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BOOK REVIEWS

Agrometeorology. Principles and Application of Climate Studies in Agriculture. By H. S. Mavi and G. J. Tupper. Binghamton, NY, USA: Haworth Press (2004), pp. 364, US $95.95. ISBN 1-56022-972-1. doi:10.1017/S0014479704212613

Among the strengths of this book are the wide range of topics covered and a strong emphasis on practicalities, e.g. in planning improved use of water. The emphasis is definitely on applications. However, these lead to some weaknesses. There is therefore, a tendency to give specimen facts and examples of crop responses rather than to explain and to convey understanding, e.g. transpiration. Or again, several methods to indicate drought are introduced but it is not possible to calculate the indices, even with the data to hand.

A feature of the book is the frequency of examples taken from semi-arid climates in general and Australian examples in particular. This is not a problem but it becomes a characteristic as one reads through the book. There is an extensive list of references for further reading (13 pages) grouped according to chapter, although for some chapters the lists include a significant number that are to conference presentations and technical reports that may not be readily accessible to many readers.

In all, this book represents a brave attempt to cover a very wide ranging subject and it does serve as an introduction to the many factors of weather and climate that influence both agriculture and natural systems.

D. K. L. MacKerron

Pest and Vector Control. By H. F. van Emden and M. W. Service. Cambridge: Cambridge University Press (2004), pp. 349, £30.00. ISBN 0-521-01-83-7 (paperback). doi:10.1017/S001447970422261X

This book expands Professor van Emden's well-known student text on crop protection to include and compare control methods developed for pests of medical and veterinary importance. The first two chapters review the devastating impact of these pests, and the diseases they spread, on humans, livestock and crops. A brief account of insect population dynamics precedes a discussion of the causes of epidemics of pests and vectored diseases. Three chapters are devoted to insecticides, formulations and application methods, and problems associated with their use, particularly the development by pests of insecticide resistance. Other control methods, including modifications to the environment and agricultural practice, the use of insect pathogens, pheromones and genetic control, are then reviewed. Particular attention is paid to biological control methods and plant and host resistance, and the advantages and problems associated with their use. The final chapter describes the development of control by integrated pest and crop management.

The difficulty in deciding what pests to include are immense – in the tropics there are more than 300 major crop pests – and the countless site-, or pest-specific, control measures illustrate the problem of attempting to derive universal principles, applicable to crop, medical and veterinary pests. Although much of the information may be well known to agricultural or medical entomologists, this book succeeds in highlighting often overlooked links, such as the consequences of crop irrigation schemes or farm mechanization on mosquito vectors. It covers topics, such as the importance of legislative controls and community involvement, that clearly show the authors' long practical experience of work in developing countries. This is a readable and memorable book, amply justifying the authors' undiminished enthusiasm for their subject.

Trefor Woodford

Fundamentals of Soil Ecology. By D. C. Coleman, D. A. Crossley and P. F. Hendrix. Amsterdam; Elsevier Academic Press (2004), pp. 386, US $39.99 (paperback). ISBN 0-12-179726-0. doi:10.1017/S0014479704232616

This book is by highly respected authors on a very active subject. There was a first edition in 1995/6. The two editions are similar in many ways, with long sections and most figures being identical. Roughly three-quarters

of the references are from 1994 or earlier. This edition contains two extra chapters on 'Soil Biodiversity and Linkages to Soil Processes,' and a long series of 'Laboratory and Field Exercises.' The former contains a rather general discussion of biodiversity and ecosystem functions, including multi-species assemblages. The latter are very good and clear, and should help greatly in practical classes. The last chapter is on 'Future Development'. This discusses recent issues including carbon sequestration, modelling soil carbon, the Gaia hypothesis, soil quality and global change.

The book is basically descriptive, with little theory, modelling or process analysis. Chapter 4 on 'The Soil Fauna' has a traditional anatomical and taxonomic approach. The use of the holistic approach is stressed from the Preface onwards, but the authors note that there is little soil chemistry and physics in the book. In addition, there is very little about modelling of soil organism populations, the rhizosphere processes, or the insights into microbial activity obtained by molecular biological methods. This gives the book a slightly old-fashioned air – one cannot be very holistic when confined within a single discipline. However, if it is part of a well-integrated soils course, the necessary connections can be established with this book. As such it will give an excellent education on soil organisms and their general behaviour.

