



Diagnosing Turf Diseases

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Today's Tifton Talk

- Who are we? (3 slides)
- Diagnosing Turf Maladies (100 slides)

Who Are We?

- Committed
- Consultative
- Connected
- *“A relationship that matters”*

Who Are We?

Simplot

Bringing Earth's Resources to Life

COMMITTED. CONSULTATIVE. CONNECTED.
A RELATIONSHIP THAT MATTERS

Simplot
PARTNERS

FULL PRODUCT LINE, UNIQUE SOLUTIONS.

Your Simplot representative connects you and your clients to a full range of advanced and efficient fertilizers, turfgrass seed, turf protection and specialty products.

Our Partners

Simplot
PARTNERS

AMVAC The Andersons ABE BASF
Bayer CropScience BEST CLEARY
DU PONT FMC JAGKLIN SEED KROCH
MITCHELL PRODUCTS Mulsam G Profile
PROKAZ SePRO Spectrum syngenta
TEE GREEN TMI TURF MERCHANTS INC. TURFACE ATHLETICS Underhill
UnionTools UPI VALENT

Exclusive Specialty Products

✓ ColorPack

- ✓ Micronutrients, pigments

✓ Growth Pack

- ✓ Liquid Biostimulants etc.

✓ NutriPack

- ✓ Liquid fertility

✓ PestPack

- ✓ A few pesticides

✓ SoilPack

- ✓ Gypsum, Lime, Humic acid

✓ SoluPack

- ✓ Granular fert for liquid apps.

✓ SprayPack

- ✓ Spray adjuvants, dyes etc.

✓ SurfPack

- ✓ Wetting agents

✓ TechPack

- ✓ Cleaners, defoamers

✓ WaterPack

- ✓ Lake treatments/colorants

Diagnosing Turf Overview

- Abiotic disorders vs. biotic
- Disease examples
- Nematodes (of course)

Types of Plant Disorders

- **Abiotic** diseases/disorders are caused by noninfectious agents such as...
 - weather stress
 - nutrient deficiency
 - chemical injury
 - soil factors
 - etc., etc.

Types of Plant Disorders

- **Biotic** diseases/disorders are caused by infectious agents
 - Fungi
 - Bacteria
 - Viruses
 - Nematodes

Turf Symptoms – abiotic?



TifEagle bermudagrass, Settle 4-24-19

Turf Symptoms – abiotic!



TifEagle bermudagrass, Settle 4-24-19

Disease triangle

Pathogen

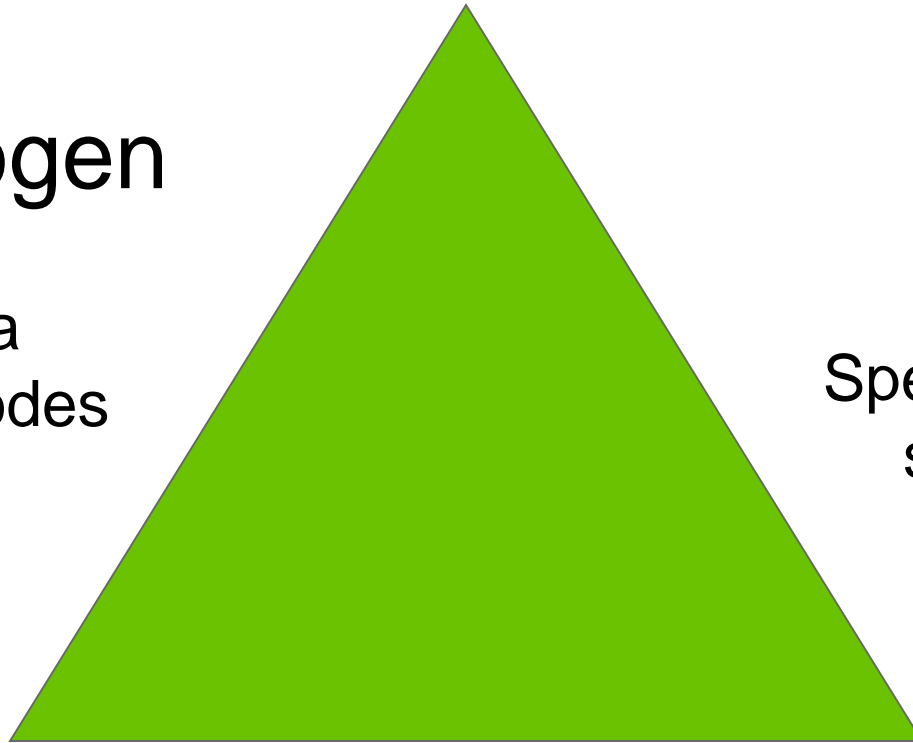
fungi
bacteria
nematodes
viruses

Host

Species, cultivar,
stress level

Environment

Soil moisture, leaf wetness, temperature



Turf symptoms - biotic



Looking closer: What *part* of the plant is affected?

