Agricultural Acarology, ENY 5245
Course Objectives

Professor

Dr. Marjorie A. Hoy

This course typically is taught on campus during Summer B in odd-numbered years. However, students who are not on campus in Gainesville may take this course as a distance course at other times, upon request. The course also is available to true distance students, upon request.

Office Location and Office Hours

Dr. Hoy’s office is Room 3111, Entomology and Nematology Building, Steinmetz Hall
Email: mahoy@ufl.edu
Phone: 273-3961, Fax: 392-0190.
I will have office hours during the week by appointment. If you are an off-campus or true-distance student, please email me or telephone me to discuss your concerns or questions.

Course Goals

The student will learn to discriminate between mites and other arthropods, understand the different tactics used in agricultural pest-management programs for mites, understand the biology, behavior, and ecology of key mite pests in agriculture, understand the biology, behavior and ecology of key natural enemies of pest mites, learn control tactics for managing pest mites and their advantages and limitations, learn to identify the life stages of plant-pest mites and phytoseiid predators, gain an understanding of mite management in several model systems including ornamentals, apples, almonds, citrus and cassava, and to understand the biology and impact of mites on honey bees. A brief overview will be provided of mites and ticks that affect farm animals and households (stored products and dust mites).

General Description

The course emphasizes the biology, ecology and behavior of pest and beneficial mites in agricultural systems and the diverse methods of controlling them. An emphasis will be placed on biological control and other management tactics that are compatible with biological controls.

You will learn to:

1) Discriminate between mites and other arthropods taxonomically.

2) Understand the different tactics used in agricultural pest management programs for mites.
3) Name the major families of mites that are pests in agriculture.

4) Understand the biology, behavior, and ecology of key acarine plant pests in agriculture.

5) Understand the biology, behavior, and ecology of key natural enemies of acarine plant pests.

6) Learn the control tactics for managing pest mites in agriculture and their advantages and limitations.

7) Use a hand lens and a dissecting microscope to identify the life stages of spider mites, eriophyoids, tarsonemids, and phytoseiids.

8) Understand the management of mites in model cropping systems, including ornamentals and, apples, almonds, citrus, and cassava.

9) Understand the biology and impact of mites on honeybees, key pollinators of agricultural crops.

10) Understand there are mites and ticks that affect farm animals and households and obtain information about their management.

11) Gain access to references that will introduce you to the acarological literature.

**Recommended Textbook**


**Course Structure**

The first class session will be in a lecture format, as will classes on days when the two midterm exams are given. On other days, students are expected to read the assigned chapters in the textbook **prior to coming to class**. They should also look at the Powerpoint slides provided at the course website. Finally, students should attempt to answer the study questions. On these days, class will involve discussions and I will answer questions regarding the material covered in the chapter/Powerpoint slides/study questions. Students will not be able to get the most from the class unless they have read the assigned material and attempted to answer the study questions.

Students at the UF research centers taking the course when it is offered on campus during Summer B should be able to attend by Polycom and should take the examinations at the same time as the on-campus students. True distance students
should contact the instructor for a schedule of examinations. Proctors are required for the midterm and final examinations for both types of distance students; please contact the instructor for details.

Class Attendance

On-campus students should attend each class and be prepared to discuss the material and ask questions. Please turn off your cell phones during class. Students taking the course by Polycom are encouraged to ask questions, as well. True distance students should email the instructor with questions.

Student Accommodation

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu.drc/

Exam Make-Up Policy

Examinations may be made up only with advance permission or an excuse from a doctor or the infirmary. Extenuating personal situations include a death or serious illness of an immediate family member. CALL PRIOR TO THE EXAMINATION. Leave a message on my telephone at: 273-3961, or email at mahoy@ufl.edu.

Grades and Grade Points

For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling and Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance. The University Counseling and Wellness Center is at 3199 Radio Road, 392-1575, www.counseling.ufl.edu/cwc/

The Career Resource Center is at First Floor JWRU, 392-1601, www.crc.ufl.edu/
Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies, disciplinary action will be taken as appropriate.

