

BOOK REVIEWS

World Agriculture: Towards 2015/2030. An FAO Perspective. Edited by J. Bruinsma. Rome: FAO and London: Earthscan (2003), pp. 432, £35.00 Paperback. ISBN 92-5-104835-5. DOI: 10.1017/S0014479704211796

This follow up of the FAO's 1995 study provides an evaluation of future advances in world food, nutrition and agriculture, including the crops, livestock, forestry and fisheries sectors. There is detailed coverage of 140 countries and 32 crop and livestock commodities. Though there may be weaknesses in some of the statistical data this is a valuable study which underlines the opportunities and problems in meeting the targets set by the 1996 World Food Summit of halving the number of the undernourished in the developing countries by 2015. It concludes that this target is unlikely to be met in a number of countries, mostly in sub-Saharan Africa.

In spite of slower population growth, projected to give a total of 8.3 billion in 2030, world cereal production must rise by another billion tons by 2030, from increases in area cultivated and yields. Recent growth rates of cereal and livestock production in the developing countries have generally been below those demands, with agricultural exporters becoming importers. Cereal imports, mainly from the traditional exporters, are expected to rise from 110 million tons currently to 265 million tons by 2030.

The book, a valuable source of information on the future of agriculture, gives a balanced coverage of several current issues such as trade policy and globalization, agriculture and the environment, the possible impacts of climate change and agricultural research and biotechnology. On the last the report makes the important point that the wealthiest societies control much of the scientific knowledge and the media that can so influence the debate.

John K. Coulter

Indigenous Management of Wetlands: Experiences in Ethiopia. By A. B. Dixon. Aldershot: Ashgate (2003), pp. 243, £50.00. ISBN 0-7546-30477-7. DOI: 10.1017/S0014479704221792

Tropical wetlands are site-specific complex-ecosystems, which are critical to the survival of many communities throughout the world. From an agricultural point of view wetlands are assumed to be robust production systems, less sensitive to degradation than the adjacent uplands, due to the inflow of water, nutrients and organic debris. On the other hand, the same wetlands are regarded by conservationists as fragile ecosystems that should be handled with care. This conflicting opinion, together with complex cultural and socioeconomic issues surrounding wetlands, has given rise to a plethora of views on how to develop wetlands. Any substantial contribution to elicit this issue is most welcome.

The book starts with a general background on wetlands: definitions, typology, classification and utilization of different wetland types. This chapter is followed by a historic overview of indigenous knowledge, documentation and recent developments, like links with scientific and global knowledge systems. After the introductory chapters the author continues with an account of the study of indigenous knowledge of wetlands management in the Illubabor area in south west Ethiopia. The knowledge of the local community about rainfall, water table elevation, its spatial variability and hydrochemistry was compared with data from a hydrological monitoring program.

This study is a valuable contribution to the information on tropical wetlands and for this reason alone it is worth buying. Moreover, it is well-structured, well-documented and above all well-written. A must for students, researchers and policy makers who are involved in wetlands research or development.

Paul Kiepe

Encyclopedic Dictionary of Plant Breeding and Related Subjects. By R. H. J. Schlegel. Binghamton, NY, USA: Haworth Press (2003), pp. 563, US \$89.95. ISBN 1-56022-950-0. DOI: 10.1017/S0014479704231799

The main section of this book contains a comprehensive dictionary of terms used by plant breeders, geneticists and those who work in closely related fields. It is followed by a section with a list of important crop plants and other plants of the world. Another section with tables and one with schematic figures include information on reproductive biology, taxonomy, genetics and genomics, breeding methodologies and experimental field designs. In these latter two sections there is a bias towards the major cereal crops in the specific examples. There is an adequate but by no means extensive bibliography. It is to be hoped that a revised edition of this book incorporating more information on the utilization of molecular genetics and biotechnology in the breeding of crop plants will become available soon. Meanwhile, I think that this is a very useful reference book which I recommend strongly to lecturers, students and practitioners of plant breeding and their associates.

N. L. Innes

Organic Agriculture: Sustainability, Markets and Policies. Proceedings of the OECD Workshop on Organic Agriculture, Washington, DC, 23–26 September 2002. Paris: Organisation for Economic Co-operation and Development, and Wallingford, UK: CABI Publishing (2003), pp. 406, £49.95. ISBN 922-64-10150-0 (OECD) and ISBN 0-85199-740-6 (CABI Publishing). DOI: 10.1017/S0014479704241795

The 38 papers delivered at the OECD Workshop in Washington, DC, in September 2002, give a broad perspective of the present position of organic agriculture. Unlike a single-authored book, there is the inevitable repetition of information as well as similar views on the problems facing organic agriculture and strategy for the future development. Only 2% of the OECD agricultural output (0.2% in the United States) comes from the organic sector that is changing and growing rapidly. Because organic agriculture is a small-scale industry and still in its infancy, research has been limited and consequently hard data to support sustainability and the future direction are minimal. It is obvious that the authors have little information to support theses and much space is given to their ideas of what needs to be done to advance organic farming within integrated and conventional agriculture. Interestingly the ideas of most authors are complementary.

