

ENTO 412/812 2023

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Overview: *Principles embodied in the implementation of multifaceted tactics designed to successfully manage insect populations.*

- Entomology and Management of Pests is an upper division undergraduate and graduate level course focusing on insect pest management, primarily for crops.
- Prerequisite for this course is an introductory entomology class. Students should have a basic understanding of insect biology. An ecology class is highly recommended.

Purpose, Goals, and Objectives: The rationale of this course is to introduce you to the diversity and complexity of integrated management of insects. The goal is to develop an understanding of the concepts and principles of IPM as a complex mix of practices and technologies to efficiently manage pest populations that are specific to locales.

Learning Objectives

- Understand the terms relevant to insect pest management
- Understand the different tactics used to manage pest insects in crop situations
- Gain an understanding of the social and economic constraints of agriculture and pest management
- Given a situation, be able to design an appropriate management strategy with consideration for sustainability
- Increase your intellectual curiosity about the topic

Why Take This Course?

- Global crop losses to insects alone are estimated to be approximately 13%.
- The global human population is expected to grow from today's 6 billion to 9 billion by 2050.
- Global demands for sustainable production of high-quality foods will increase with population.

Together these points are straining global food and fiber cropping systems that rely on effective and safe pest management for quality, sustainable production practices.

What You Will Learn: This course is about how we can minimize competition from insects for our crops. The difficulty in producing the quantity and quality of food needed to satisfy an exponentially growing global human population could largely be met if crop losses to insects and other pests could be drastically reduced. Yet, despite modern pest management technologies, crop losses to all pests are estimated to be about 44% worldwide. Even in nations where modern technologies are affordable, crop losses to pests are about 30%.

Insects harming crops are generically called pests but pest is not a biological attribute. Instead,

pest is a human-oriented designation. Insects are considered pests based on their potential for economic harm, our aesthetic evaluations, and annoyance tolerance. Small numbers of a species are tolerable, but as population size increases, negative interactions and impacts increase, and at some point, they are considered pests. One final point, although the term pest is sometimes used synonymously with insects, plants and pathogens are other common crop pests and there are pests in many other taxonomic categories.

The class emphasizes insect management in agroecosystems, but insect pests are also common in urban, rural, and recreational areas. Pest management is important to maintain public health and environmental health in natural areas such as nature reserves, forests, grasslands, and parks.

Often, insect management in a cropping system is reactionary and effects a temporary reduction in insect numbers. More difficult, but often preferable, is preventative pest management designed to maintain insect numbers below a threshold value and a reactionary intervention is not needed.

We will also explore the consequences and unintended effects of insect management. The effects may be minor or major and we may not be aware of them, at least not until a later date. We also need to be aware that since pest management and agriculture are human-centric activities, there are social and political ramifications to our pest management actions and we will explore some of the relevant issues.

A prominent outcome of social pressure bearing on pest management was the development and refinement of a concept that came to be known as Integrated Pest Management or IPM. A key event that served to focus social and political pressure on the science and practice of pest management was the 1962 publication of 'Silent Spring' by Rachael Carson. Her seminal publication focused public attention and much criticism on the largely unregulated practices of pest management and resulted in a paradigm shift in pest management thinking and application.

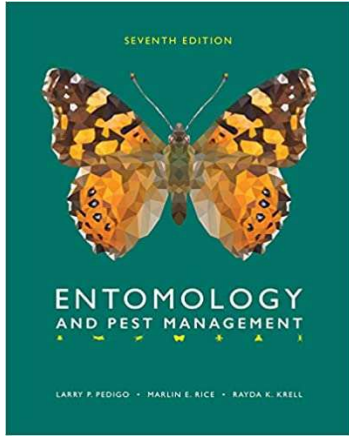
Silent Spring had two major themes. First, chemical pesticides can be dangerous to man and the environment and should be the last rather than the first resort. Second, there are biologically based alternatives to pesticides. The themes of Silent Spring remain relevant today, consistent with the philosophy of IPM, and I recommend you read or reread the book.

Grading, Assignments, and course Calendar: Check the Calendar and Scoring 2021 file in the Syllabus folder for details. Assignment details are in the Assignments folder of Canvas, our course management software.

Office Hours. Because this is an online class, regular office hours don't apply but I encourage you to call, text, or send an email anytime. I will check periodically during the day and usually at least once in the evening. I will do my best to respond within 24 hours but that may not always

be possible. Don't hesitate to send me a reminder if I have not responded in after a reasonable time period but please do not expect me to respond late at night.

