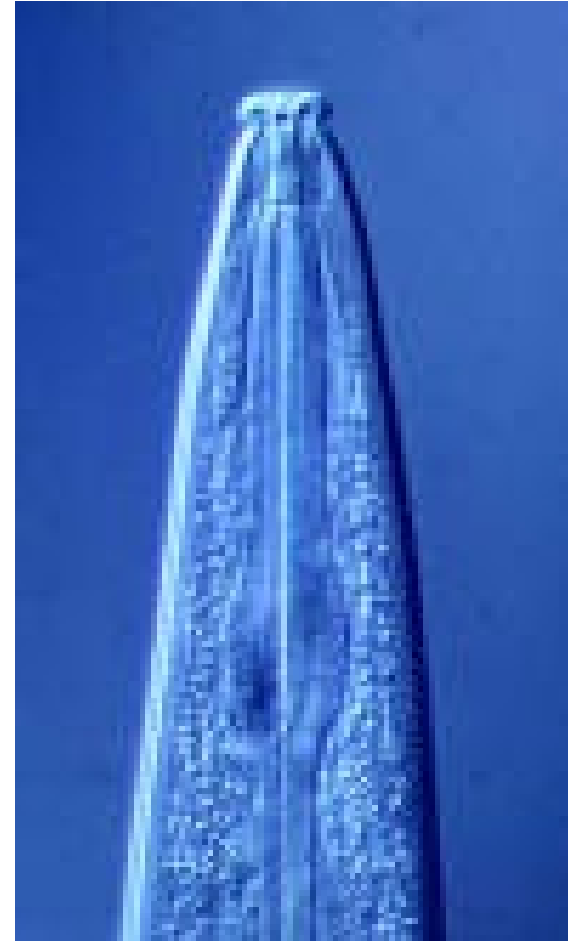
# Human and Animal Parasitic Nematodes

- Free-living nematodes (saprophytes)
- Predaceous nematodes
- Entomopathogenic nematodes
- Plant-parasitic nematodes (PPN)

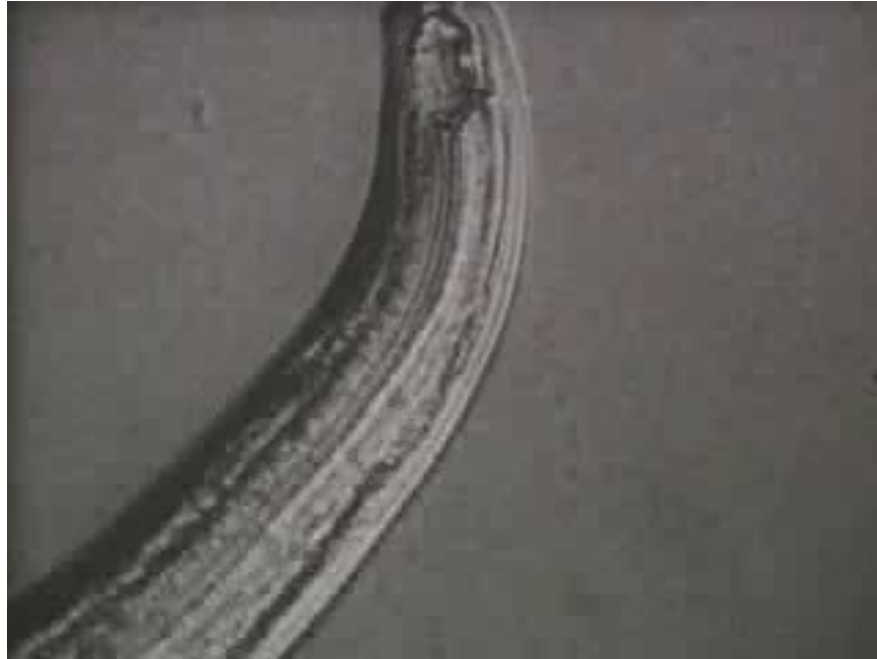
# Nematode Types

# Free-living Nematodes

- Can be saprophytic, fungivores or bacteriophores
- Play vital roles in foodweb (nutrient recycling) as secondary decomposers
- Important indicator organisms
- Beneficial to agriculture



# Predaceous Nematodes



- Predators of other nematodes
- *Mononchus* sp.

