Neth. J. Pl. Path. 98 (1992) 265-266

Book review

C.M. Messiaen, D. Blancard, F. Rouxel & R. Lafon., 1991. Les maladies des plantes maraîchères, 3rd edition. INRA, Paris, France. 552 pp. ISBN: 2-7380-0286-2. 285 FRF.

I have rarely looked forward to a new edition of an out-of-print book as much as of Messiaen & Lafon's 1970 edition of 'Les maladies des plantes maraîchères'. When asked for a useful book on vegetable diseases by someone who can read French, this book was always the first I mentioned. The new edition, published in INRA's series 'du labo au terrain' is a welcome one!

As indicated, the language will limit the readership of this original book on vegetable diseases. However, those with diverse spectra of interest 'from the lab to the field', will find it outstanding. What made the second edition, and fortunately the third again, so attractive? In my opinion, they have some very useful and even distinctive characteristics. The outline and details of the book show the enthusiasm of its authors. They must be traditional plant pathologists with empathy for the vegetable growers plagued by diseases, but at the same time with admiration for the complex system of crop–pathogen interactions. From time to time they show a touch of their tropical experience. They certainly have a bias for resistance breeding as one of the methods to control vegetable diseases.

The book opens with two general chapters, the first on diagnostics and the second on methods of crop protection, including recommended rotations, cropping methods and use of pesticides. 'Diseases' are considered in a broad sense, including physiological disorders and problems caused by nematodes and even mites, insofar as mites cause disease-like symptoms. Chapters 3–15 cover specific vegetable crops, in some instances logically treated by family, such as the Cucurbits (Chapter 4) and the Crucifers (Chapter 11). Tomato, eggplant and pepper are grouped in Chapter 3, but the leguminous vegetables are spread over two chapters, the Phaseolineae (French bean and related crops) in Chapter 5, with peas and broad beans in Chapter 6. Celery and parsley are treated in Chapter 7, whereas the other Umbelliferous vegetables carrot and fennel occupy Chapter 8. *Allium* is found in Chapter 9 and *Asparagus* in Chapter 10. Beet and spinach, including the tropical 'spinach-like' *Basella* and *Amaranthus* are found in Chapter 12. The last three chapters of this part are for various composites. Chapter 13 describes diseases of lettuce and chicory, including the non-composite *Valerianella olitoria*. Artichokes are found in Chapter 14 and salsify in Chapter 15.

The most outstanding chapter, compared with other manuals on vegetable diseases, is Chapter 16, which contains the mycological index. This chapter provides mycological details on the fungi encountered with the respective crops, and is a great help in ascertaining the identity of a disease.

The third edition has been thoroughly updated, without any major change in structure. However, the viruses have generally received more attention, following the rapid increase in knowledge over the past 20 years. The literature update is very practical. Thus, the appearance of a publication of the American Phytopathological Society (APS) on pea diseases (D.J. Hagedorn (Editor), 1984. Compendium of pea diseases. APS, St Paul, 57 pp) has motivated the authors to refer to this standard manual, and to add only some French literature as a service to a category of readers. New and recently booming diseases have been added. Thus, the growing importance of *Oidium* in tomato and of *Penicillium oxalicum* in cucumbers in greenhouse crops in Western Europe has been recognized. The list of races of *Bremia lactucae* has increased from Nl 3 in the second edition to Nl 16 in the new book. But Race 4 of *Peronospora farinosa* has not yet been dealt with. Colour pictures have inevitably made their appearance, but unfortunately they are scattered over seven places in the book (16 pages in total), without

adequate reference in the text, which is especially confusing when they are placed in a chapter on another crop. About half of these pictures have been used to illustrate virus symptoms. The 1970 edition was already outstanding by its use of schematic drawings to illustrate essential features of diseases. In the new edition, the black-and-white pictures of the second edition have been replaced by such drawings, which are indeed more illustrative.

In the preface, Messiaen eloquently advocates his conviction that biological growers need more sympathy and support, and he regrets that the options are so few. Certainly, resistance breeding and resistant varieties receive much attention, sometimes leading to details never found in comparable books, for instance the chromosome maps of important resistance genes in tomato. Antagonists of fungal diseases have also received some attention, for instance those of *Sclerotinia*. Regretably the subject index does not mention these antagonists, so that one would not look for data on *Trichoderma* in the mycological index. This index, unfortunately, is not always easy to consult. For example, *Gliocladium virens* is not arranged alphabetically, but is added to the paragraph on *Trichoderma*. Also, *Stemphylium* and *Ulocladium*, certainly because of their relationship, are dealt with in the *Alternaria* alinea. But would a user look for data on these fungi there?

