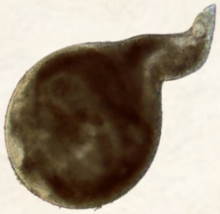
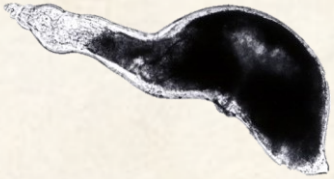
Root-Knot and Reniform: Key Nematode Challenges for Louisiana Agriculture

Louisiana Agricultural Technology and Management Conference
(February 12, 2026)





Tristan Watson

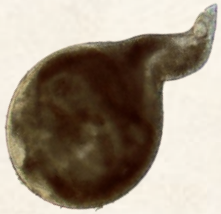
Nematologist

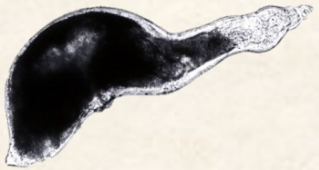
Plant Pathology and Crop Physiology

LSU AgCenter

Presentation Outline

Root-Knot & Reniform Nematode





Soybean

Corn

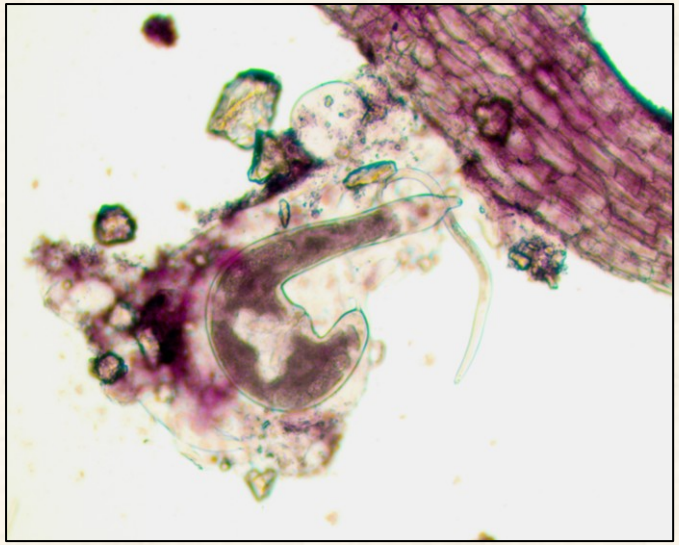
Cotton

Sugarcane

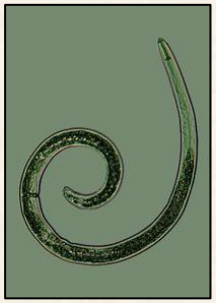
Nematode Species in Louisiana

Root-Knot Nematodes
Meloidogyne spp.

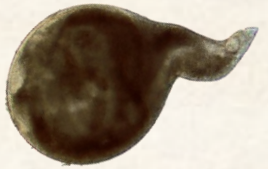
Reniform Nematode
Rotylenchulus reniformis



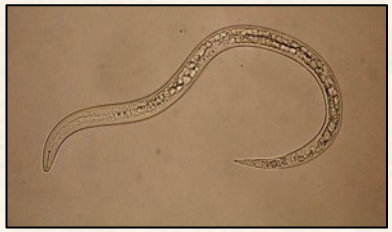
Minor Parasites
Lesion, Ring, Stunt, Spiral, etc.



Root-Knot Nematode



- Wide host range
- Forms galls on roots
- Aboveground:
  - Yellowing
  - Stunted growth
- Reduces yield
- ’Hot spots’ in a field
- Likes with sandy soil