The papers, including a number of case studies, deal with topics such as the effect of organic farming on the environment and biodiversity (both very difficult to quantify), key issues for producers and consumers, and problems faced in marketing organic products. The questions of certification, labelling, standard and regulations, within an increasing chaotic system, are adequately discussed, as well as government policy worldwide that is needed to give harmonisation and ensure product quality.

Garry Robertson

Weeds and Weed Management on Arable Land – An Ecological Approach. By S. Hakansson. Wallingford, UK: CABI Publishing (2003), pp. 288, £55.00. ISBN 0-85199-651-5. DOI: 10.1017/S0014479704251791

This book focuses on the principles of weed science and these are richly described with examples from Scandinavia and elsewhere in the world. The author deals firstly with classification of plants, vegetation succession, competition between plants and factors influencing its outcome, and secondly with interventions against weeds, with an emphasis on soil tillage rather than chemical or cultural measures. The author cites over 500 references, spanning the twentieth century, more than 40 years of which refer to his own extensive work. Examples are mainly drawn from temperate agriculture. The book has a species and a subject index, through the latter is not extensive. The book describes in detail the occurrence of weeds in a range of cropping systems and the response of weeds to differing management. In-depth discussions provide the means for an understanding of the occurrence of weeds in cropping systems, the rationale for the development of particular strategies, and the importance of integrated measures. Some topics, including parasitic weeds, development of crops that are more competitive with weeds, allelopathy, and resistance to herbicides get only scant attention but a single text cannot provide detail on all topics. The book will be of particular interest and an important reference for post-graduate students, researchers and teachers working in weed science, weed ecology and related subjects.

David Johnson

Coping with Climate Variability – The Use of Seasonal Climate Forecasts in Southern Africa. Edited by K. O'Brien and C. Vogel. Aldershot: Ashgate (2003), pp. 238, £55.00. ISBN 0-7546-1766-1.
DOI: 10.1017/S0014479704261798

In this book 'Southern Africa' is taken to include the Democratic Republic of Congo, Tanzania, and all countries south of them. In view of the geographic region, it is not surprising that the meteorological variable of principal interest is rainfall. Although the topic has a wide field of interest, the science that is presented is very much in its infancy. A significant proportion of the text therefore concerns the need for the techniques being developed rather than their achievements. As will become apparent to readers of this book, the techniques do show promise yet they still require significant development.

The foreseen end users of the data are in agriculture, water resources, electricity supply, transport, construction, insurance and others. The book is in three parts: Seasonal Climate Forecasts, Case Studies of User Responses and Identifying Users Needs. Perhaps the last part should have come first.

The book shows the problems of both spatial and temporal variability. An outstanding difficulty in handling spatial variability lies in the need to give forecasts at a small enough scale to be meaningful to the anticipated users. Currently they are in broad sweeps of territory, larger than whole countries. In addition, forecasting either kind of variability has an almost immovable difficulty: that the forecasts are in the form of probabilities. In the studies reported here, probabilities are presented in terciles: below average, average, and above average. That is, the chance of a period as dry or as wet as the driest or wettest eight out of 32 such periods. What can a user make of values of probability such as 30:50:20? It would, perhaps be better to offer the probabilities of very wet or dry or as wet as the driest three or the wettest two out of 32 such periods.

The style of writing has produced many esoteric phrases and passages that are verbose and repetitive. However, if readers will put up with those difficulties they will find a lot that should stimulate both thought and discussion.

D. K. L. MacKerron

Integrated Natural Resource Management: Linking Productivity, the Environment and Development. Edited by B. M. Campbell and J. A. Sayer. Wallingford, UK: CABI Publishing in association with the Centre for International Forestry Research (CIFOR) (2003), pp. 315, no price quoted. ISBN 0-85199-731-7.
DOI: 10.1017/S0014479704271794

This book results from the work of a CGIAR task force established to examine how the International Agricultural Research Centres could provide more emphasis to integrated resource management. The 15 papers, by 57 authors, are a record of the integrated natural resource management thinking and activity in the centres in 2003. The preface to the volume suggests that a 'foundation has been laid for a considerable expansion into the vital area of research'.