P. B. H. Tinker

Handbook of Seed Physiology. Applications to Agriculture. Edited by R. Benech-Arnold and R. A. Sanchez. Binghamton, NY: The Aaworth Press (2004), pp. 480, US $59.95. ISBN 1-56022-928-4 (paperback). doi:10.1017/S0014479704242612

When a reviewer opens a book on seed physiology to find positive, nay, glowing pre-publication reviews from eminent seed scientists, the thought 'dare I find fault' does occur. The sub-title, 'Applications to Agriculture', suggests that applications will give a consistent direction and end point to the physiology. This is satisfyingly achieved in Section 1 on Stand Establishment and in the chapter on Methods to Improve Seed Performance but is not seen in Section II on Seed Longevity and Storage. The two chapters in Section II are, in themselves, fine pieces, but there is no strong finish on the application to agriculture. Also, what about something on the effect of deterioration during seed production and storage on the physiological quality of seed used in mainstream (i.e. orthodox seed) agriculture? In Section III, the four chapters on dormancy seem to overdo the topic. Three chapters on the industrial uses of seeds for flour, oil and malting comprise the final Section IV. An early reaction on reading the book was that an introductory chapter from the editors, explaining the choice and balance of the chapters, was needed. A later conclusion was that this would be difficult to write! Any prospective purchaser expecting, as indicated in the title, an emphasis on applications to agriculture will be disappointed. Reading through the above, and reading again the opening reviews and review extracts on the back cover, another thought occurs, that this reviewer seems to be spoiling the party a little.

Stan Matthews

Developing Smallholder Agriculture: A Global Perspective. By R. L. Tinsley. Brussels: AgBe Publishing (2003), pp. 437, US $49.00. ISBN 981-0873-5. doi:10.1017/S0014479704252619

This book follows a previous publication on smallholder agriculture by William Beets. It has some similar characteristics in that it is a very personal journey containing reflections of another peripatetic agronomist. There are ten chapters on characteristics; determinants of smallholder agriculture; land, labour and efficiency; support systems; transferring technology; sustainability; mechanization; irrigation; practicalities and assistance. It is not an academically analytical book, as there is minimal referencing of 'evidence' in the text and few attempts to develop some of the interesting debates about the strategies and the resilience of smallholder farming.

One recurrent theme is the statement that smallholders have between six to eight weeks in which to plant the crops that they need to survive. This the author attributes to lack of resources that would enable the farmer to plant on time rather than a deliberate attempt to spread risk. There is a huge literature on this topic which the author chooses to ignore.

There are some useful reflections on the rise and fall of the training and visit system, in the experience of irrigation systems, of mechanization in specific locations and in the 'per diem' culture. The insertion of chapter summaries is laudable but few show a sensitivity of wider social and political context within which smallholder farmers, researchers and advisers operate. There is minimal treatment of the importance of livestock, especially smallstock, in the many smallholders' livelihood systems, particularly in Asia.

The book could be of special interest to those who have had similar work experiences to the author, or who have an interest in some of the countries covered in the book. However, there is a lack of acknowledgement of the evolution of farming systems thinking towards a greater understanding of sustainable livelihoods which underpin much of today's analysis of smallholder systems.

David Gibbon

Communication for Rural Innovation – Rethinking Agricultural Extension. 3rd Edition. By C. Leeuwis and A. W. van den Ban. Oxford: Blackwell Publishing Ltd (2004), pp. 424, £24.99. ISBN 063205249X.
doi:10.1017/S0014479704262615

This first edition of this book was published in Dutch in 1974. As the authors state, the range of topics under the banner of communication and innovation is enormous and the book's 20 chapters, supported by an extensive literature review, cover a host of issues about agricultural knowledge and information systems.

Agricultural progress depends on the timely use of knowledge and ideas, though many planned changes and innovations never materialize. Most extension workers are familiar with a linear model, generation of innovations through research, transfer by extension and application by farmers, but experience shows many deviations from such a model. Indeed the term 'extension' may be misleading for a process that involves communication and innovation, but as the book is aimed at the wide group of practitioners who identify with this, the term is retained. Change and innovation, a multi-dimensional process, requires much more than technical advice, so the practioners of conventional extension systems have every reason to rethink their mission.

The book is aimed at those using communication to stimulate and facilitate change in agriculture and resource management and to change the concept of 'extension' into ideas of communication for innovation. Innovation requires the integration of ideas, knowledge, experience and creativity from a variety of sources, farmers, researchers, service providers and communication workers. Though the book has a strong academic emphasis, it has also practical suggestions and would be of considerable interest and value to those involved in bringing innovation to the rural sector; such innovations depend on a thorough understanding of farmers' aspirations.