Summarizing my impressions, I strongly recommend this book to anyone with a working knowledge of French and an interest in vegetable diseases. The addition of two new authors to the cover of the new edition is an encouraging sign that this valuable book will see more editions in the future.

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J.A. Lucas, R.C. Shattock, D.S. Shaw & L.R. Cooke (Eds), 1991. Phytophthora. Cambridge University Press, Cambridge, New York, Melbourne. XIV + 447 pp. ISBN: 0-521-40080-5. £ 60.00/US$ 110.00.

This book is the result of a joint symposium on the genus *Phytophthora* of the British Mycological Society, The British Society for Plant Pathology and the Society of Irish Plant Pathologists held at Trinity College, Dublin, in September 1989. It contains, in 28 chapters, the invited lectures of phytophthora researchers from all over the world. The symposium was organized to commemorate the centenary of the death of the Reverend M.J. Berkeley, who was a crucial figure in the debate around the cause of the potato-blight epidemic in the 1840s. He correctly imputed the disease to a fungus, now known as *Phytophthora infestans*. Naturally, the first two chapters are devoted to a short description of the life of Berkeley and to the scientific controversy around the potato blight in Europe in 1845, respectively. Next an account is presented of the origin of *P. infestans* and of the role the Mexican national potato programme might play in international collaborative research on this species.

The introductory chapters are followed by four chapters on host–pathogen interactions: a short summary of current questions on recognition events, an ultrastructural/immunological study of surface properties of zoospores during encystment, adhesion of germ tubes and hyphae of *Phytophthora* spp. to host cells, and pathogen recognition and signal transduction in cell suspension cultures at the molecular level.

The next five chapters deal with taxonomy, starting with a very readable account of current issues and the role of molecular approaches in phytophthora systematics, in view of a population approach. A chapter on *Phytophthora* species causing root rot of raspberry and one on variation in the *P. megasperma* complex are rather specific and publication in a scientific journal would have been more appropriate. However, the latter study in particular may be considered as exemplary and, moreover, contains an extensive endorsement of the use of a biological species concept in the genus *Phytophthora*. Two complementary chapters on restriction analysis of mitochondrial DNA and on isozymes are up-to-date contributions to the taxonomy in the genus *Phytophthora*.

The genetics of *P. infestans* are treated with respect to variation in ploidy, Mendelian genetics, use of isozymes in population genetics, and restriction-fragment-length polymorphisms in both mitochondrial and nuclear DNA as observed by two different groups (Cornell University, USA, and Imperial College of Science, Technology and Medicine/University College of North Wales, UK). A chapter on parasexuality in *Phytophthora* spp. is restricted to in vitro heterokaryon formation by means of protoplast fusion. This might develop into a useful technique in genetic studies. However, the role of heterokaryon (or heteroplasmon) formation in nature remains unknown. Two chapters describe the development of transformation in *P. infestans* and *P. nicotianae*. Both attempts were unsuccessful. Ironically, the first successful transformation of *Phytophthora* spp. was published in the very same year as the appearance of this volume.

The last eight chapters deal with control of diseases caused by *Phytophthora* spp., in particular potato late blight. They include approaches emphasizing forecasts, chemical control by phenylamides and the resulting problems due to resistance in Northern Ireland, mechanism of action of phenylamides and its use in the Netherlands, synergism between fungicides, development of resistant potato cultivars, biological control by microorganisms, control of *Phytophthora* spp. in woody plants, and integrated control of soil-borne species. It appears that biological control is in its infancy and chemical control leads to resistance; an integrated

approach seems to be the best strategy for the moment.

Contrary to what the title might suggest, this book is not a well-balanced survey of phytophthora research. About half the volume is devoted to the species *P. infestans*, which is the most important economically. Emphasis is on molecular and genetic approaches, as the editors mention in the preface, and here they met their objective. Molecular technology has particularly been introduced in systematics and genetics, and these fields are well represented by up-to-date contributions, with recent research results as well as reviews and opinions. Even the chapters on transformation, though already out of date, contain valuable information. Most of the chapters have been supplemented since the symposium and cite references of 1990 or even 1991.

This book is particularly valuable for phytopathologists and for any phytophthora researcher who wants to keep in touch with modern developments.

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