

Literature

Ridgway, R. L., Silverstein, R. M. & Inscoc, M. N. (eds.) 1990: Behavior-modifying chemicals for insect management. Applications of pheromones and other attractants. — Marcel Dekker Inc., New York, USA. 761 pp. ISBN 0-8247-8156-2. USD 195 in the USA and Canada, and USD 234 elsewhere.

Insect sexual pheromones have intrigued many researchers since the first observations were made of their power in attracting males over long distances. As a result of intensive work during the last 30 years, the identification, synthesis and practical use of sexual pheromones in pest management are now the best known of all behavior-modifying chemicals. The importance of sexual pheromones is reflected in the contents of this book, but other attractants, such as aggregation pheromones, have been dealt with as well.

The book has been edited by three world-famous scientists in pheromone research with the collaboration of 54 contributors. Although the book is based on a symposium, its separate chapters are well-melded into a common frame. This book presents a broad and realistic view on the current situation, as well as future perspectives, in the practical application of pheromones and other attractants in pest management.

The book is divided into seven parts: I. 'Principles of research and development', II. 'Pests of horticultural crops', III. 'Forest insect pests', IV. 'Pests of field crops', V. 'Stored-product insect pests and insects affecting animals', VI. 'Development, registration and uses', VII. 'Prospects'. In each part, several authors give up-to-date information on the current research activities of each topic, referring comprehensively to earlier investigations so that even a reader who has not worked on pheromones can easily follow the text.

Part I, 'Principles of research and development', gives the reader a good understanding of the possible uses of pheromones and the main methods of research. This part begins with practical field experimentation, followed by methods used in the chemical analysis, synthesis and formulation of pheromones. This order, placing more emphasis on practical application than on basic chemical research, is well suited to the title of the book. B. S. Lindgren has, in conclusions, listed the basic 'information plume' needed for the practical application of pheromones: 1. Basic scientific data on the insect and the chemical, 2. Applied scientific data, 3. Economic information on cropping, damages and pest management, 4. Technical information concerning the application method, and 5. The user's needs to help integration of the method with current practices. This very simplified list shows that more than entomological and chemical research is needed to complete the application of semiochemicals in practical farming.

In Parts II–V, many well-documented studies on the practical application of insect pheromones and other attractants have been extensively referred to. For example,

Part II, 'Pests of horticultural crops', includes accounts of studies on the use of mating disruption techniques for the codling moth, the oriental fruit moth, the grape berry moth, the grape-vine moth, the peach-tree borer, the lesser peach-tree borer and the tomato pinworm. The use of pheromones for the detection or mass trapping of pests is handled only in the case of tephritid fruit flies in America. As many horticultural pests can be and are currently monitored by pheromone traps, examples of the practical and profitable use of the monitoring methods on the farm level would have been interesting in this connection. Especially in northern regions where temperature is a limiting factor for many pest species, the detecting and monitoring of certain pests using pheromone traps is of great value. However, in Part I, 'Principles of research and development', monitoring and mass trapping have been treated extensively, as well as the principles of mating disruption methods.

Regardless of the first enthusiastic expectations, in the 1960–1970s, concerning the role of pheromones in practical pest management, there are still few practical applications for direct control: mass-trapping for 19 and mating disruption for 18 pest species. In an up-dated and useful list of commercially available pheromones and other attractants a total of 257 insect species are mentioned. A list of commercial suppliers of pheromones, attractants and traps is included. The majority of the practical applications concern the monitoring and detection of pests, especially the Lepidoptera (202).

The problems involved in the registration of behavior-modifying chemicals become more and more pressing as an increasing number of methods are being developed. In this book the current situation is explained and future perspectives in this context are viewed. The general trend is that for monitoring no registration is needed, but mass trapping or mating disruption methods require registration. It is pointed out by some authors that the high cost and long period required for registration seem to lead to the situation where only pheromones for the main pests of some major crops can be registered for control purposes.

This book belongs in the library of any applied researcher working on pest management strategies, cropping systems, biological control or any integrated control methods. Although the pest problems and case-studies discussed in this book mainly concern temperate regions and large-scale crops such as cotton, its ideas are well adaptable to research on minor crops and other regions.

Tuomo Tuovinen