There is a convergence of opinion across these papers which indicates that the involvement of a range of stakeholders from different disciplinary and social backgrounds must replace the single-disciplinary management decisions of the past. These stakeholders must determine a set of actions, and indicators to monitor them, and find answers to specific questions concerning the vital aspects of system performance and viability. Research should address major resource management problems in an eco-regional context at both strategic and specific interdisciplinary levels. The editors should have provided a summary of the thinking – a pity that this was not done. Reading such a summary would save the rather painstaking job of wading through more than 300 pages of frequently-repeated ideas. The big questions are who will heed these opinions (Research Centre directors, aid agencies, governments), and if they do, will the new approaches result in greater productivity, improved livelihoods, poverty reductions and better management of the environment? Judge for yourself, but at the end of the day only time will tell.

R. W. Smith

Plant Resources of South-East Asia No 17. Fibre Plants. Edited by M. Brink and R. P. Escobin. Leiden, The Netherlands: Backhuys Publishers (2003), pp. 456, Eu 120.00. ISBN 90-5782-129-X.
DOI: 10.1017/S0014479704281790

This volume is the latest of 20 comprising the Prosea Handbook, co-ordinated by seven institutions, including Wageningen University. Economically and socially important fibre-producing species are described, ranging

from those traded internationally to plants mainly of local use. Reference is made to other Prosea volumes dealing with fibre-producing species having other primary uses, e.g. timber trees (5), cereals (10), and medicinal and poisonous plants (12); rattans (6) and bamboos (7) merit separate volumes.

Chapter 1, the history of fibre usage is described succinctly alongside the development of synthetic fibres. An account is given for all the important uses of natural fibres, as well as recent developments such as biocomposites in the automotive industry, geotextiles, and environmentally friendly biodegradable products. Other introductory topics range from economic aspects, agronomy, and harvesting, to genetic resources and breeding (including molecular assisted breeding), supply and demand, and research and development priorities. The bulk of the text, Chapter 2, is an alphabetical treatment of 45 key species and genera, from *Abroma augusta* (devil's cotton) to *Wikstroemia* (salago). Each is reviewed under a series of headings including origin and geographical distribution, production and international trade, properties, propagation and planting, diseases and pests, harvesting, yield, handling after harvest, genetic resources, breeding, prospects, and literature. Chapter 3 covers in less detail 129 minor fibre-producing plants. Chapter 4 simply lists about 450 plants (with synonyms) whose primary use is not fibre production. In addition to a useful glossary, there is a reasonable reference listing, and indices of scientific and vernacular plant names.

This well-edited volume covers a wide constituency of interests and adopts a straightforward encyclopaedic approach. If size and cost were ignored, it could have been more comprehensively illustrated.

J. R. Hillman

The Forest Farms of Kandy and Other Gardens of Complete Design. By D. J. McConnell with K. A. E. Dharmapala, G. K. Upawana and S. R. Attanayake. Aldershot: Ashgate (2003), pp. 535, £69.95. ISBN 0-7546-0958-8. DOI: 10.1017/S0014479704291797

This is an interesting book, intelligible for the most part, and more generally relevant than the title might suggest. It describes the ecological diversity, social functions, nutrient flows and energy budgets of the small, locally-run, forest-farms that are found in warm and moist climates over many parts of the earth. It makes a plea for the value and utility of these farms.

Agronomists and crop ecologists may find weaknesses in some of the important quantitative arguments. For instance, the comparison of yield per tree between forest-farm and pure stands in Table 1.3 does not make it clear that the same units of area are used. This is an essential type of comparison, but it, and others like it, are not always supported with adequate background and detail. The line in Fig. 3.2A, showing number of large plants against farm size, appears to be drawn with little reference to the spread of symbols; and the text relating to Fig. 3.2B implies that diversity (of species) increases as size (of farm) decreases – an alternative slant being that diversity is independent of farm size over the range studied (1 to 5 acres). If the argument is to be made that forest-farms are more productive or sustainable than disturbed croplands, then proper and rigorous substantiation is needed. The authors' analysis, in fact, reveals that few investigations have been made of the partitioning of mass or nutrients among individual organisms in these systems. Much more explicit, quantitative work needs to be done.

Some readers may find the transfer of ideas is hampered by self-indulgencies, in-jokes and lapses into cynicism, which escalate in later chapters. Nevertheless, there is a great store of knowledge here, and plenty for stimulation and discussion.