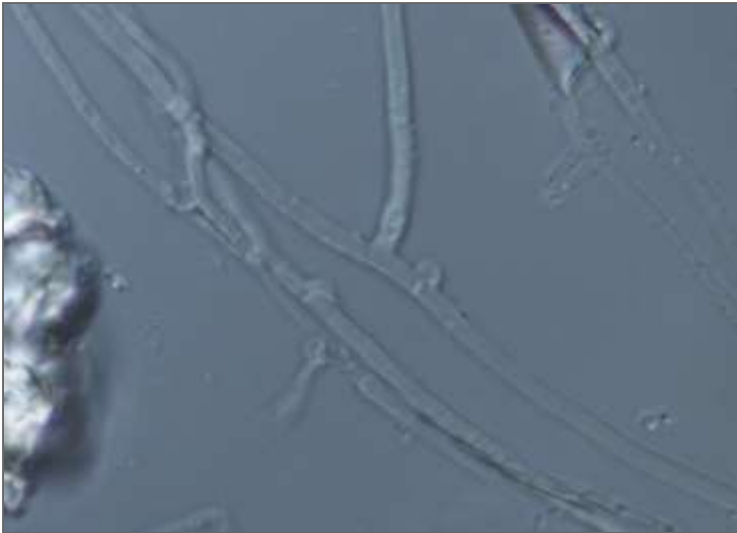


Turf disease *signs*



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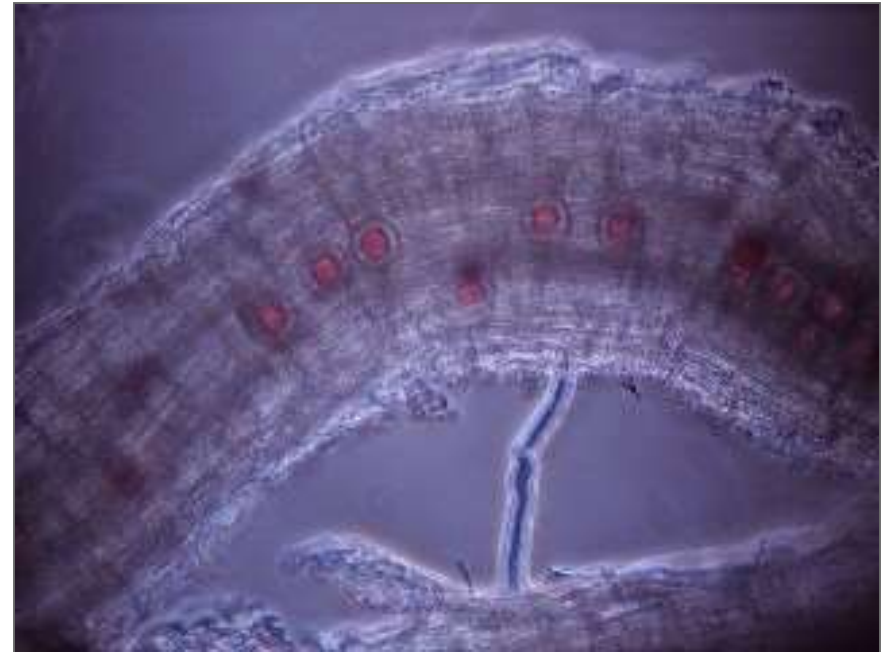
Microscopic signs



Hyphae (mycelium)



Conidia
(spores)