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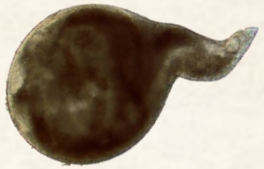
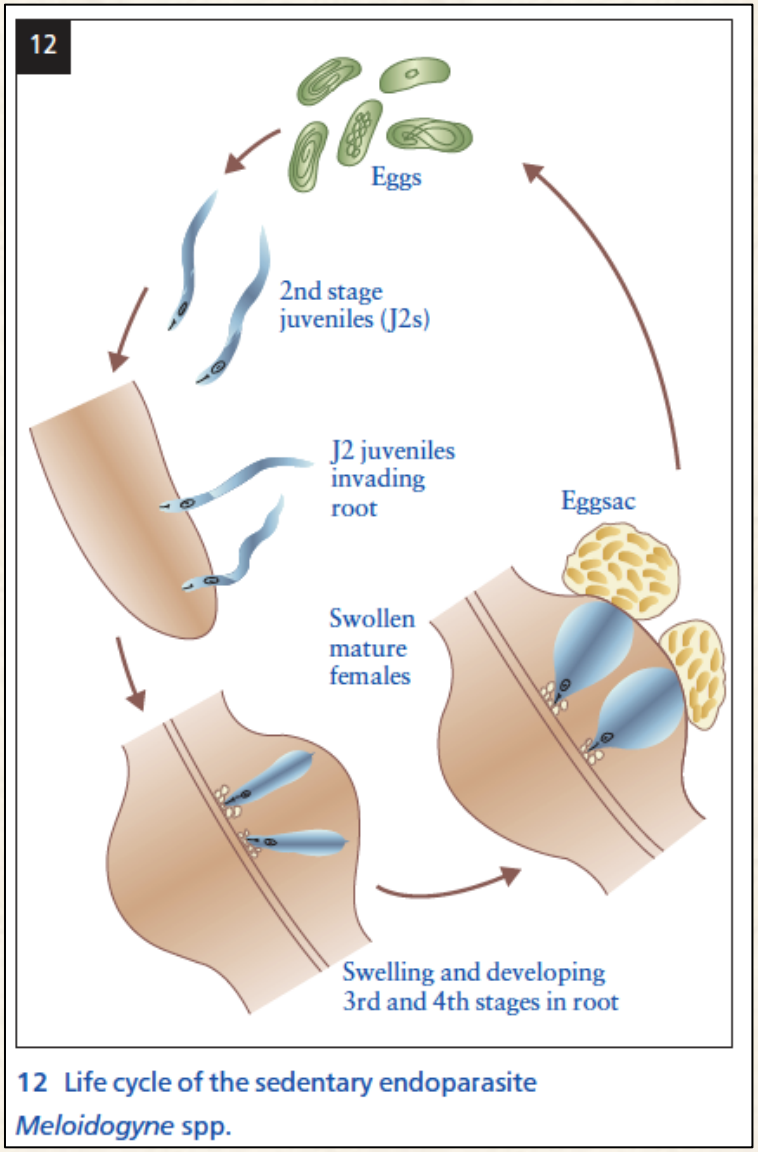
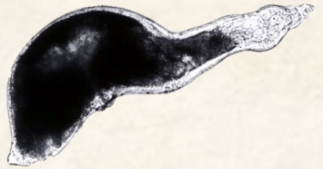


Life Cycle

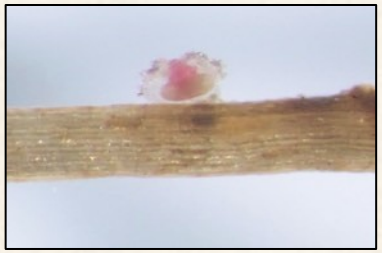
- J2-stage nematode emerges from egg
- J2 seeks out and penetrates root tip
- J2 establishes feeding site (giant cell)
- Nematode ingests cytoplasmic contents
- J2 increases in size and molts
  - J3-stage, J4-stage, Adult
- Eggs are deposited in egg mass on roots



Reniform Nematode



- Moderate host range
  - Corn and Grain Sorghum = non-host



- No obvious root symptoms

- Reduces yield

- Infested fields occasionally show no obvious signs of damage.