(Video courtesy of UC Davis)



- **Entomopathogenic Nematodes**

- Important biocontrol agents
- Used to control mole crickets and many other soil dwelling insect pests
- *Steinernema* spp. and *Heterorhabditis* spp.

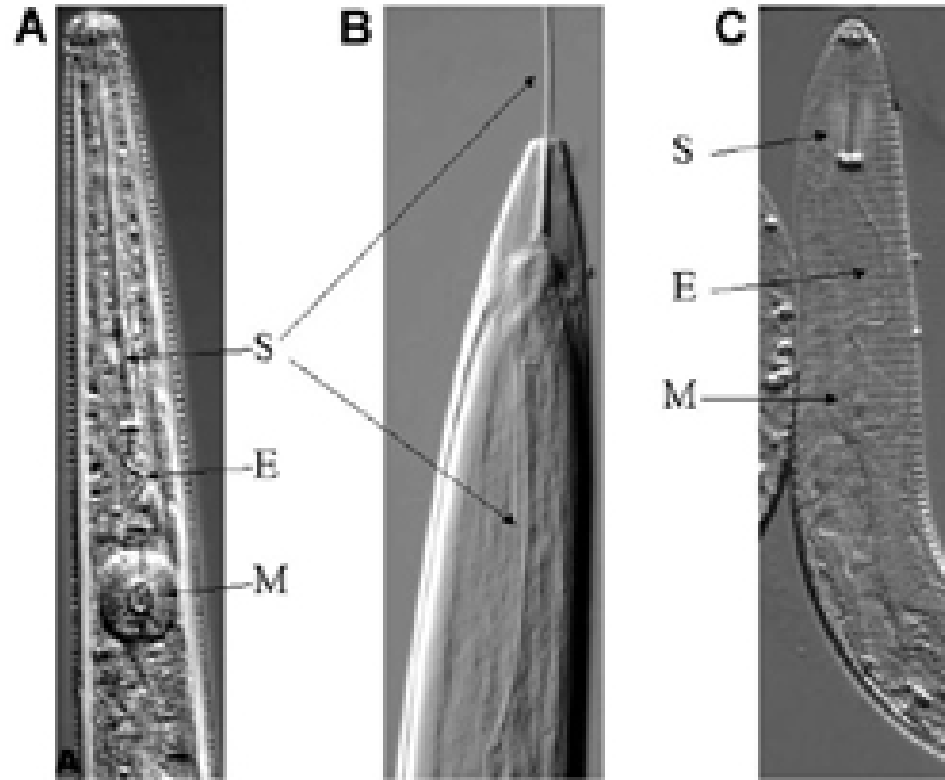


Buglogical.com

- Organisms that inhabit the rhizosphere of plants and interacts with the plants (not all feed on roots)
- Can live inside the roots (endoparasites) or feed on the outside of roots (ectoparasites)
- Cause root damage that leads to reduced vigor, wilting, reduction in growth and economic yield

## **Plant-Parasitic Nematodes (PPN)**

- All have stylets that are used to pierce the root cuticle and remove cell contents



## Characteristics of PPN

## • Above Ground:

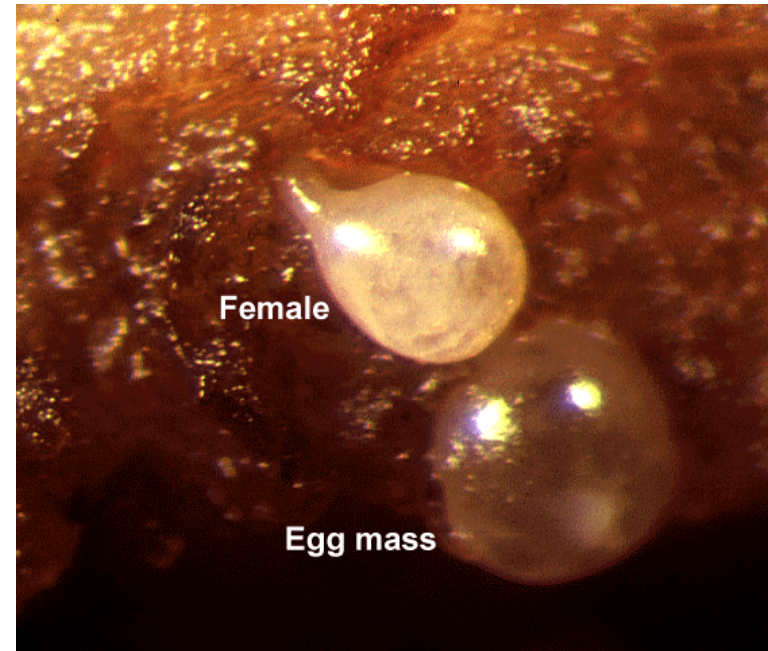
- General chlorosis, necrosis, wilting and interveinal chlorosis in leaves
- Stunting, toppling and lodging of plants
- Patchiness in field situations
- Dieback in trees beginning with the terminal tip
- Sudden death

