

Ornamental Plant Diseases & Nematode Management in Plant Beds

Limited Commercial Landscape Maintenance (LCLM)
Pesticide Applicator Certification Workshop

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Plant Diseases

Fungi

Bacteria

Viruses



Citrus Ringspot Virus

Diseases Caused by Fungi

Stem Rots

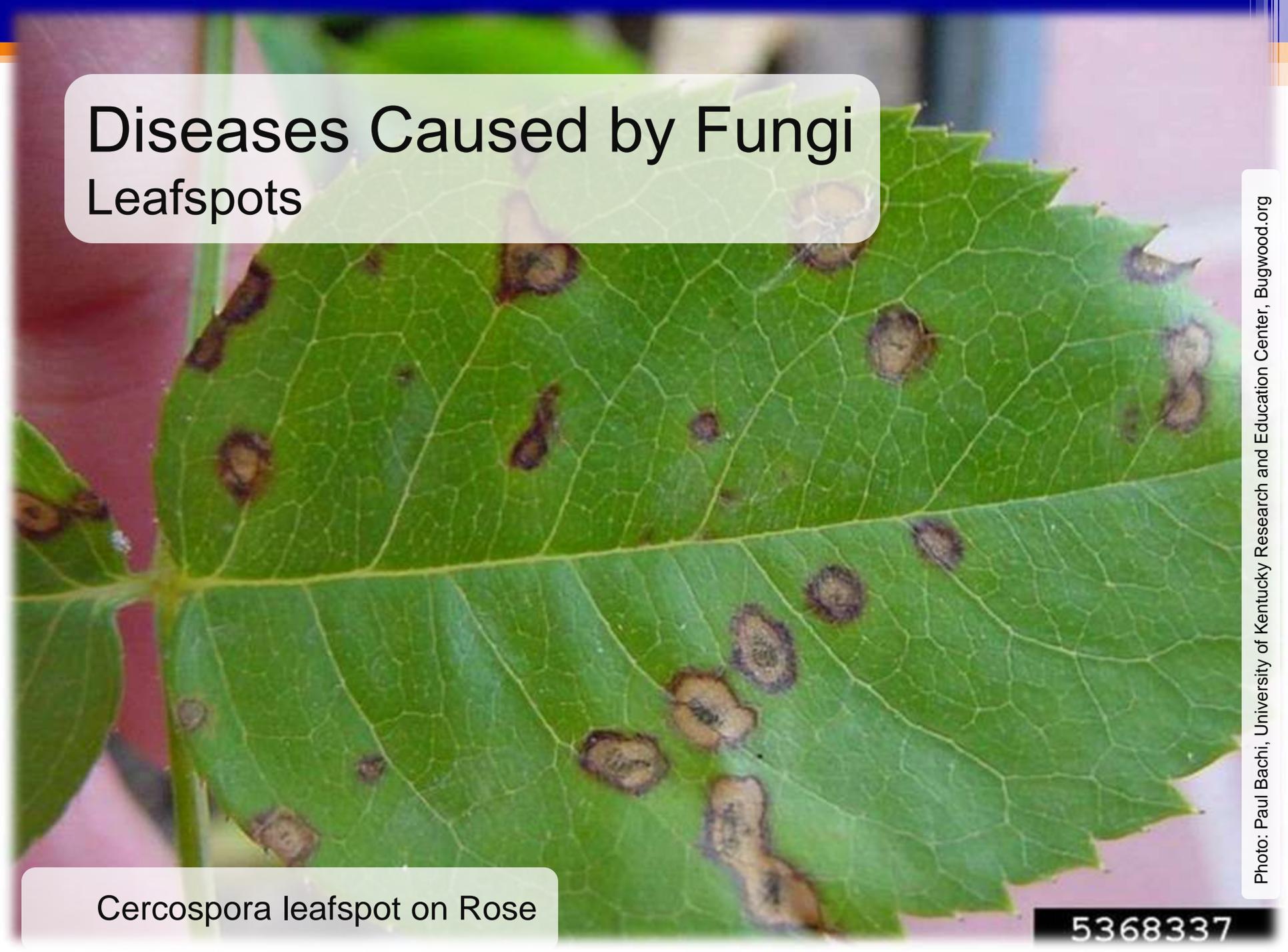
- rotting of the stem especially near soil line