John K. Coulter

Fruit and Vegetables: Harvesting, Handling and Storage. 2nd Edition. By A. K. Thomson. Oxford: Blackwell Publishing Ltd (2003), pp. 480, £99.50. ISBN 1-4051-0619-0.
doi:10.1017/S0014479704272611

In the preface it states that this book aims to provide a range of options for harvest, handling and storage techniques from which produce technologists working in the fresh produce industry can select an appropriate course of action, as well as providing an industry-focussed reference work for university students.

The book has 12 sections, the first 11 of which focus on the various aspects of pre-harvest treatments, harvesting, handling, storage and marketing of fruit and vegetables. These are described in very broad, general terms whilst citing a few, crop-specific, examples. There is a considerable amount of interesting and relevant information in these sections but also some which is quite historical and no longer relevant to modern fruit and vegetable production.

The final section of the book tries to provide a detailed description of the botany, harvesting, cooling and storage of an extremely wide range of fruit and vegetables. To cover all these topics fully for the extremely wide range of products included in the book it would have to have been several volumes longer. In this single volume, however, there is only a very brief overview of the facts for each individual product.

Consequently, although the book may provide a useful reference for university students, it fails to provide sufficient information for it to be a useful reference source for technologists working in the produce industry who would require much more detailed information. There is, however, an extremely comprehensive list of further references, which could lead readers to additional sources of information.

Ian Morrison

Below Ground Interactions in Tropical Agro-ecosystems. Edited by M. van Noordwijk, G. Cadish and C. K. Ong. Wallingford, UK: CABI Publishing (2004), pp. 440, £25.00. ISBN 0-85199-673-6.
doi:10.1017/S0014479704282618

This book combines knowledge of the primary above/below ground interactions in tropical agriculture. The twenty chapters range from ecological concepts and theory to field examples of key organismal groups and their interactions. Chapters span scales from the rhizosphere to the watershed, with chapters on modelling uniting research across the scales.

This volume appears targeted to a system level approach, rather than the fine detail of organism interactions, and as such is a useful introductory text for tropical agro-ecosystems. There are some excellent chapters, such as those on deep soil nutrients, climate change and food webs, but some were surprisingly lacking in detail, and cross-referencing between chapters could be improved. Some terminology and symbols change between chapters. This is most apparent in the chapters involving water. The final chapter uses three carefully chosen examples to place the work in context, to highlight interesting anomalies and to identify key research needs. Referencing of primary material is sparse (perhaps to meet a publisher's request), but the book provides a contemporary bibliography for further reading, and a comprehensive index. Overall the breadth of subjects covered makes this a useful synthesis of current concepts and practices.

T. J. Daniell, B. S. Griffiths and B. M. McKenzie

Books currently under review:

Genetically Modified Crops. Their Development, Uses and Risks. Edited by G. H. Liang and D. Z. Skinner. Binghamton, USA: The Haworth Press (2004), pp. 394, US $39.95 (paperback). ISBN 1-56022-281-6.

Food Wars, The Global Battle for Mouths, Minds and Markets. By T. Lang and M. Heasman. London: Earthscan (2004), pp. 365, £19.99 (paperback). ISBN 1-85383-702-4.

Increasing Productivity of Intensive Rice Systems Through Site-Specific Nutrient Management. Edited by A. Dobermann, C. Witt and D. Dawe. Enfield, NH, USA: Science Publishers and IRRI (2004), pp. 410, US $49.50. ISBN 1-57808-266-8.

Integrated Resource and Environmental Management: The Human Dimension. By A. W. Ewert, D. C. Baker and G. C. Bissix. Wallingford, UK: CABI Publishing (2004), pp. 290, £27.50. ISBN 0-85199-834-8.

Readers may be interested to know about the following publications received but not reviewed because of their limited relevance to the majority of readers of *Experimental Agriculture*.

Report of a Working Group on Medicinal and Aromatic Plants. First Meeting, 12–14 September 2002. Gozd Martuljek, Slovenia. Compiled by D. Baricevic, J. Bernath, L. Maggioni and E. Lipman. Rome: IPGRI (2004), pp. 161, no price quoted. ISBN 92-9043-633-6.

The Evolving Role of Gene Banks in the Fast-developing Field of Molecular Genetics. Edited by M. C. de Vicente. Rome: IPGRI (2004), pp. 54, no price quoted. ISBN 92-9043-623-9.