# General Nematode Disease

- Below Ground:

- Root Knot- pronounced swelling of root tissue due to hypertrophy and hyperplasia
- Lesion- an injury, wound or spot of infected tissue
- Necrosis- death of root cells

# General Nematode Disease



# Root Knot Nematodes (*Meloidogyne* spp.)

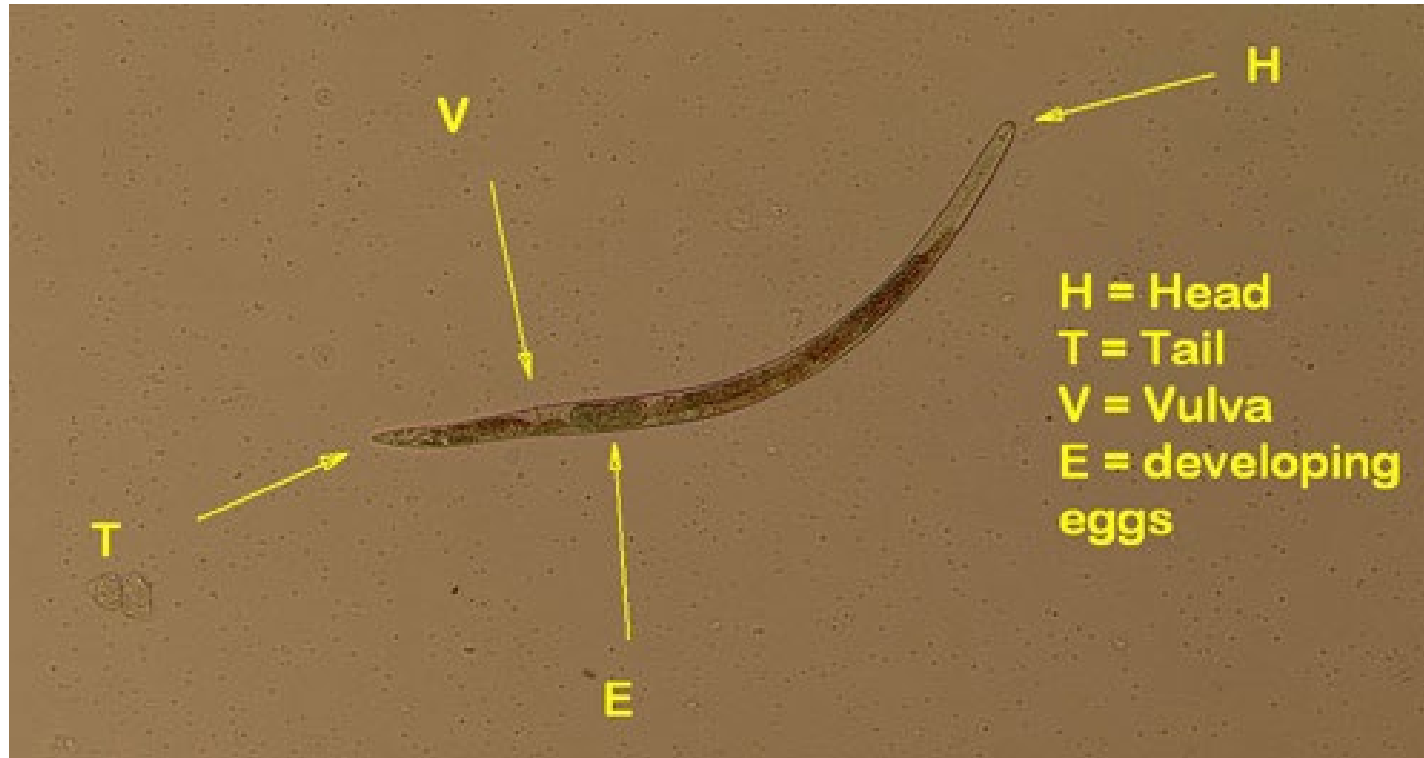


# Root Knot Nematodes (*Meloidogyne* spp.)

- Wide host range (over 5000 plant hosts)
- Obligate parasite
- Most harmful plant-parasitic nematode
- More than 80 species described
- No apparent aboveground signs