Pythium on Geranium

Diseases Caused by Fungi

Leafspots



Cercospora leafspot on Rose

More Diseases Caused by Fungi

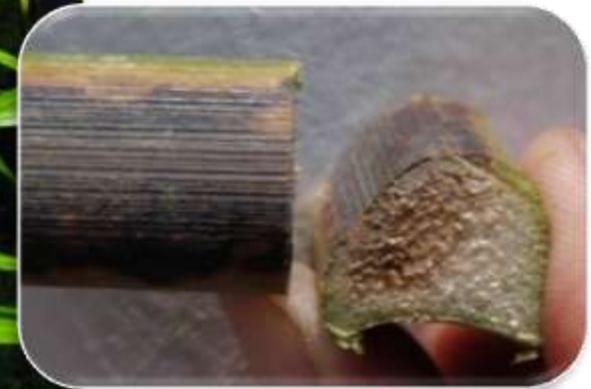
Rusts

- Eugenia rust – name from spore color



More Diseases Caused by Fungi - Wilts

- fungus invades the vascular system of the plant
- *Fusarium oxysporum* f. sp. *palmarum* on queen palm
- A major palm disease in this area



• Photos: UF Monica Elliott

More Diseases Caused by Fungi - Wilts

Another major palm disease in this area

- *Ganoderma zonatum*

Photo: UF Schall



Photo: UF Schall



Photo: UF Elliott

More Diseases Caused by Fungi

Powdery Mildew and Downy Mildew

- appears as powder spilled on the plant surface



PM on cucumber leaves



DM on Impatiens walleriana leaf bottom

Diseases Caused by Viruses

Types of Viruses

- Wilts
- Mosaics

- Viruses are spread by piercing-sucking insects like aphids and whiteflies
- Infection can almost never be controlled or eliminated in the plant

Diseases Caused by Viruses

Photo: Department of Plant Pathology Archive, North Carolina State University, Bugwood.org



Tobacco Mosaic Virus on Orchid



Photo: UF Schall

Sugarcane Mosaic Virus on St. Augustinegrass

Diseases Causes By Bacteria

Leaf Spots

- spots appear to be “water-soaked”

Wilts

- more rapid than wilt caused by fungi

Galls

- “crown gall” is an example

Diseases Causes By Bacteria

Common bacterial blight of
beans close-up of spot
Xanthomonas axonopodis pv. *Phaseoli*