Oospores

**An example –
warm temp Pythium blight**



7-11-17

An example – warm temp *Pythium* blight



7-11-17

**An example –
warm temp *Pythium* blight**



7-11-17

An example – warm temp *Pythium* blight



7-11-17

An example – warm temp Pythium blight



7-11-17

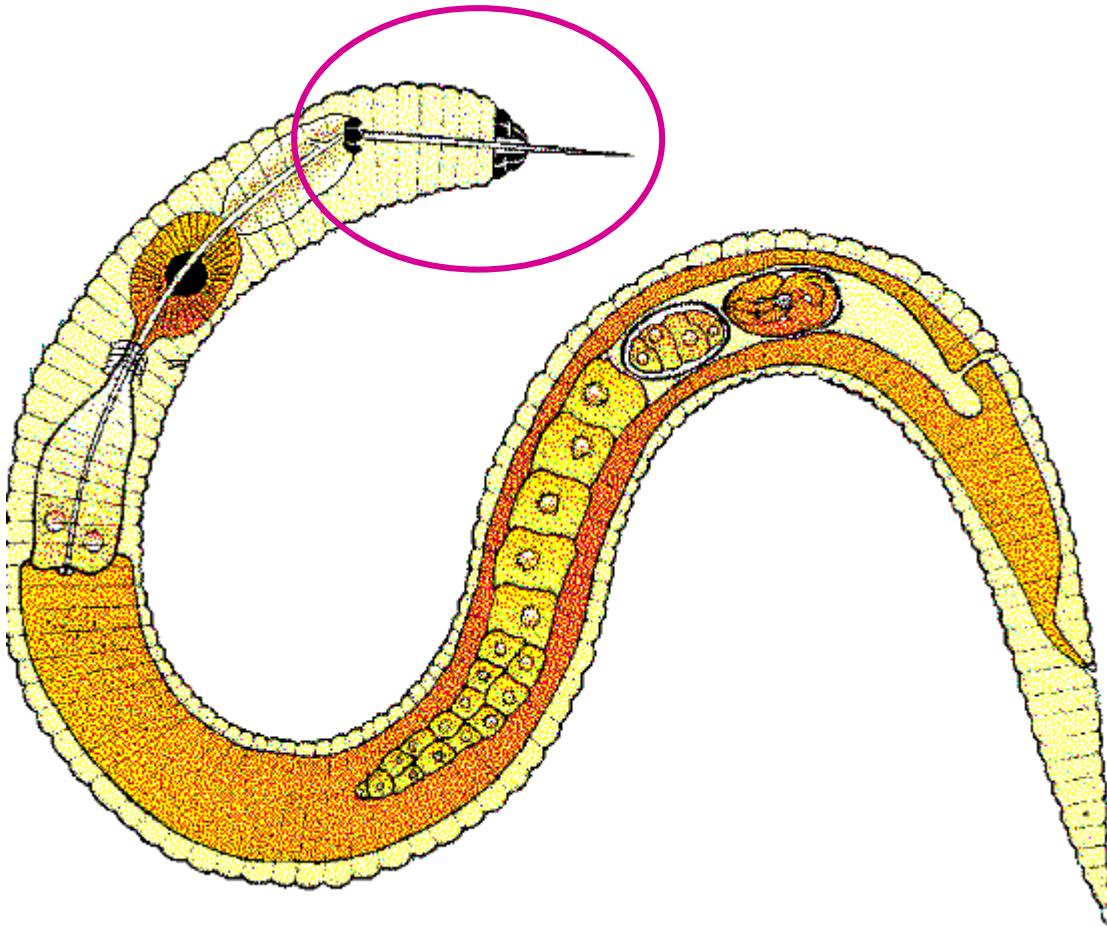
How to submit a sample

Take sample from the
“leading edge”

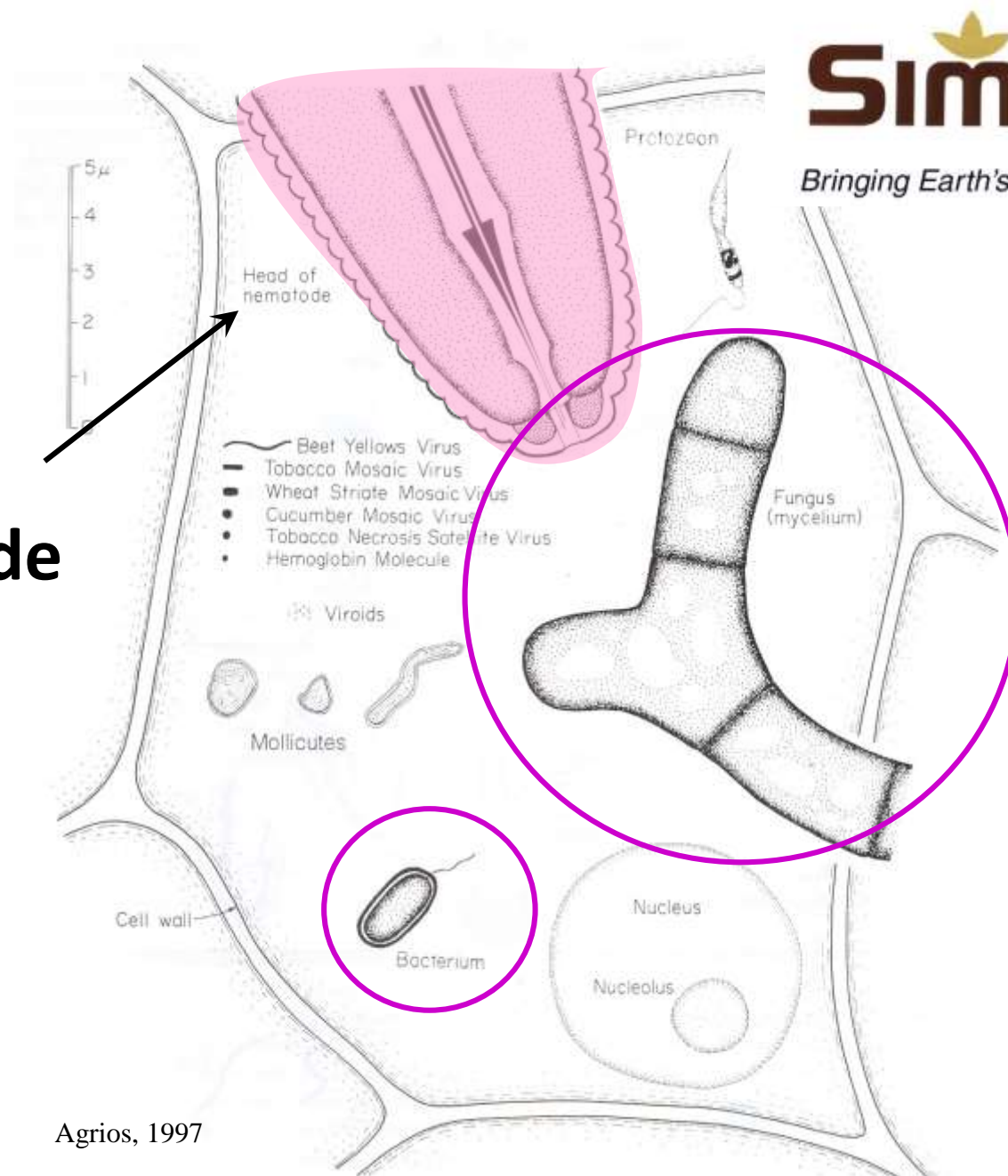


Deep enough to get
roots!

