

Koul O., Dhalival G.S. (eds.). *Microbial Biopesticides*. Taylor & Francis, London and New York, 340 pp. ISBN 0-415-27213-0

Insect science and plant protection specialists with great interest will welcome this book as it provides a comprehensive overview of the advances made in the use of bacteria, fungi, viruses and nematodes in integrated pest management. In addition, a role of genetic engineering and tissue culture and potential use of antiinsectan anti-weed compounds derived from microorganisms is also presented in that volume.

This book has 9 chapters which deal or with specific groups of biopesticides or with various strategies of their use. 1. Microbial biopesticides: An Introduction. 2. Antiinsectan compounds derived from microorganisms. 3. Microbial control of insect pests: role of genetic engineering and tissue culture. 4. Microbial biopesticides developed as inducible plant defensive systems transgenically. 5. Aspects of nucleopolyhedrovirus pathogenesis in lepidopteran larvae. 6. Prospects of baculoviruses in integrated pest management. 7. *Beauveria bassiana* and other entomopathogenic fungi in the management of insect pests. 8. Entomopathogenic nematodes and insect pest management. 9. Bioherbicides: potential successful strategies for weed control.

It is not possible to refer to all chapters and I will only concentrate on some of them.

Chapter 2 "Antiinsectan compounds derived from microorganisms" by P. F. Dowd (p. 13–115) provides a very comprehensive review of over 200 compounds produced by microorganisms belonging to *Archaeobacteria*, *Eubacteria* and *Eucaryota*. These compounds are grouped according to their origin or mode of action. Toxins produced by well known insect pathogens such as *Bacillus thuringiensis* (thuringiensin) or *Beauveria bassiana* (beauvericin) and many other are well characterized providing also their chemical and structural formulas. This chapter is supported by almost 300 references.

Chapter 4 "Microbial biopesticides developed as inducible plant defensive systems transgenically" by S. Arpaia, G. Mennella, G.L. Rotino and F. Sunseri (p. 181–204) reviews the mechanisms of natural inducible defenses in plants and plant genes involved in this interesting phenomenon. To entomologists and plant protection specialists of special interest will be sections dealing with practical use Bt transgenic potato against *Leptinotarsa decemlineata* and Bt transgenic maize against *Ostrinia nubilalis*. All advantages and disadvantages of broad use of Bt-transgenic crops is well weighted.

Chapter 9 "Bioherbicides: potential successful strategies for weed control" by R.J. Kremer (p. 307–323) well presents the current status of bioherbicide development. In a tabulated form over twenty species of fungi and bacteria, thirty target weeds, several agroecosystems and trade names of commercial bioherbicides are given. To a group of target weeds belong: *Malva pusilla*, *Morrenia odorata*, *Abutilon theophrasti*, *Cuscuta* spp., *Cyperus esculentus* and many other. Effective bioherbicides were developed using foliar and stem fungi (e.g. *Colletotrichum* spp.), soilborne fungi (e.g. *Rhizoctonia solani*), and foliar bacteria (e.g. *Pseudomonas fluorescens*). Of special interest are sections and tables presenting scenarios of integrating bioherbicides into weed management strategies and the potential impact on weed management.

There are, however, some shortages in that book. In chapter 7 "*Beauveria bassiana* and other entomopathogenic fungi in the management of insect pests" by G.G. Khachatourians, E.P. Valencia and G.S. Miranpuri (p. 239–275) surprisingly the authors neglected voluminous achievements and literature concerning production technology and use of *B. bassiana* in Russia and Eastern Europe against the Colorado potato beetle *Leptinotarsa decemlineata*.

At any rate this volume provides a comprehensive and up to date review of microbials as biopesticides and their use both in tropical and temperate climate regions making it interesting and valuable to plant protection specialists working on insect pests as well as on plant pathogens and weeds. Of special value of that book is that it will stimulate to build or to improve the integrated pest management programs using ecologically friendly biopesticides.

Jerzy J. Lipa  
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