# Root Knot Nematodes

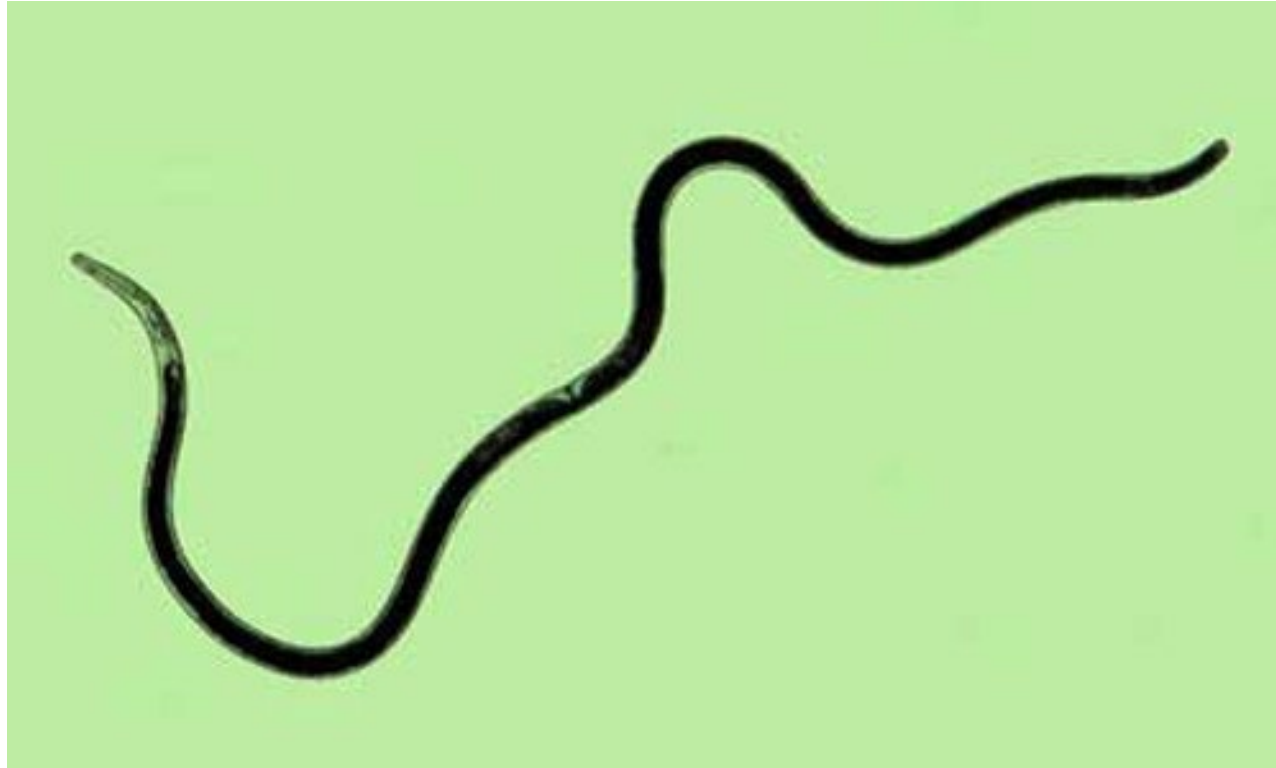




# Lesion Nematodes (*Pratylenchus* sp.)



**Amaryllis Lesion Nematode**  
***Pratylenchus hippeastri***



**Sting Nematode**  
**(*Belonolaimus longicaudatus*)**



**Sting Nematode**  
**(*Belonolaimus longicaudatus*)**



**Lance Nematode**  
**(*Hoplolaimus galeatus*)**



# Lance Nematode

- Foliar nematodes
- Pinewood and Red Ring nematodes (*Bursaphelenchus* spp.)
- Cyst nematodes (SCN)

## Other Nematodes

- There are no chemical controls labeled for home garden and landscape use- the only current options are cultural controls
- Resistant cultivars
- Cover crops
- Adding organic matter
- Adjusting planting times
- Crop destruction and weed management

## Control Options





# Soil Solarization

# Questions?

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