Plant Parasitic Nematodes

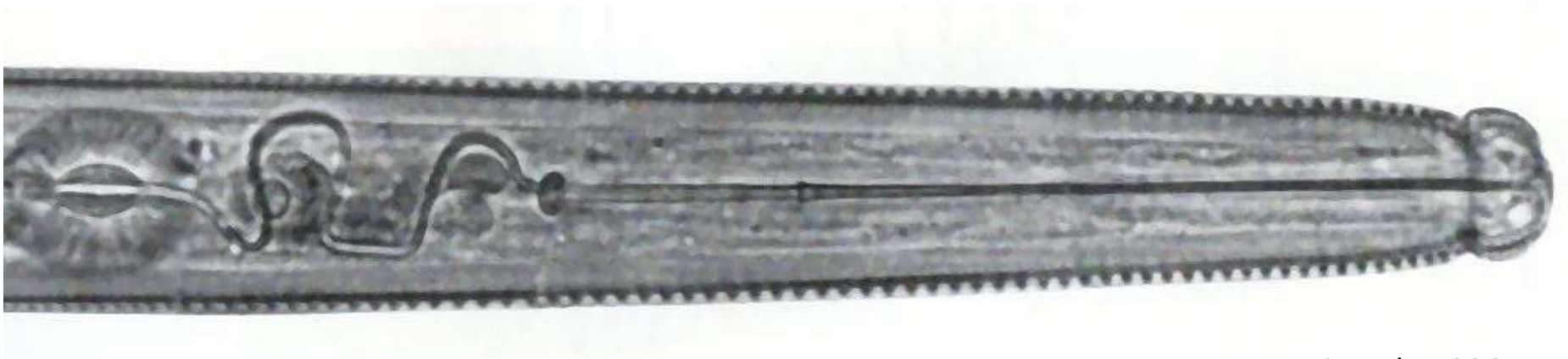


Relative size of a nematode



Sting Nematode

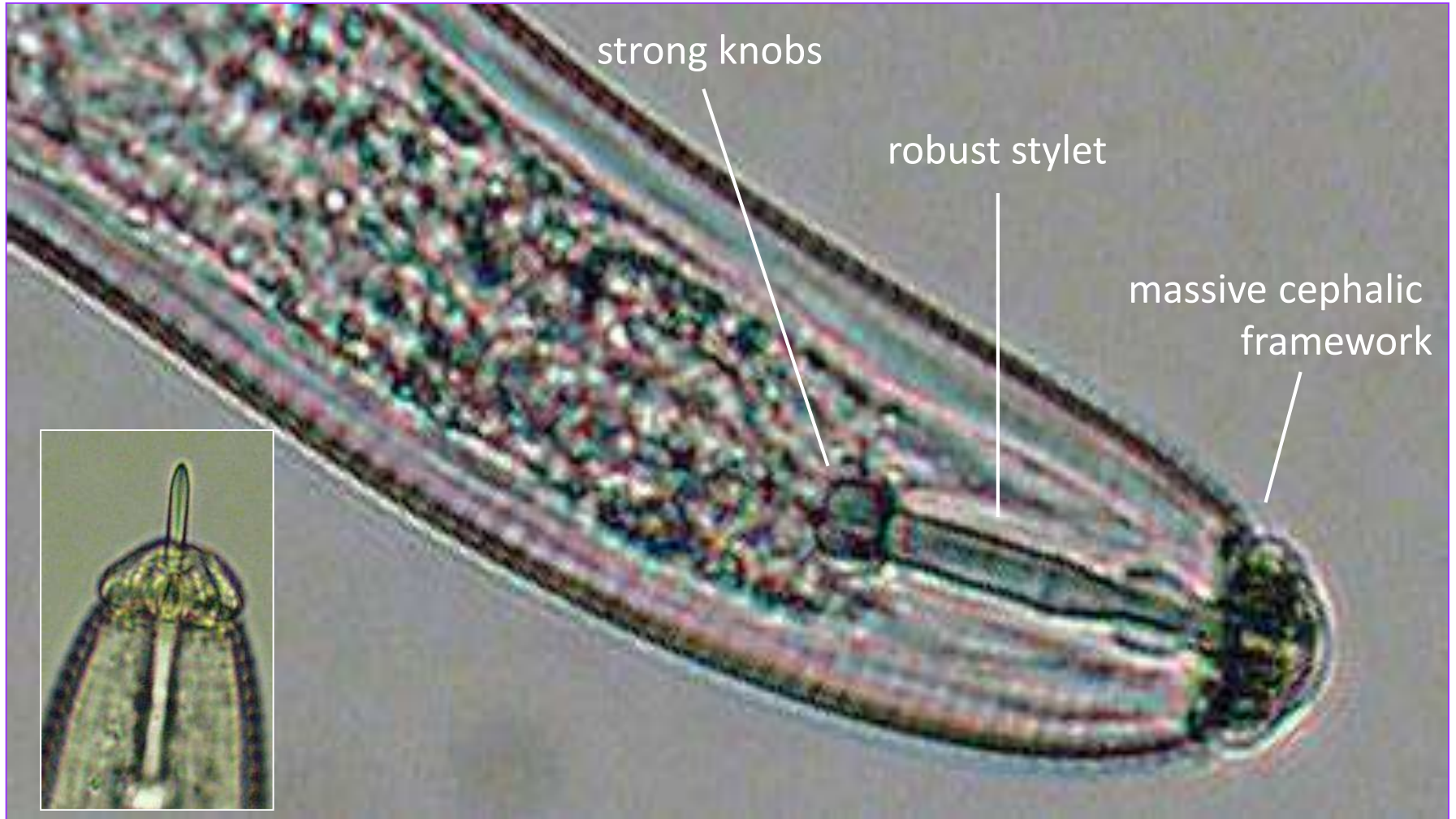
Belonolaimus longicaudatus



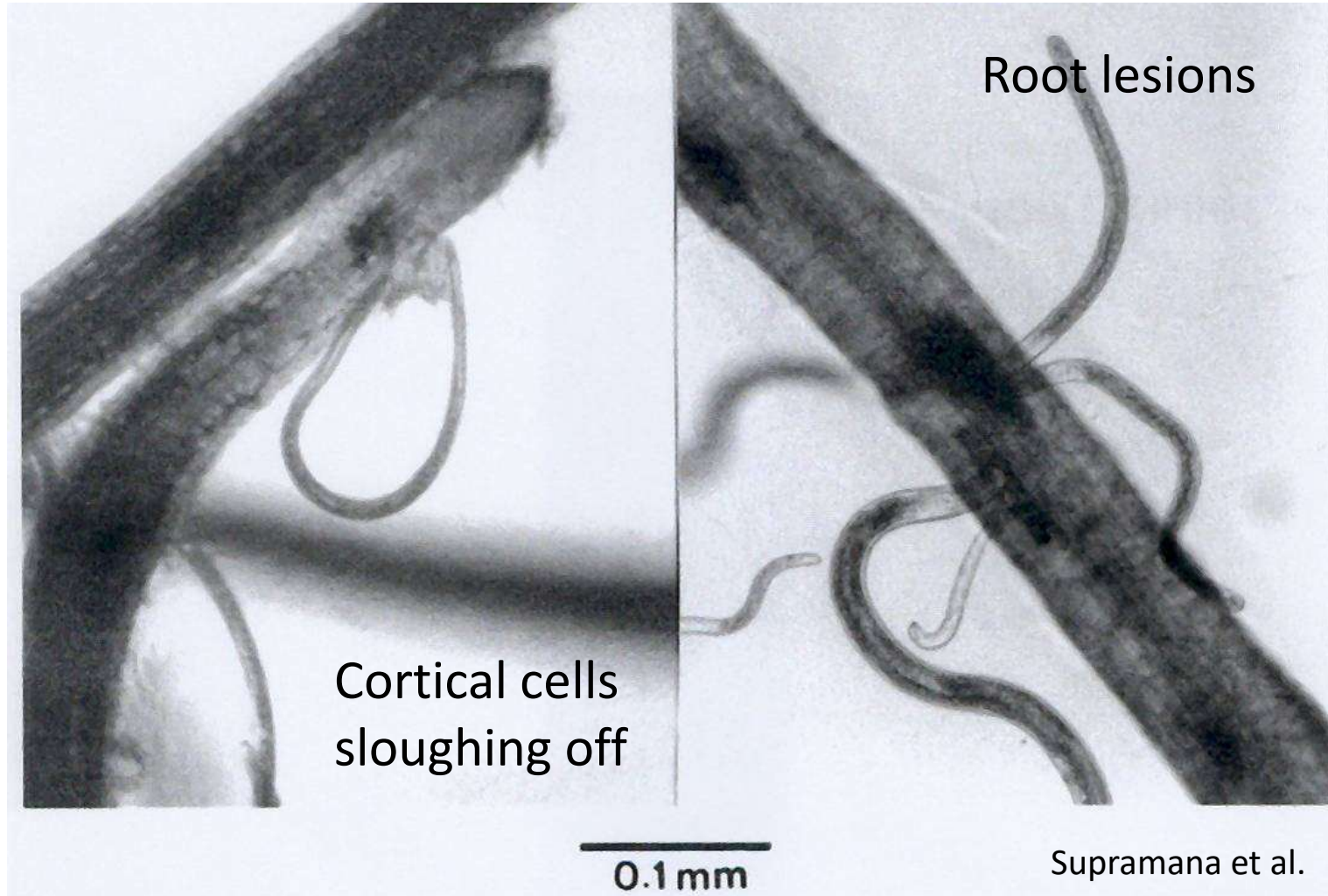