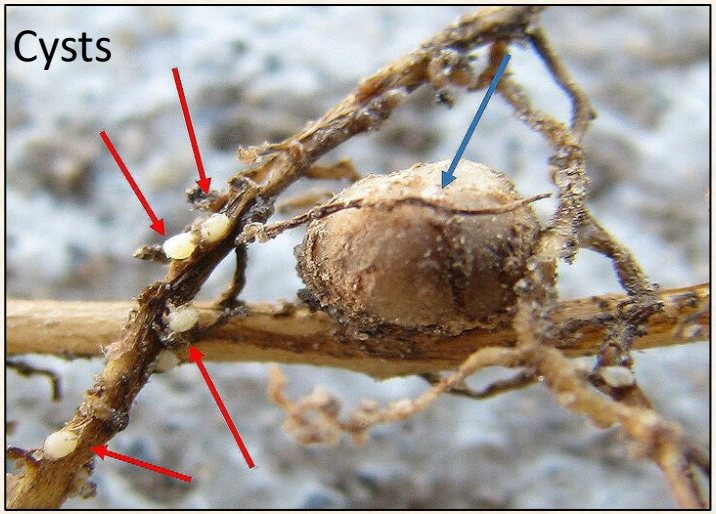
- Typically widespread in a field

Soybean

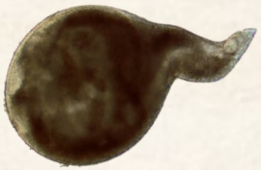
Major Nematode Pests:

- Southern Root-Knot Nematode (*Meloidogyne incognita*)
- Reniform Nematode (*Rotylenchulus reniformis*)

*Cyst Nematode (*Heterodera glycines*) can be a problem in certain sites



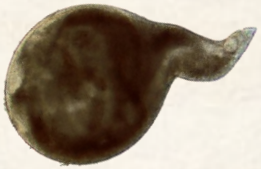
Soybean



Root-Knot Nematode

2024 = 2.23% yield loss in LA ($19.7 million)

Soybean



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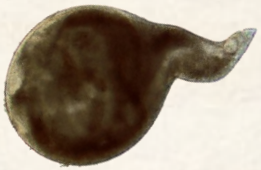

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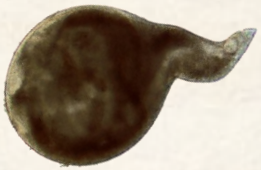

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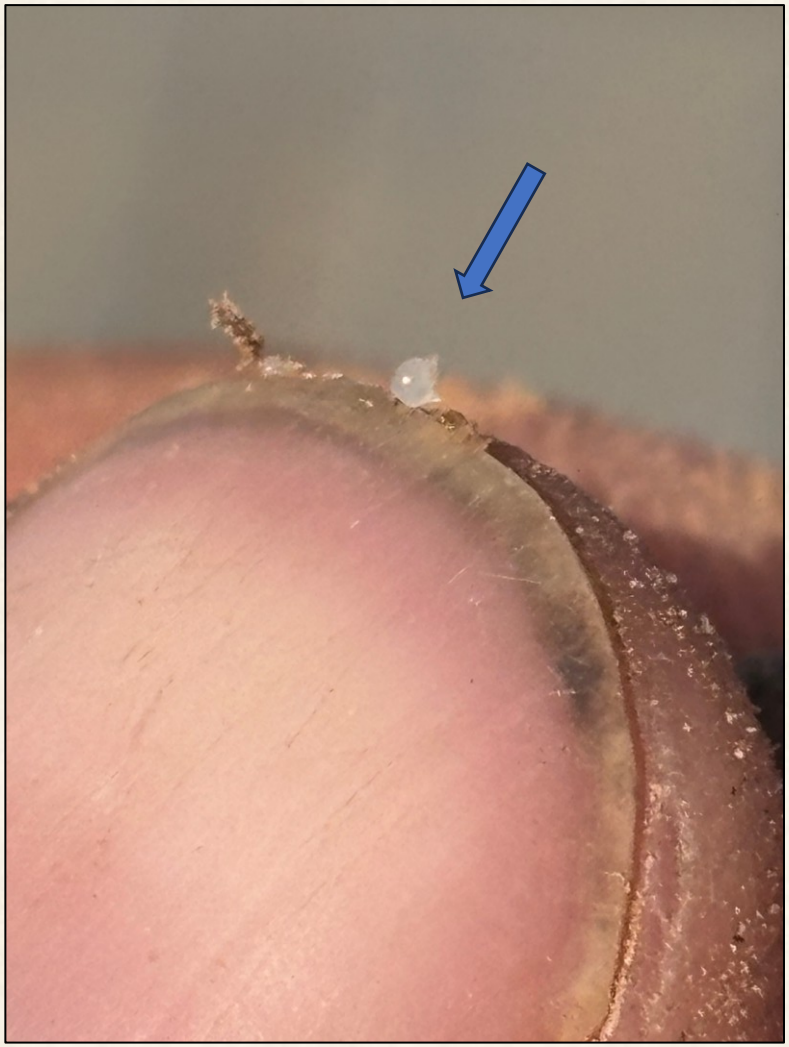
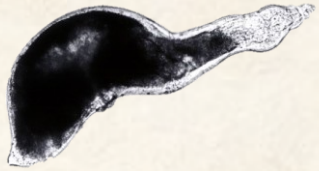


