

Book review

Nematology: Advances and Perspectives. Volume II: Nematode Management and Utilization. Edited by Z.X. Chen, S.Y. Chen and D.W. Dickinson. 2004. 608 pp. CABI Publishing, ISBN 085199 6469. U.K. £75.00 (US\$140.00).

This book, the second of two volumes, 'Nematology: Advances and Perspectives' deals with the applied agricultural aspects of entomopathogenic and especially, plant-parasitic nematodes, thus fully justifying the title of this volume: 'Nematode Management and Utilization'. The book covers many applied aspects of phytonematodes: pathogenicity, interactions with the host (plant) and with various microorganisms (bacteria, fungi and viruses), and a wide range of approaches to nematode management (e.g., classical 'conventional' concepts based on nematicides and agro-technical practices, and 'non-conventional' ideas, such as biocontrol agents and natural products). The authors exploit the opportunity to view the 20th century in perspective, while looking forward to a new era with all its sophisticated technologies (biotechnology, bioinformatics, genomics and post-genomic concepts).

The general description of phytonematode species and nematode parasitism (Chapter 13 by Manzanilla-Lopez et al.) serves as an appropriate overture to this volume, as it opens the door for both familiar and less-familiar readers to the discipline of nematology. The question of the economic importance of plant-parasitic nematodes arises occasionally; therefore, I find it very helpful that the authors devote two complementary chapters (Chapters 13 and 23) to thorough and comprehensive discussion of the history and the cost-benefit issues of phytonematode damage with relation to management practices. Host/non-host interactions with nematodes are further discussed in Chapter 15 by Melakeberhan, and in Chapter 17 by Starr and Roberts. Chapter 15 covers

physiological aspects, such as host nutrition, water, CO₂ and photosynthesis, which affect nematode parasitism, whereas Chapter 17 discusses the benefits and mechanisms of host resistance to plant-parasitic species; it presents several typical current examples of the farmers' use of resistant plants, mainly in north America.

Nematode management is the central motif of this volume. Agrotechnical management practices, such as crop rotation (using non-host or resistant plants, or fallowing), as well as the use of green manure, soil amendments, physical methods (e.g., solarization), trap and allelopathic crops, are comprehensively discussed in Chapter 18 by Halbrecht and LaMondia. Nematicides, although considered as a 'less favourable option' by the 'environment protectors', are still the last main resort for farmers who suffer from damage caused by phytonematodes. Therefore, it was a good decision to dedicate a chapter (Chapter 24, by Rich et al.) specifically to this issue. As the general trend towards the end of the 20th century was towards reducing the application of chemicals, it is only natural that the main focus of a book on nematode management should be on biological control (Chapters 20, 21) and the use of antagonistic plants and natural products (Chapter 19). Beyond the economic importance of virus transmission by nematodes, this combination forms a fascinating biological system that has been investigated intensively by research groups in the U.K. (mainly in Dundee, Scotland) and Italy. Chapter 14, by Brown et al., covers virus-nematode interactions very intensively, with a long detailed description of nepo- and tobnaviruses associated with their vectors, and an extended comprehensive review, down to the molecular level, of the mechanisms involved in the various stages of this interaction.

The beneficial nematode species that have been brought into use within the last decade, mainly as biocontrol agents, for the benefit of farmers, are

given special attention in this volume, and are described in two chapters. The first, Chapter 16, by Nguyen and Smart, describes the taxonomy of the various orders of this group. Chapter 22, by Kaya and Koppenhofer, covers practical aspects of using *Mermithidae* species against mosquitoes and agricultural insect pests and continues with a detailed overview of the interactions of representatives of two well-known genera *Steinernema* and *Heterorhabditis* – with their insect hosts. Various aspects of tritropic interactions (nematode/bacterium/insect), such as the biology of the bacterium, infectivity, host range, ecology, dispersal and nematode survival in the field, are well presented to the reader.

Although the authors aimed this volume primarily at researchers and graduate students, it is

my impression that it can provide the farmer and extension worker communities with a better understanding of the practical aspects, as well as a moderate scientific background of agri-nematological know-how. It will also help teachers in high schools and universities to prepare their lessons and lectures; I, for one, will definitely use it in my next class.

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