Text



Entomology and Pest Management, 7th edition, (Larry P. Pedigo, Marlin E. Rice, and Rayda K. Krell, 2021, ISBN: 978-1478639923, Etext ISBN: 978-1478646860) is the general text for this class. It is crop centric, but the principles are universal to IPM. Besides the IPM chapters, the text is a good general entomology resource and will be useful to you for a long time. I strongly recommend it.

If you opt not to get your own copies, your library may have a copy, and the relevant chapters of an earlier edition will be available in Canvas. Other current IPM texts will have similar chapters.

Recorded online lectures supplement the chapters and readings will provide extra context.

Technical/Computer Requirements.

In order to take this course, you must have:

1. E-mail
2. An Internet connection
3. Microsoft Word
4. Adobe Acrobat reader (go [here](#) for a free download)

The technology skills you will need to succeed in this course are a basic familiarity with your Web browser, e-mail, word processing, and the ability to locate specific information on the Internet. You will need to use Canvas. UNL's course management software.

Scoring. Refer to the Calendar and Scoring file in Canvas.

HELP!!

Canvas. We will be using Canvas Learning Management Software. For help start at the Technology & Canvas Help module for this class. You can also go directly to the Canvas student help page.

<https://community.canvaslms.com/docs/DOC-10701>

Robert Vavala, Instructional Design Technology Specialist for CASNR, is an excellent resource for all things Canvas; robert.vavala@unl.edu, (402) 472-2607.

Library Services. UNL students have access to a tremendous resource- UNL's Library Services! The web site can also be accessed directly at <http://libraries.unl.edu/>. Ask a Librarian is at: <http://libraries.unl.edu/ask>. Need to use the library from off-campus, [set up your library](#)

[account](#) using their handy tutorial on the left side of the page. Another useful resource is the UNL library's Entomology Research Guide that includes a [Teaching and Learning](#) content section.

Additional Information

Good Practice. It is recommended that you make a copy of any submitted assignments you turn into the instructor as a record and a back-up of your work.

Pledge of Instructional Standards. Entomology instructors will provide our students a complete syllabus meeting all UNL standards, our classes will be based on current science and will follow published schedules and descriptions, and our instructors will be timely in returning grades and in responding to our students.

Professionalism. All work you submit for class must be professional in appearance and content. Your assignments must be developed in WORD, follow good writing practice, and be spell-checked.

Civility. You are expected to be a courteous, good citizen of the class. This includes participating in discussions and providing instructive feedback to support your classmate's learning. Good citizen's also turn in work on time and read the syllabus. Good citizens fully participate in the class and meet their obligations for the team project. You are expected to be cognizant of what a constructive educational experience is and respectful of those leading and participating in a learning environment. Failure to do so can result in disciplinary action.

Academic Honesty. Students are expected to adhere to guidelines concerning academic dishonesty outlined in Article III.B. of the University's Student Code of Conduct (<http://stuafs.unl.edu/dos/code/>). Students are encouraged to contact the instructor to seek clarification of these guidelines whenever they have questions and/or potential concerns.

Diversity & Inclusion. The University of Nebraska-Lincoln does not discriminate on the basis of race, ethnicity, color, national origin, sex (including pregnancy), religion, age, disability, sexual orientation, gender identity, genetic information, veteran status, marital status, and/or political affiliation.

Services for Students with Disabilities (ADA Statement). The University strives to make all learning experiences as accessible as possible. If you anticipate or experience barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can discuss options privately. To establish reasonable accommodations, I may request that you register with Services for Students with Disabilities (SSD). If you are eligible for services and register with their office, make arrangements with me as soon as possible to discuss your accommodations so they can be implemented in a timely manner. SSD contact information: 117 Louise Pound Hall; 402-472-3787.

Academic Support Services. You can schedule free appointments for individual academic coaching with First-Year Experience and Transition Program staff through MyPLAN. You can also take advantage of study stops--which provide individual and group study with learning consultants in a variety of disciplines--and free group workshops on topics such as time management, goal setting, test preparation, and reading strategies. See the [Center for Academic Success and Transition](#) page for schedules and more information.

Counseling and Psychological Services. UNL offers a variety of options to students to aid them in dealing with stress and adversity. [Counseling and Psychological & Services](#) (CAPS) is a multidisciplinary team of psychologists and counselors that works collaboratively with Nebraska students to help them explore their feelings and thoughts and learn helpful ways to improve their mental, psychological and emotional well-being when issues arise. CAPS can be reached by calling 402-472-7450. [Big Red Resilience & Well-Being](#) provides one-on-one well-being coaching to any student who wants to enhance their well-being. Trained well-being coaches help students create and be grateful for positive experiences, practice resilience and self-compassion, and find support as they need it. The Phone number is 402-472-8770.