



Entomology and Pest Management (3rd Edition)

By Larry P. Pedigo

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For undergraduate/ graduate-level introductory courses in Applied Entomology, Insect Pest Management, or Economic Entomology. Ideal for students with little or no background in entomology-and those who cannot spend the time to take both a general entomology course and an applied course-this text combines, in a single volume-general principles of entomology and modern principles of insect pest management-including factual details and specific examples. *Emphasizes both theory (the major elements of general entomology) and practice (modern principles of pest management) throughout. *Features a novel treatment of pest management practice that draws analogies with human medicine. *Offers an ecological approach that discusses pest management topics as aspects of applied ecology, and presents solutions to pest problems with regard to environmental quality, profitability, and durability. *Features a unique chapter on Ecological Backlash that discusses why pest programs fail. *Contains stand-alone treatments of both insect sampling and decision making *Presents examples of successful insect pest management programs in the context of diverse commodities. *Highlights new terms and important comments in boldface type for quick-reference.

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Editorial Review

From the Publisher

Entomology and Pest Management, Second Edition combines elements of general entomology and modern principles of insect pest management. The author's goal is to promote improved pest control skills and an enhanced appreciation of insects and their role in our environment. The Second Edition's coverage reflects the latest developments in the field, featuring the most up-to-date information available.

From the Back Cover

Ideal for readers with little or no background in the subject, this book combines single-volume coverage of both general principles of entomology and modern principles of insect pest management -- with factual details and specific examples. Discusses pest management topics as aspects of applied ecology, and presents solutions to pest problems with regard to environmental quality, profitability, and durability. Features a unique chapter on "Ecological Backlash" that discusses why pest programs fail. Contains stand-alone treatments of both insect sampling and decision making -- emphasizing economic thresholds. Presents examples of successful insect pest management programs in the context of diverse commodities. Covers recent pesticide regulations -- particularly the Food Quality Protection Act of 1996 -- which will have significant influences on pesticide registrations in the future. Features nearly 60 Insect diagnostic boxes -- with detailed information on distribution, importance, appearance, and life cycle of insect species or species groups. Contains several important appendices: A key to the orders of insects that allows even novices to identify both adult and immature insects; A list of insect common names along with the accompanying scientific names and classifications; and Lists of common insecticides by common and trade names and gives manufacturer and toxicity information. For entomologists and anyone wanting an introduction to applied entomology, insect pest management, or economic entomology.

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Although it has been only three years since writing the third edition of *Entomology and Pest Management*, much has occurred. Events have changed the face of pest technology and policy, causing us to take pause and reflect on our achievements and ponder our future. These recent events make the updating of this book a useful endeavor.

The most striking event since the third edition is our ubiquitous use of computers for gathering information. The Internet and World Wide Web have virtually taken over our activities, with nearly all students and specialists using them as a base of operations for information exchange. We now have rapid and mostly low-cost access to almost everything we want to know, right from our desk or laptop computer. Just do a search, and literally dozens of sites pop up on the screen, displaying everything from how-tos to why-nots. Moreover, students can enroll in and take courses through the Internet not only at their home university but at other universities as well. Arguably, many educators believe so-called distance education through computer delivery is the *sine qua non* of effective learning and the wave of the future.

To make use of this valuable information-gathering tool, the fourth edition of *Entomology and Pest Management* has "Favorite Web Sites" listed at the end of each chapter. The Web sites relate to the subject matter of the chapter and are presented as URLs, which are annotated. The reader may use these and their links to other sites to update basic information found in a particular book chapter. Additionally, Appendix 4 was developed, which presents one of the most comprehensive compilations of Web sites for entomology resources found anywhere. This list can be used for customized searches of entomological information on

nearly any topic.

Other events that called for an updating of the third edition include impacts on pesticide use mandated by the EPA and the Food Quality Protection Act of 1996. This agency and law have resulted in the disappearance of some of our most widely used insecticides and their substitution by new, sometimes safer and environmentally friendly chemicals and tactics. To reflect these events, Chapter 11 on conventional insecticides has been reorganized and completely updated, as has Appendix 3, which presents lists of commonly used insecticides. Moreover, current developments of low-risk tactics, such as microbial pesticides, insect growth regulators, and pheromones, are presented in Chapters 9 and 13.

Profound changes have also occurred in the past three years because of biotechnology. Transgenic plants that offer high degrees of resistance to insect pests have been engineered and become widely adopted in several cropping systems. Along with this development, concerns continue about insects overcoming the resistance and about the environmental and personal safety of these crops. Chapter 12 updates the reader on the status of transgenic plants developed for pest management and presents a new discussion on benefits and risks of cropping these.

There has also been substantial progress in the areawide approach to pest technology. This approach has been spotlighted nationally as a means of dealing with key insect pests, such as the boll weevil in southeastern cotton. The status of such areawide programs has been updated in Chapter 15, as has that of other pest management programs mentioned throughout the book.

TARGET AUDIENCE

Entomology and Pest Management can be used as an introduction to applied entomology for undergraduates or beginning graduate students. For undergraduates with only an elementary biology background, early chapters need emphasis to provide a basis for understanding the remaining content on insect ecology, surveillance, and management. Students with at least one course in entomology may wish to omit early chapters and emphasize the strategy and tactics of management found in later chapters. Omitting Chapters 1 through 4 for graduate courses or Chapter 14 for undergraduate courses will not result in a loss of continuity.

