pesticide research. Graduate students may find this book especially appealing, and certainly will be challenged by it.

"Pesticides" is the only proper term that could be applied to this material, since individual chapters deal with herbicides, fungicides, and insecticides, as well as chemicals used as protectants for stored products. Many sections are covered in great depth, often with appropriate equations to help clarify some very complex chemistry. Part of the book may be too complex for the person who has only a passing interest in some of the topics. Anyone interested in the specialty chapters will find the lists of references to be of value; at least three chapters contain citations to over 200 researchers' efforts in these fields.

The first four chapters present in-depth information about pesticide degradation by animals, plants, and microorganisms. There is also a good coverage of the effects of soil environmental factors. Examples of Phase I and II metabolism are excellent, and the chemical equations used to illustrate these reactions will prove helpful to anyone. Occasionally, one of the authors will resort to an abbreviation (NIM shift, mfo hydroxylation), which probably should have been defined for the reader who is not comfortable in these areas of pesticide research. These chapters contain tables and figures, valuable aids to researchers who also have teaching responsibilities in these fields, i.e., pesticide degradation, soil microbiology—the diagrammatic sketch of the interrelationship of the processes that lead to detoxication, degradation, and disappearance of herbicides (Fig. 5.1) is an excellent example of this.

Two chapters give challenging reading on herbicides and fungicides. Discussion of insecticides is even greater in two additional chapters; anyone involved in the use of insecticides and their applications in forestry will be particularly pleased. There is lengthy coverage of testing protocol with respect to forest insecticides. The Public Health Entomologist will be interested in the detail given to mosquito control, since both chemical and biocontrol agents are included.

A sometimes neglected topic, pesticides for stored products, presents information of fungicides and protectants, with a good detailed survey of alternate chemical control techniques.

The diversity of this book will make it of interest to anyone associated with pesticide usage. The book is well organized and amply illustrated with enlightening graphs and figures; it is readable, but often challenging. Although too diverse for use as a text book, it will be an excellent, up-to-date reference book for many researchers.—EDWARD P. DUNIGN, Agronomy Department, Louisiana Agricultural Experiment Station, Louisiana State University, Baton Rouge, LA 70803.

An Introduction to Biological Control


This volume is a revision of Biological Control by R. van den Bosch and P. S. Messenger, originally published in 1973 by Intext Press. In his revision, A. P. Gutierrez has updated the previous three editions by adding new chapters or sections on insect pathology, population biology, and economics. The 13 chapters are a logical progression of major categories, primarily as practiced in entomology, with the first chapter on basic definitions and principles of biological control. The second chapter deals with the history and development of biological control, and the subsequent chapters on factors affecting success of introduced natural enemies and genetics. There are chapters on the development of controlled environments and the use of biological control agents in different geographic and economic areas. The book concludes with a chapter on the role of regulatory agencies in the implementation of biological control and a chapter on the status of biological control in the world. The text is well illustrated with line drawings and tables to help clarify some very complex chemistry. The book is a valuable resource for anyone interested in the field of biological control.