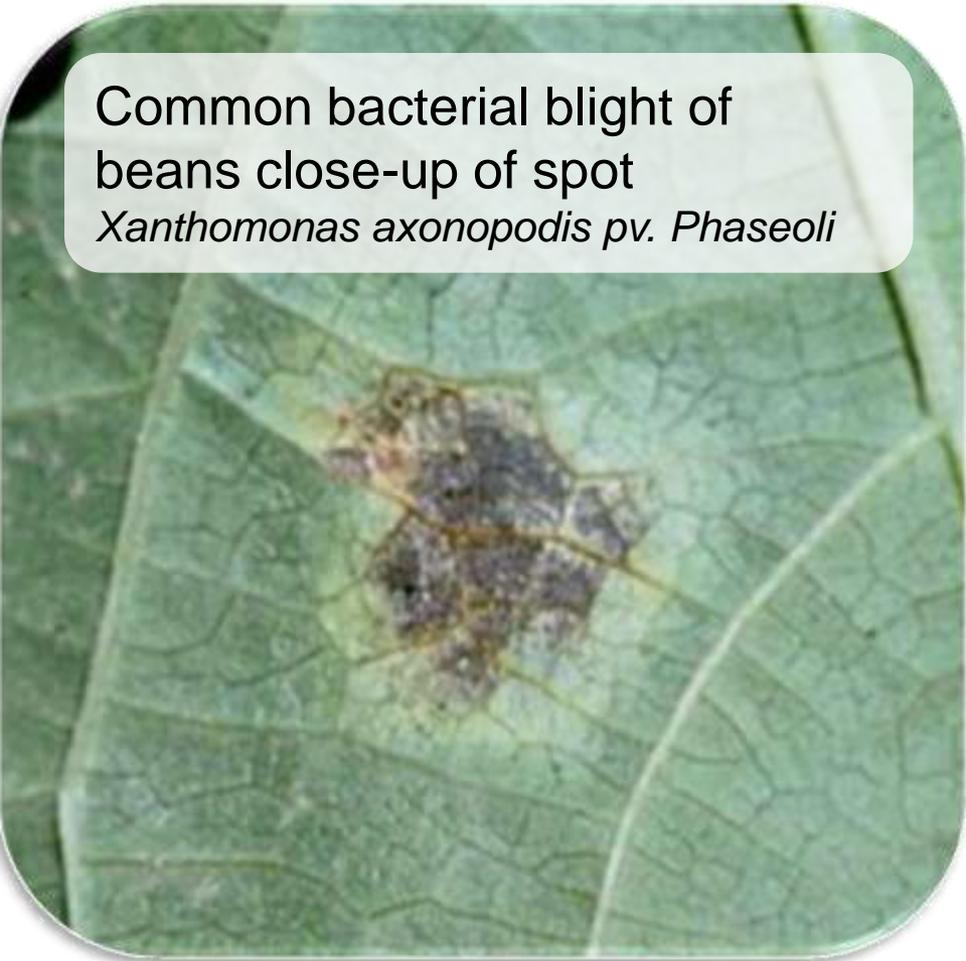
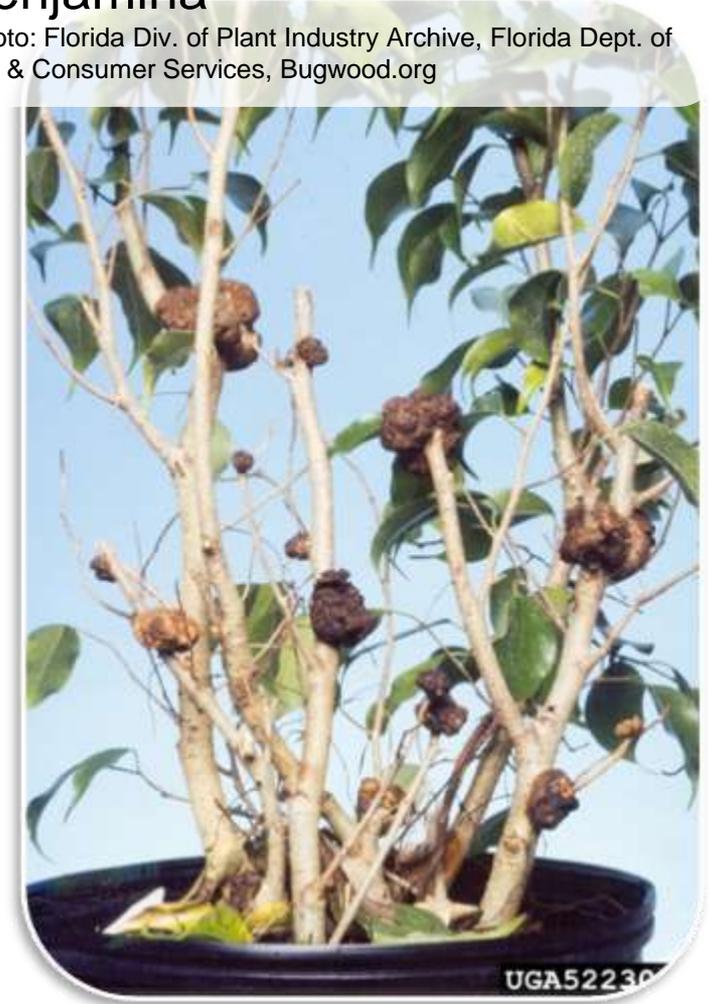


Photo: Howard F. Schwartz, Colorado
State University, Bugwood.org

Crown Gall on Ficus benjamina

Photo: Florida Div. of Plant Industry Archive, Florida Dept. of
Ag. & Consumer Services, Bugwood.org