Mai et al., 1996

Lance Nematode

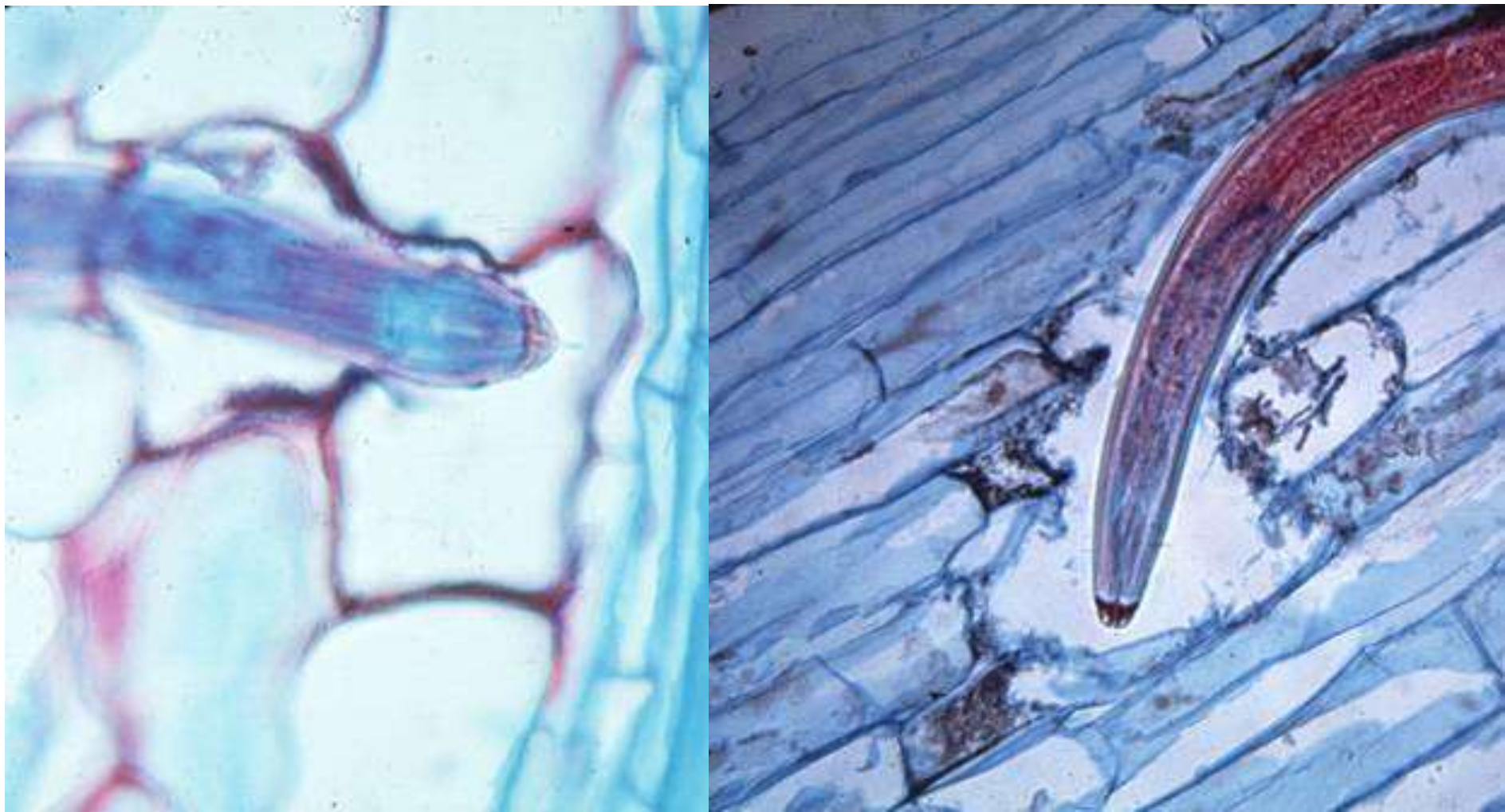
Hoplolaimus galeatus



Lance Nematodes with Ecto-parasitic Behavior

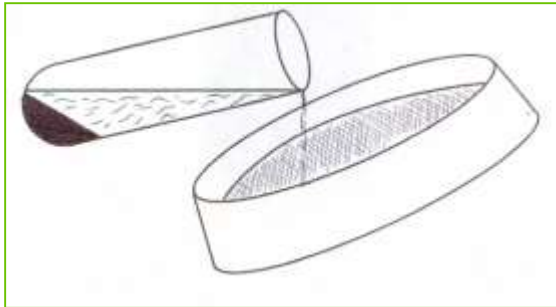
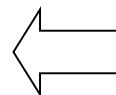