Content and Organization

The book consists of seventeen chapters, four appendices, and a glossary. Concepts and principles are emphasized and supported by factual detail and specific examples. Beginning chapters (1 through 3) concentrate on general entomology for the novice. Chapters 4 and 5 synthesize the elements of insect biology and ecology required for understanding insect pest management. Chapter 6 covers techniques and principles of sampling for problem assessment, and Chapter 7 builds on this knowledge by outlining types of reactions of crops to insect densities. Chapter 7 also features the concept of adding environmental costs in the decision-making process for management. The ideas and history of insect pest technology are reviewed, and the concept and philosophy of modern pest management is introduced in Chapter 8.

With this basic information presented in the first eight chapters, the student is introduced, chapter by chapter, to the individual tactics used as elements in pest management programs. The order of tactics presented is based on their relative importance in existing pest management programs. Consequently, natural enemies and ecological management of the environment, primarily preventive tactics, are mentioned first, followed by conventional insecticides, the premier element in curative tactics. The remaining tactics discussed in Chapters 12 through 14 are more specialized but, nevertheless, convey some of the newest and most innovative ideas in the science. These chapters have been updated and expanded in the fourth edition.

Chapter 15 discusses the ways pest management and pest technology are practiced. This chapter draws the analogy between human medicine and pest management, and it emphasizes the idea of prevention and therapy in combining several management tactics. Additionally, the chapter discusses areawide pest technology and recent successes with the cotton boll weevil in the United States.

Chapter 16 is unique among entomology texts because it integrates the problems of resistance, resurgence, and replacement and recent phenomena, such as enhanced microbial degradation of insecticides, into a single concept—ecological backlash. The chapter suggests to students that applying the tactics discussed does not always result in sustainable pest management, and it recommends ways of reducing or avoiding such problems.

The book ends by presenting examples of successful insect pest management programs in the context of diverse commodities.

Special Features

Basic and applied entomology. The primary purpose of the book is to promote an understanding of major elements of general entomology and relate them to modern principles of insect pest management. Both theory and practice are emphasized in a conceptual approach to the topics, and numerous examples are presented to facilitate learning.

Ecological approach. Pest management topics are discussed as aspects of applied ecology, and solutions to pest problems are presented with regard to environmental quality, profitability, and durability.

Insect diagnostic boxes. About 60 insect diagnostic boxes are presented throughout the text. Each box contains detailed information on distribution, importance, appearance, and life cycle of a species or species group. Insects chosen are from examples mentioned in the text. Grouping specific data in boxes keeps the text from being overburdened with background information about a species when examples and case histories are given. Students not familiar with the species being discussed can consult the boxes to better understand and appreciate the examples in the text. Information in the boxes is referenced in the index. Additional information about major pests is given in Chapter 3 as insect families of major economic importance were included in presenting information on insect classification.

Boldface type. This feature allows the student to recognize new terms and important comments quickly and serves as a basis for topic review.

Appendices. Four appendices facilitate learning and serve as reference material. Appendix 1 presents a key to the orders of insects, allowing identification of both adult and immature insects. Appendix 2 contains a list of insect common names, scientific names, and classifications. Appendix 3 presents lists of common insecticides by common and trade names and gives manufacturer and toxicity information; this appendix was extensively revised and updated in the fourth edition. Appendix 4 is a comprehensive list of World Wide Web sites of Entomological Resources that can be used for customized computer searches of information.

Glossary. A glossary for quick reference appears at the end of the book and was expanded in the fourth edition. Words in the text that appear in bold type and others are included.

Favorite Web sites. The Web sites accessible through the Internet are presented as URL addresses along with a short description of the site's content. Readers can receive updates on the topic of a chapter by consulting these sites and navigating links to other, related sites for additional information.

ACKNOWLEDGMENTS

First and foremost, I owe many thanks to my current graduate students, Rayda Krell and Wilmar Morjan, in completing this revision. These students made important suggestions and contributions, which I have attempted to add to this edition. In addition to the demands of their own class work and dissertation research, they helped immeasurably with the daily operation of our research project, freeing my time for this task. Also, I thank my colleagues at Iowa State University for helping update my knowledge on various topics. They include Joel Coats, Ken Holscher, Donald Lewis, John Obrycki, Marlin Rice, and Jon Tollefson. I also owe very special thanks to John VanDyk, computer specialist in our department, for pr...

Users Review

From reader reviews:

Sheldon McLean:

The reason? Because this Entomology and Pest Management (3rd Edition) is an unordinary book that the inside of the book waiting for you to snap it but latter it will jolt you with the secret that inside. Reading this book adjacent to it was fantastic author who all write the book in such incredible way makes the content within easier to understand, entertaining means but still convey the meaning thoroughly. So , it is good for you for not hesitating having this any longer or you going to regret it. This amazing book will give you a lot of advantages than the other book get such as help improving your expertise and your critical thinking means. So , still want to delay having that book? If I were you I will go to the e-book store hurriedly.

Danielle Deguzman:

This Entomology and Pest Management (3rd Edition) is great book for you because the content which is full of information for you who also always deal with world and possess to make decision every minute. This kind of book reveal it information accurately using great arrange word or we can claim no rambling sentences inside it. So if you are read the item hurriedly you can have whole facts in it. Doesn't mean it only gives you straight forward sentences but tough core information with attractive delivering sentences. Having Entomology and Pest Management (3rd Edition) in your hand like keeping the world in your arm, data in it is not ridiculous just one. We can say that no publication that offer you world in ten or fifteen second right but this publication already do that. So , this really is good reading book. Hey there Mr. and Mrs. busy do you still doubt that will?

Lloyd North:

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