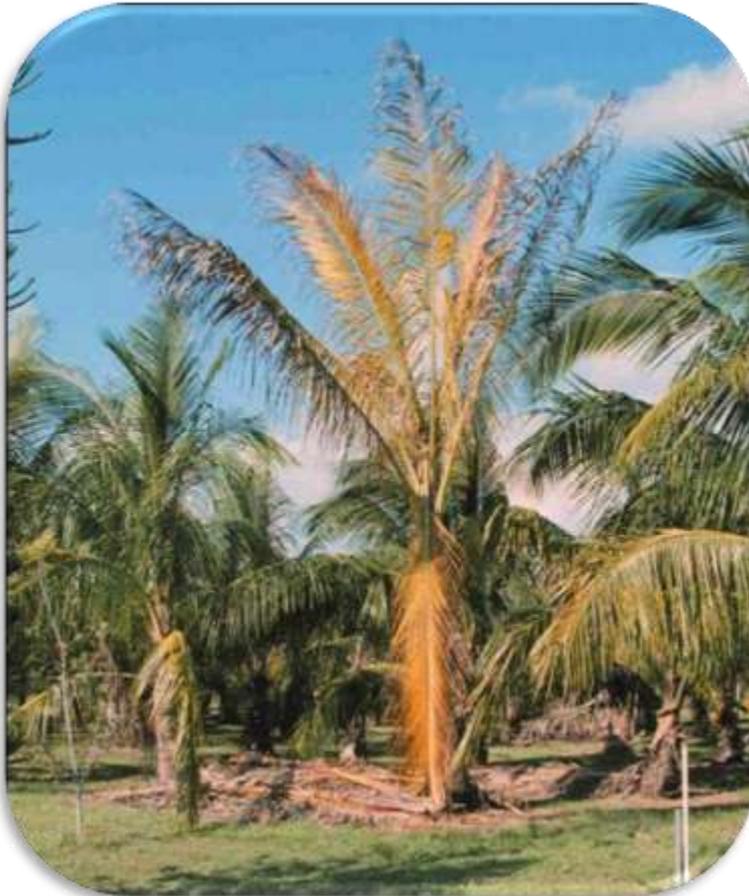


Diseases Caused by Phytoplasmas

(like bacteria without cell walls)

more major palm disease in this area

- Lethal Yellowing & TPPD



Mildew

- Sooty mold looks like mildew
- Mildew is actually fungi that grows under moist conditions



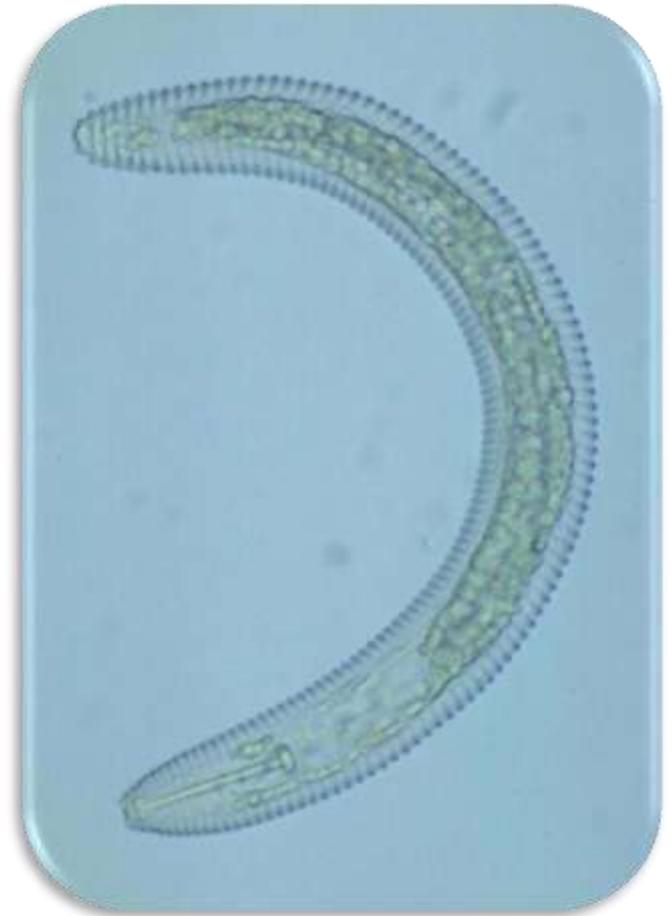
Diseases Identification

Extension Agent and Probably Lab for Identification



Nematode Management

- Small (1/100 to 1/8 inch long) unsegmented roundworms
- Most in plant roots
- Some in leaves, flowers, or developing seeds