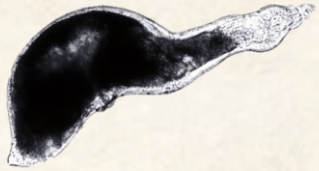
Soybean



Reniform Nematode

Wave Effect:

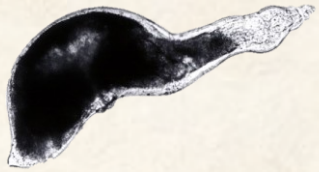
Soybean



Reniform Nematode

2024 = 1.89% yield loss in LA ($16.7 million)

Soybean



Reniform Nematode

2024 = 1.89% yield loss in LA ($16.7 million)

Soybean

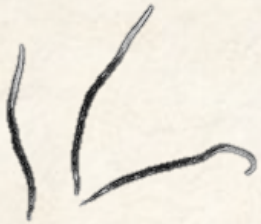
Management

- **Host Resistance**:
  - Available for root-knot nematode, but only partially effective
  - Starting to become available for reniform nematode

- **Nematicides**:
  - Primary seed coat treatments (may preserve yield)
  - Some in-furrow nematicides becoming available
    - Cost restrictive?

- **Crop Rotation**:
  - May help with reniform nematode
  - More difficult with root-knot nematode

Corn



Major Nematode Pests:

- Southern Root-Knot Nematode (*Meloidogyne incognita*)

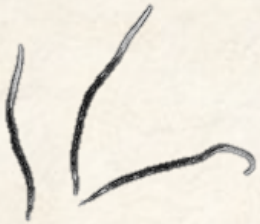
  *Stunt nematode (*Tylenchorhynchus* sp.) can be a problem in certain sites

- Non-host to reniform nematode (i.e., good rotation crop)

- Damage is specific to sites with a history of root-knot infestation

- Watch out for fields with sandy soil texture

Corn



Yield loss estimates ongoing

2025 = 9.5% in two infested fields

Corn

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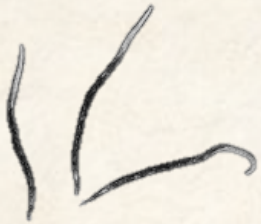
Corn



Management:

- **Resistant Varieties** = Not available
- **Nematicides**:
  - Seed coat and in-furrow

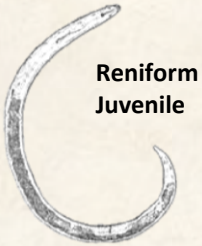
Crop	Product Choices	Rate	Comments	Nematicide Type
Corn	Mocap 15G	10-13 lb (40-in rows)	Apply in a 12-15 inch band at planting. Incorporate into top 2-4 inches of soil.	Granular – Organophosphate
	Counter 15G Lock 'n Load Counter 20G Lock 'n Load Counter 20G Smartbox	6-8 oz/1000 ft 4.5-6 oz/1,000 ft	Apply in a 7 inch band. Apply in a 4-5 inch band over open seed furrow in front of press wheel or apply in furrow.	Granular – Organophosphate
	Avicta Complete Corn 250 Avicta Complete Corn 500 Avicta Duo Corn Avicta Duo 250 Corn	Preordered seed treatment	Use in fields with low to moderate nematode levels only.	Seed Coat – Lactone
	Poncho Votivo	Seed application	Use in fields with low to moderate nematode levels only.	Seed Coat – Biological
	Telone II	3-6 gal	Apply fumigant 1 week before planting at a depth of 14 inches beneath the soil surface. Soil should not be excessively wet at the time of application.	Soil Fumigant
	Averland FC	4-6 fl oz	Apply in-furrow. Do not apply more than 6 fl oz per year.	Liquid – Lactone