Academic Honesty

In 1995 The UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office.

It is assumed all work will be completed independently unless the assignment is defined as a group project by the instructor. This policy will be vigorously upheld at all times in this course.
BIOLOGY AND CONTROL OF MITES IN AGRICULTURE, 2 units
ENY 5245, Section 4F34

Students at the UF research centers can take this course as a distance course by Polycom. True distance students are also welcome. Please contact Marjorie Hoy (mahoy@ufl.edu) for additional information and Ruth Brumbaug (brumbaug@ufl.edu) for Section numbers.

Summer B, 2013
Located in Room ENY 1027
12:30-3:15 PM (Periods 4-5), Tuesdays and Thursdays

Marjorie A. Hoy, Instructor
273-3961; mahoy@ufl.edu, Rm. 3111ENY
Office hours by appointment


Lecture Topics and Dates

July 2 Course objectives, requirements and grading. Part I. Introduction to Acarology. Classification of the Acari: The Relationship of Mites to Other Arthropods. (Chapters 1, 2) Basic Structure and Function of Mites. Segmentation and Molting; Feeding; Water Balance, Excretion (Chapters 3)

July 4 Holiday

July 9 Muscles, Respiratory, Nervous, and Circulatory Tissues; Reproduction, Life Cycles; Genetics and Sex Determination, Dispersal (Chapter 3), Collection, Identification and Culturing of Mites (Chapter 4)

July 11 EXAMINATION 1 (Multiple choice; definitions, short answers: 25% of course grade) (one hour). Covers material in first two lectures (Part I). After the examination there will be a lecture.

Part II. Integrated Mite Management Strategy and Tactics. An Overview of the Tactics and Strategies, including Biological Control (Augmentation, Conservation and Classical Biological Control), Host Plant Resistance, Cultural Controls, Acaricides, and Genetic Control (Chapter 5)

July 16 Part III. Pest Mites and Their Natural Enemies on Plants. The Tetranychidae
(Spider Mites), Tarsonemidae, Eriophyoidea, Tenuipalpidae (Chapters 6, 7, 8, 9)

**July 18** The Penthaeleidae, and Miscellaneous possible plant pests (Chapters 10, 11)
Premier Predators: The Phytoseiidae, Their Biology, Behavior, Ecology, and Genetics (Chapter 12)

Demonstration of Spider Mite Biology, Rearing Methods, Sampling Methods; Phytoseiid Biology, Rearing Methods, Sampling Methods.
Please bring your own hand lens.

**July 23** Insect Predators of Mites; Mite Pathogens (Chapters 13, 14)

**July 25** EXAMINATION 2 (25% of course grade, one hour) Covers material from previous four lectures (Parts II and III). After the examination there will be a lecture.

Part IV. Exemplars of Integrate Mite Management of Plant-feeding Mites. Biological Control of Cassava Green Mite in Africa (Chapter 15), Integrated Mite Management in Washington Apples (Chapter 16)

**July 30** Integrated Mite Management in Almonds (Chapter 17), Integrated Mite management in Citrus in Florida and California (Chapter 18), Mites on Ornamental Plants (Chapter 19)

**August 1** Part V. Soil Mites and Agriculture, Part VI. Pest Mites of Honey Bees (Chapters 20, 21), Part VII. Ticks of Mammals and Birds (Chapter 22), Pest Mites of Farm and Companion Animals (Chapter 23)

**August 6** Part VIII. Pest Mites of Stored Products and Households. Post-Harvest Mites (Chapter 24), House Dust Mites (Chapter 25), Review

**August 8** Final examination (2 hrs)

Final Examination: Comprehensive written examination (50% of course grade); about half will cover the material from the first two examinations and about half will cover the remaining material. For additional information on minus grades go to: http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html

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Please see the Course Syllabus for additional information about the course.