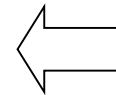
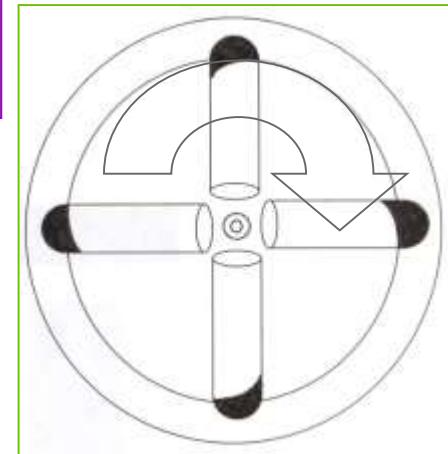
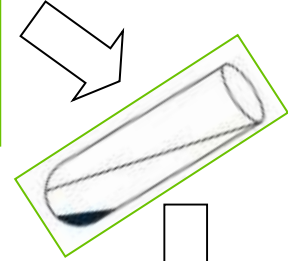
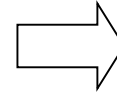
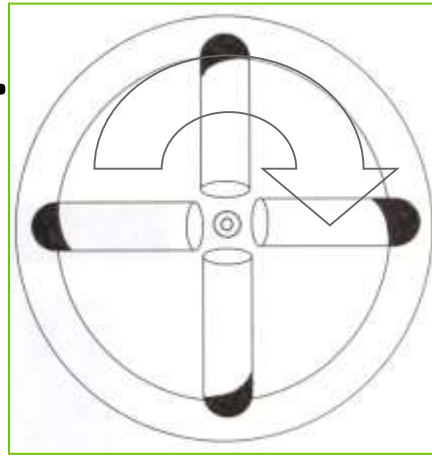
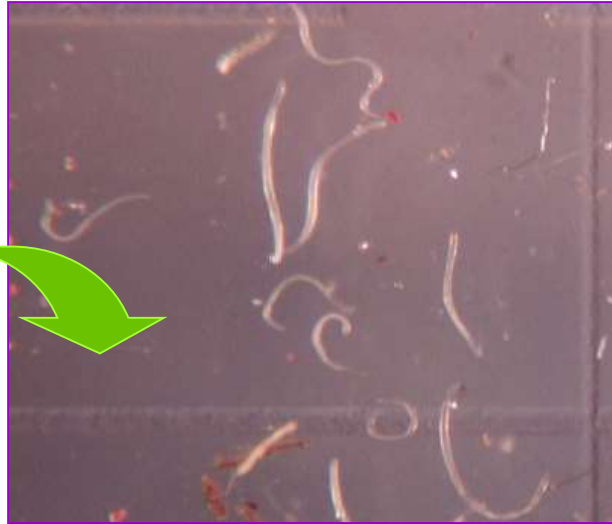