- **Crop Rotation**:
  - Difficult with root-knot nematode

Cotton

Major Nematode Pests:

- Southern Root-Knot Nematode (*Meloidogyne incognita*)
- Reniform Nematode (*Rotylenchulus reniformis*)



Reniform Infective Juvenile

Cotton

Root-Knot Nematode

Cotton

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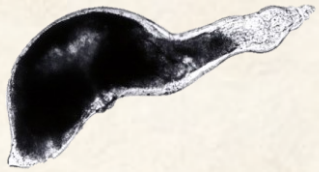
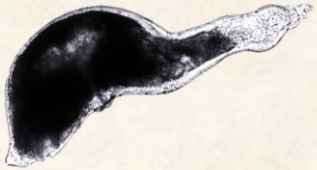


Reniform Nematode

Soil samples provide best diagnostics

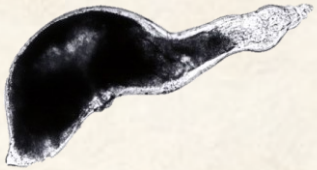
Cotton



Reniform Nematode

2024 = 3.00% yield loss in LA ($3.3 million)

Cotton



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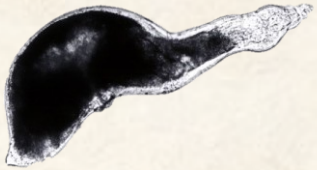

Reniform Nematode

2024 = 3.00% yield loss in LA ($3.3 million)

Cotton

Management:

- **Host resistance** and **in-furrow nematicides** show management potential

VELUM® PRIME

AVERLAND™ FC Nematicide · Insecticide

AgLogic™ 15G Aldicarb Pesticide

- ‘21 Host Resistance (DP2143NR, PHY411, etc.)
  - Two gene resistance to Southern Root-Knot Nematode
  - One gene partial resistance to Reniform Nematode

DELTAPINE®

PhytoGen COTTONSEED

- New cultivars with enhanced reniform nematode resistance now available
  - Deltapine 2522NR B3TXF
  - 40% yield increase relative to susceptible cultivar in 2025 trial

Sugarcane

Major Nematode Pests:

- Lesion Nematode (*Pratylenchus* sp.)
- Ring Nematode (*Mesocriconema* sp.)

Responsible or 5 – 10 % yield loss in infested fields

*Southern Root-Knot Nematode (*Meloidogyne incognita*)

- Increasingly a problem when rotating between sugarcane crops
- Yield loss on sugarcane unknown

Sugarcane

Sugarcane

Treated with Nematicide (Nimitz)

Yield..... stay tuned!

Sugarcane

Management

2 Nematicides currently registered

Crop	Product Choices	Rate	Comments	Nematicide Type
Sugarcane	Mocap 15G	1.8-3.6 lbs/1,000 row	Apply in a 12-15-inch band over seed pieces and cover with soil.	Granular – Organophosphate
	Nimitz	3.5-7 pints	Apply broadcast or banded at-planting or at ratoon.	Liquid – 3F Nematicide

LSU AgCenter Nematode Advisory Service

Nematode Advisory Service
Department of Plant Pathology and Crop Physiology
302 Life Science Building
Baton Rouge, LA 70803

Nematode Advisory Service
125 Life Science Annex
Louisiana State University

Provides nematode diagnostics, population monitoring, and management recommendations to the state of Louisiana

Dr. Tristan Watson
Director
Nematode Advisory Service

Dr. Josie Rezende
Research Associate
Nematode Advisory Service

Nematode Advisory Service

Department of Plant Pathology & Crop Physiology
302 Life Sciences Building
110 LSU Union Square
Baton Rouge, LA 70803
Tel: (225) 578-2186

Nematode Assay Form

Grower's name and address:

Name _____
Address _____
City, State, Zip _____
Parish _____
Email _____
Date of sampling _____

Submitted by:

Name _____
Address _____
City, State, Zip _____
County Agent _____

Sample Information

Clinic number (leave blank)	Sample identification	Current crop or past crop	Next crop or alternatives

There is a charge of $10 per sample. Checks should be made out to "LSU AgCenter NAS".

Questions?

Tristan Watson
Nematologist – LSU AgCenter

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941-243-1397