Nematode Diagnostics (NEM 6942)

Course Format: 1 hour lecture, 2 hour lab

Credit Hours: 2 credits

Prerequisites: None

Instructor: Tesfamariam Mengistu (Tesfa), email: tmekete@ufl.edu

Course Description: Nematode diagnosis with particular emphasis on plant-parasitic nematodes, the diseases they cause, and their management.

Course Objective: Develop an appreciation for the role of nematodes in the environment in general, and in agricultural crop production in particular.

Expected Learning Outcomes: Upon completion of this course, student will be able to:

1) Demonstrate familiarity with economically important groups of nematodes

2) Recognize common nematode diseases of plants, their symptoms, importance, and management.
3) Develop control methods for pest species.

4) Implement basic laboratory techniques for extraction, identification, culturing, and manipulation of common nematode species.

5) Implement nematode threshold levels to different crop species.

Texts:

- Mai, et al. 1996. Plant-parasitic nematodes: A pictorial key to the genera. (5th ed.).
- Southey, J.F. (ed). Laboratory Methods for Work with Plant and Soil Nematodes
- Chen et al (ed); Nematology advances and perspectives: nematode management and utilization.
- **Grover C. Smart and Khuong B. Nguyen. Illustrated key for the identification of common nematodes in Florida (copy provided in the class)**

GRADING

- Lab and assignment reports (20%)
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- Midterm exam (30%)
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- Final exam (50%)

Grading scale

A 90 - 100 points
B+ 88 - 89 points
B 80 - 87 points
C+ 78 - 79 points
C 70 - 77 points
D 60 - 69 points
E <60

Exams (Mid and final): All exams will be comprehensive but will emphasize material covered during lectures. All exams will be written and will include short answer and essay questions.

Laboratory Exercises: Lab reports and unknown identification reports will be required. Unidentified nematode samples will be made available and each student shall identify the unknown to genus based on published keys.

Lecture schedule

Class 1	Introduction, nature of nematodes and diseases
Class 2	Classification and Identification Keys
Class 3	Feeding habits and symptoms
Class 4	Nematode sampling, extraction techniques, and damage threshold levels
Class 5	Nematodes of quarantine importance
Class 6	Nematode management
Class 7	Field visit to Plant City
Class 8	Root-knot and Cyst nematodes
Class 9	Root-lesion, burrowing and rice root nematodes and disease interactions
Class 10	Mid-Term Exam
Class 11	Reniform, Citrus, Virus vector and forest nematodes
Class 12	Field visit to Lake Alfred
Class 13	Stem and Foliar nematodes – Aphelenchids, *Ditylenchus* and *Anguina*

Class 14 Final exam

Lab Schedule

Lab 1	Introduction
Lab 2	Light microscopy, plant parasitic vs non parasitic nematodes
Lab 3	Ectoparasitic nematodes
Lab 4	Root-knot and cyst nematodes
Lab 5	Nematode Extraction Techniques (soil & roots)
Lab 6	Nematode counting techniques and data presentations
Lab 7	Nematode damage threshold functions
Lab 8	Virus vector and Forest nematodes
Lab 9	Mid-term exam
Lab 10	Reniform and Citrus nematodes
Lab 11	Plant-parasites and virus vector nematodes of the order Dorylimida
Lab 12	Visit to Lake Alfred
Lab 13	Nema cocktail
Lab 14	Final exam