G. R. Squire

Weed Ecology in Natural and Agricultural Systems. By B. D. Booth, S. D. Murphy and C. J. Swanton. Wallingford, UK: CABI Publishing (2003), pp. 288, £35.00. ISBN 0-85199-528-4. DOI: 10.1017/S0014479704301791

This book presents an undergraduate text on the ecological principles, rather than the management, of weeds. In a readable and straightforward style, it covers processes in plant distribution, phenology, growth, population dynamics, competition and herbivory, then uses this knowledge to explore community structure, succession and invasions. The approach is generic, case studies are cited where appropriate; and it is highly practical, giving worked samples and questions to occupy the student, with comprehensive references at the end of each chapter. It should be of equal value in tropical or temperate systems. Inevitably in a student text, some topics have limited

coverage, for instance, mating systems, outcrossing and gene flow; and some complex issues are over-simplified, such as the 'diversity-stability' hypotheses. But the great value of the text is the formal introduction of ecological concept and theory into weed science. In many respects, also, the book could be treated as a general ecological text, using illustrations from disturbed systems. With notable exceptions, weed science has operated outside mainstream ecology, despite weeds being an important part of global ecosystems. There is an increasing desire in many parts of the world to balance their roles in enhancing food webs and reducing yields. As the authors state; 'management without ecology increases the likelihood of failure'. This text is recommended for students and also as a refresher for ecologists with interest in managed habitats.

G. R. Squire

Management of Agricultural Drought: Agronomic and Genetic Options. Edited by N. P. Saxena. Enfield, NH, USA and Hyderabad, India: Science Publishers, Inc and ICRISAT (2003), pp. 209, US \$69.00. ISBN 1-57808-191-2. DOI: 10.1017/S0014479704311798

The scope of this book is more limited than that implied in its title. It draws almost exclusively on experiences from India and Australia, and focuses on grain legume research – excluding cereals, roots and tubers, tree crops and the integration of livestock. Recent farmer response to drought is largely ignored, and the economic and social implications of the different agronomic and genetic options presented are not explored. Indeed it is disturbing to find the editor asking the question: 'Is there a need to involve extension and development personnel and farmers, to solicit their views on their expectations for improvement in drought management?' Some promising agronomic options (e.g. seed priming) are not mentioned, and the overall conclusions after two hundred pages amount to one short paragraph.

This collection of chapters by different authors will inform other (principally public sector) breeders, research agronomists and plant physiology researchers of recent advances in grain legume research for drought-prone areas, but there is limited interpretation of the research outputs to guide the application of that research to farming situations.

Despite the mis-labelling of most of the figures in chapter 11, and the fact that half of the references are over ten years old, the book is an authoritative update on its core theme. However, those looking for new strategies to apply to the management of agriculture in drought-affected areas will not find them here.

Barry Pound

Concise Encyclopedia of Temperate Tree Fruit. Edited by T. A. Baugher and S. Singha. New York: Food Products Press (2003), pp. 388, US\$ 39.95. ISBN 1-560022-941-1. DOI: 10.1017/S0014479704321794

This book broadly covers all aspects of temperate tree fruit from the breeding of new varieties and fruit production, right through to the final marketing of the fruit. Written by 28 of America's leading pomologists, it is divided into 42 separate chapters which are arranged in alphabetical order (hence the 'Encyclopedia'). Although there are some useful colour plates in the centre of the book, in my view it would have benefited from more, particularly those illustrating some of the symptoms of the diseases, pests and disorders that are described in the text.

The book will provide an introduction to the science of pomology for students and commercial growers, with a bibliography at the end of each chapter should further information be required. It will also be a useful reference text for serious gardeners and amateur fruit growers providing practical advice on areas as diverse as orchard planting plans and which type of ladder is most suitable when harvesting fruit. For a concise text at a relatively inexpensive price, this book makes for a good read for anyone with an interest in temperate tree fruit.

K. M. Evans

Principles of Plant Protection. By D. L. Ebbels. Wallingford, UK: CABI Publishing (2003), pp. 302, £55.00. ISBN 0-85199-680-9. DOI: 10.1017/S0014479704331790

National and international regulation of plant pests has a crucial impact on both agricultural production and international trade. Increasingly, legislative requirements have to be set against a background of World Trade

Organisation objectives and require to be scientifically justified on the basis of pest risk assessments. This book explains the often complex nature of international plant health agreements and introduces the reader to the challenges faced by plant health officials in preventing the introduction of damaging pests or in limiting their spread and economic impact. It outlines how national and regional plant protection organisations operate to facilitate international trade in plant and plant products while protecting the plant health of importing countries.