Lance Nematodes with Endo-parasitic Behavior

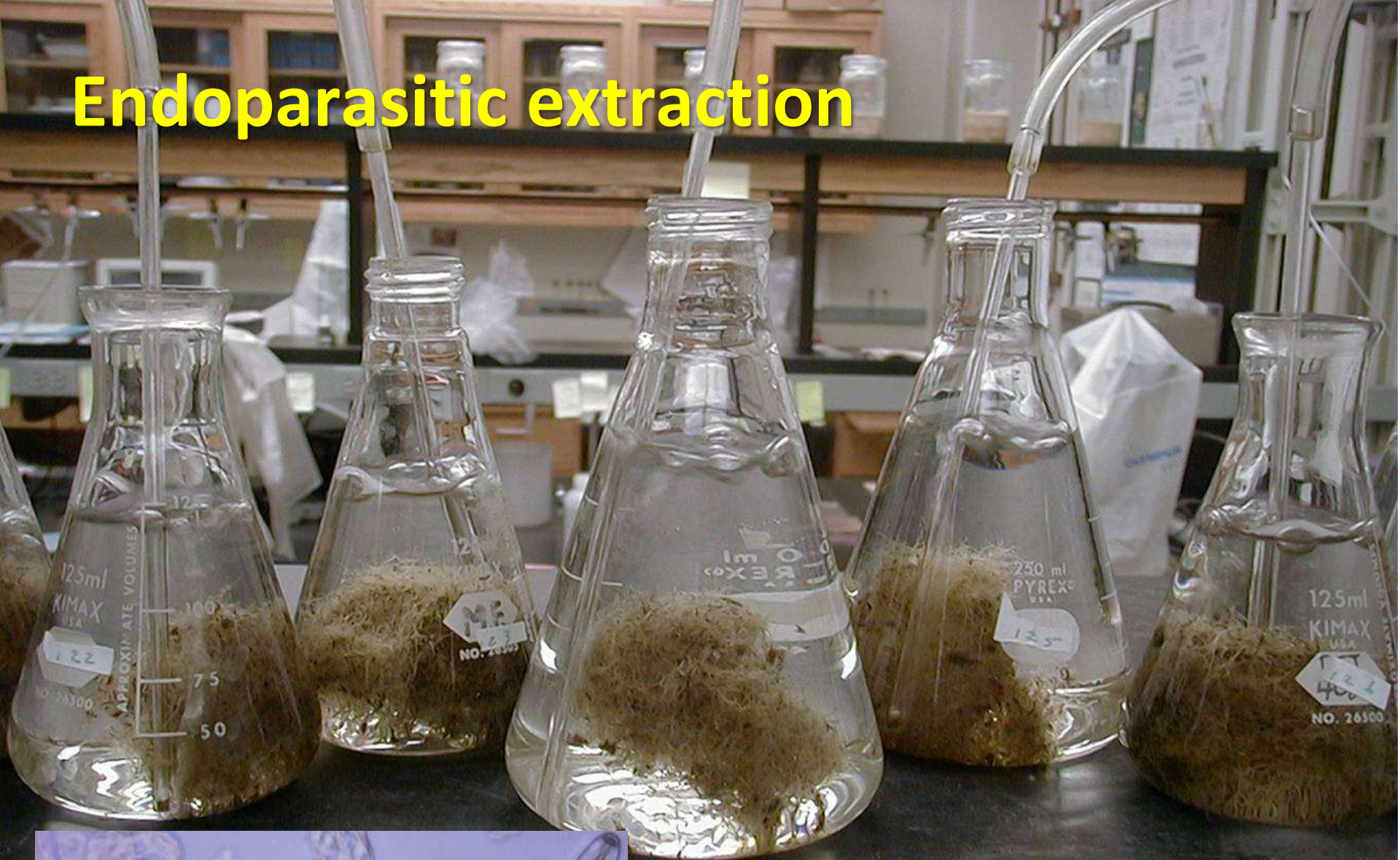


Sucrose extraction

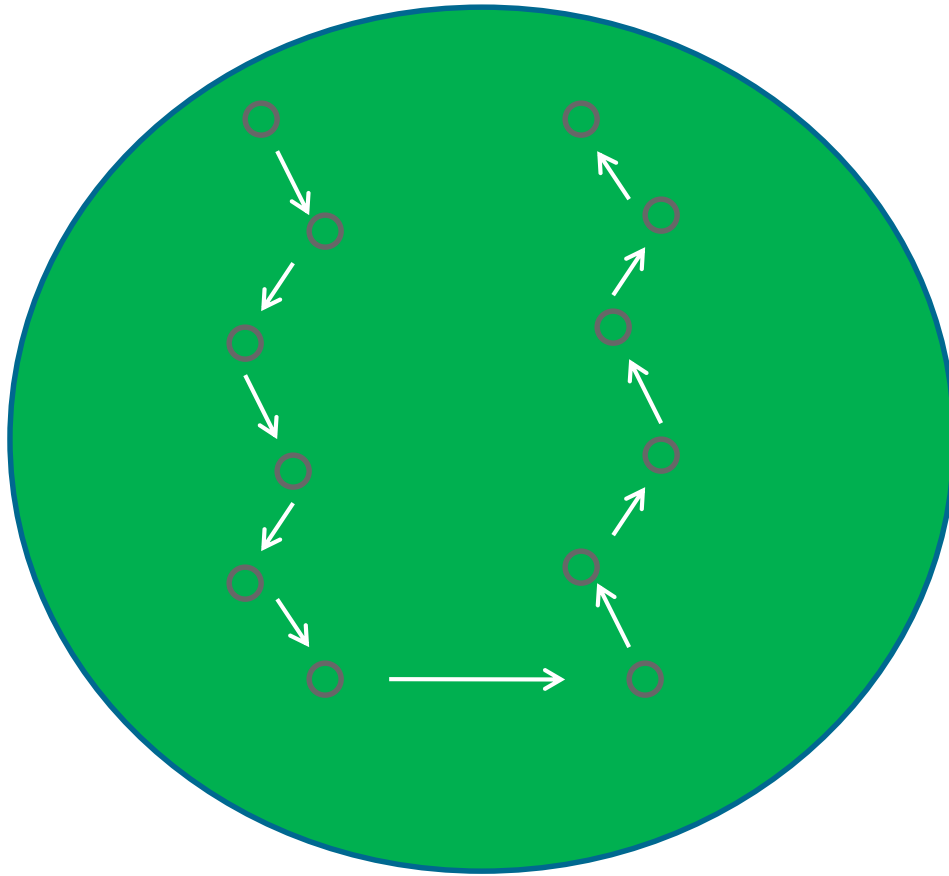
1.



Endoparasitic extraction

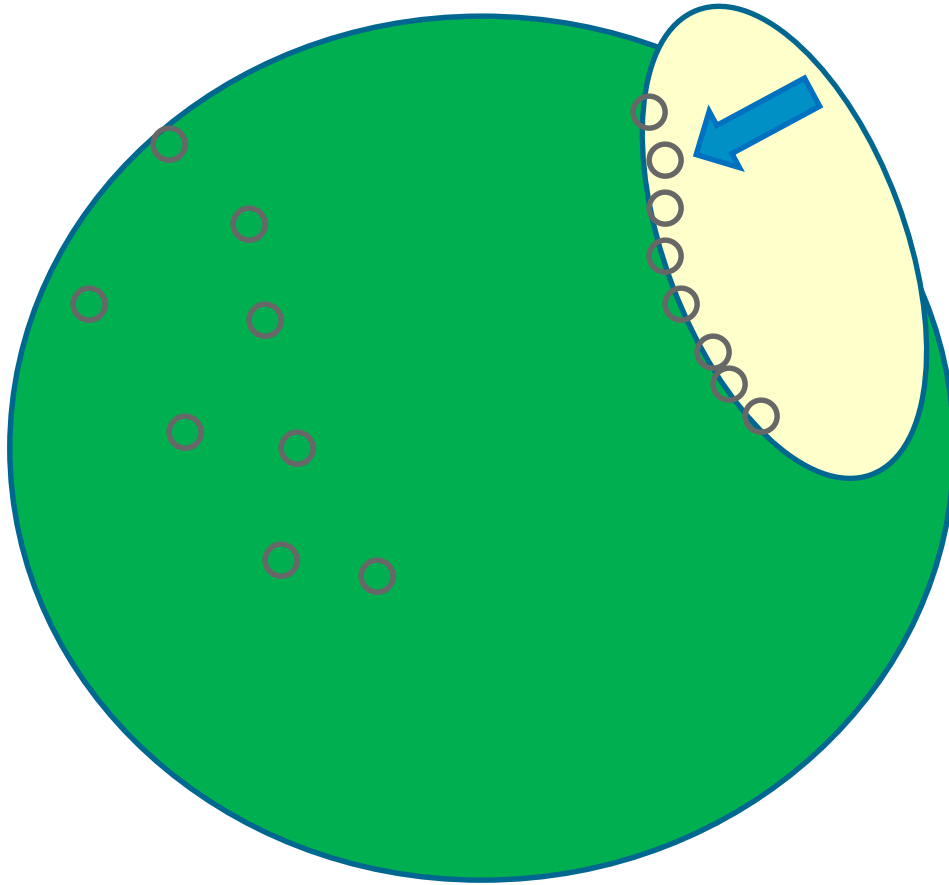


Sample for nematodes?



If there's no real pattern, you can take a random sample across the green. Nematodes tend to be patchy so combining a lot of small plugs gives a better estimate than having one or two larger plugs.

Sample for nematodes?



If you have areas with damage

1) Collect a bunch of cores from the leading edge of the damaged area, where the grass is declining but not dead. This is where the nematodes are most likely to be.

If you sample back where the turf has been dead for awhile, the nemas are probably gone already.

2) Then, take a similar number of plugs from a completely healthy area, away from the damaged area. We can compare numbers in a more meaningful way.

Final 'Plug' – Know state/regional turfgrass diagnostic labs

- Familiar with the problems *in your area*
- They'll know what is currently active
 - Dr. Alfredo Martinez, UGA
 - Dr. Billy Crow, UF Gainesville
 - ~~• Dr. Bruce Martin, Clemson~~
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