Ring Nematode Highly Magnified

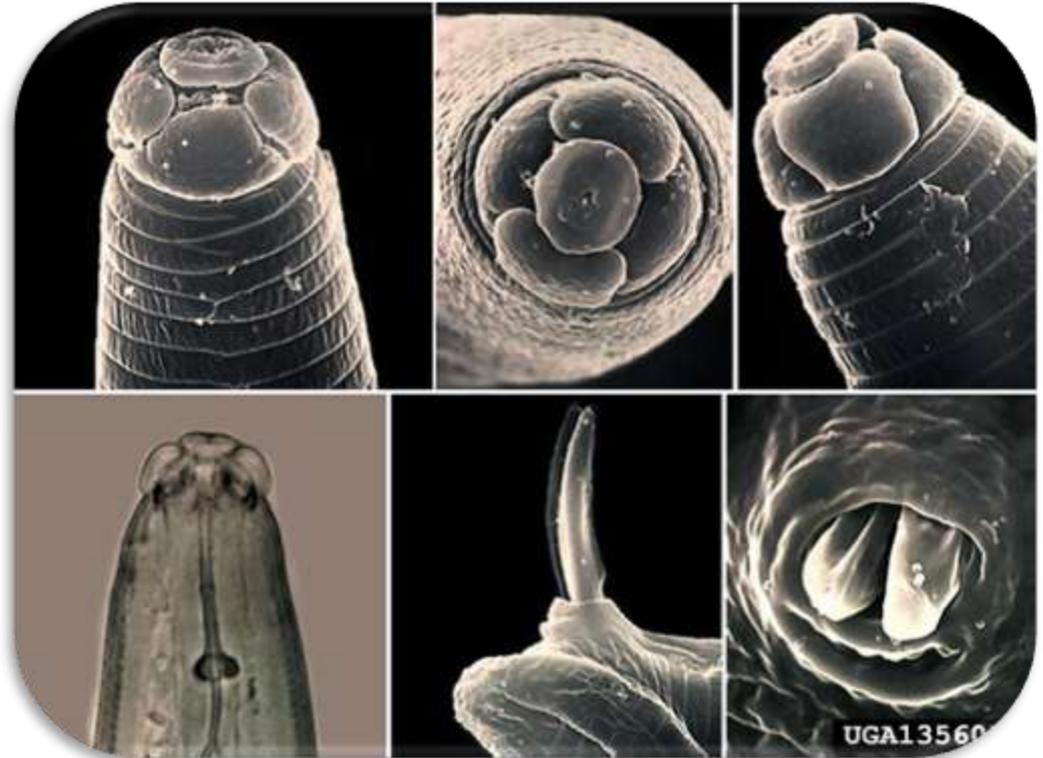
Photo: H.J. Larsen, Bugwood.org

Plant-Parasitic Nematode Management

- Usually need moisture to spread

Root Knot Nematode Head

Photos: Jonathan D. Eisenback, Virginia Polytechnic Institute and State University, Bugwood.org



Above Ground Symptoms

- Yellowing
- Slow growth
- Increased sensitivity to water stress
- Leaf-drop and branch die-back in woody plants

Below Ground Symptoms

Root galling

- root-knot nematodes (woody ornamental shrubs)

Stubby roots

- sting, awl, and stubby-root nematodes

Discoloration of roots

- lesion, lance, and burrowing nematodes

Below Ground Symptoms

Root galling

- root-knot nematodes
- Mostly on woody ornamentals



Some Root-Knot Nematode Common Host Plants

Pittosporum, Impatiens, Coleus, Salvia, holly, rose, *Hibiscus*, ti plants, figs, butterfly bush, *Ixora*, most *Gardenia*, bottle brush, Barbados cherry

Photos

Rose: Peggy Greb, USDA Agricultural Research Service, Bugwood.org

Hibiscus: Joy Viola, Northeastern University, Bugwood.org

Bottlebrush: Dennis Haugen, Bugwood.org

Salvia: Joy Viola, Northeastern University, Bugwood.org

Ti: Forest & Kim Starr, Starr Environmental, Bugwood.org



Below Ground Symptoms

Stubby roots

- sting, awl, and stubby-root nematodes



Sting nematode causing
“stubby” roots



Stubby-root nematode
on corn

Below Ground Symptoms

Discoloration of roots

- lesion, lance, and burrowing nematodes
- Can sometimes be confused with rotting roots



Photos: UF William Crow



Lance nematodes, healthy & rotted roots

Burrowing nematode on palm

Management of Nematodes

(restricted materials & turf application not legal under this license)

Gas Fumigants

- soil must be covered
- examples: methyl bromide, chloropicrin

Liquid Fumigants

- highly corrosive
- Examples: Vapam, Vorlex

Non-Fumigant Nematicides

- most toxic to humans, least to plants
- water soluble
- examples: Nema-cur, Mocap

Entomopathogenic Nematodes



***Heterorhabditis bacteriophora*
attacking white grub**

Photo: Whitney Cranshaw, Colorado State University, Bugwood.org



***Heterorhabditis bacteriophora*
attacking soil caterpillar**

Photo: Peggy Greb, USDA Agricultural Research Service,
Bugwood.org

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