Certification schemes can give effective plant health assurances to buyers or importers of propagating material and several examples are given. The importance of establishing pest free nuclear stock as the basis for future multiplication is emphasised and a chapter is devoted to indexing and the diagnosis of plant pests. This is vital if consequential action is to be taken under regulations.

The book is at least partly intended to support the training of those new to plant health work, including policy makers, scientists and operational inspectors, and in this it will certainly fulfil its aim. Plant health professionals will welcome the comprehensive list of references which bring together the often dispersed and fragmented published work in this specialist field. The useful list of 31 websites allows ready access to up-to-date information on international plant health agreements and requirements

W. J. Rennie

Research Management Guidelines 6 – Improving Agricultural Research at Universities in Sub-Saharan Africa: A Study Guide.

By H. Michelsen, L. Zuidema, C. Hoste and D. Shapiro. The Hague: ISNAR (2003), pp. 101, no price quoted. ISBN 92-9118-0065-3. DOI: 10.1017/S0014479704341797

Research Management Guidelines No. 6 provides in depth information, based on case studies, workshops, literature reviews and interviews involving stakeholders in Sub-Saharan Africa (SSA), on the role universities, (numbering over 200, of which 87 have agricultural programmes), should play in agricultural research. The approach of the study recognizes that universities should not only be viewed in the systems context but that, in addition to teaching and research, their research should also be part of the national research system. Mechanisms and examples of how this can be achieved are suggested. Stages are outlined as a 'road map' in the review-and-change process, preceded by approaches, which university administrators can use to formulate recommendations and develop appropriate action plans

Lack of funding and motivation and concentration of universities on teaching are brought out as the main causes for their low contribution to agricultural research, despite their having highly qualified staff and good facilities compared to most national agricultural research systems (NARS). The book provides fifteen strategies and several lines of action on enhancing university contributions to agricultural research and rightly cautions that their applications will vary from country to country.

The authors have presented the book very clearly, with several tables in the text and on the attached CD-ROM and many references. It is highly recommended to university and NARS administrators and policy makers in SSA countries who wish to maximize on agricultural research potential available at universities. ISNAR should be congratulated for initiating the study and its publication.

R. S. Musangi

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*.

Solanaceae Genetic Resources in Europe. Report of Two Meetings 21 September 2001, Nijmegen, The Netherlands; 22 May 2003, Skierniewice, Poland. Compiled by M. C. Daunay, L. Maggioni and E. Lipman. Rome: IPGRI (2003), pp. 92, no price quoted. ISBN 92-9043-579-8

Mashua. Tropaecolum tuberosum Ruiz & Pav. Promoting the Conservation and Use of Underutilized and Neglected Crops. 25. By A. Grau, R. O. Duenas, C. N. Cabrera and M. Hermann. Rome: IPGRI (2003), pp. 55, no price quoted. ISBN 92-9043-581-X

Raising Yields, Creating Partnerships: Gatsby's On-farm Work in Africa. London: The Gatsby Charitable Foundation (2003), pp. 85, no price quoted. ISBN 1-901351-40-8

Books currently under review

- Water Productivity in Agriculture. Limits and Opportunity for Improvement.* Edited by J. W. Kijne, R. Barker and D. Molden. Wallingford, UK: CABI Publishing (2003), pp. 353, £60.00. ISBN 85199-669-8
- Handbook of Soil Acidity.* Edited by Z. Rengel. New York: Marcel Dekker Inc (2003), pp. 496, US \$195.00. ISBN 0-8247-0890-3
- Bacterial Disease Resistance in Plants. Molecular Biology and Biotechnological Applications.* By P. Vidhyasekaran. Binghamton, NY, USA: Haworth Press (2002), pp. 466, US \$59.95 (paperback). ISBN 1-56022-924-1
- Crop Production in Saline Environments. Global and Integrative Perspectives.* Edited by S. S. Goyal, S. K. Sharma and D. W. Rains. Binghamton, NY, USA: Haworth Press (2003), pp. 427, US \$129.95. ISBN 1-56022-096-1
- Apples. Botany, Production and Uses.* Edited by D. C. and I. J. Warrington. Wallingford, UK: CABI Publishing (2003), pp. 672, £99.50. ISBN 0-85199-592-6
- Nutrients for Sugar Beet Production. Soil-Plant Relationships.* Wallingford, UK: CABI Publishing (2003), pp. 272, £65.00. ISBN 0-85199-633-X
- Handbook of Formulas and Software for Plant Geneticists and Breeders.* Edited by M. S. Kang. Binghamton, NY, USA: Haworth Press (2003), pp. 348, US \$39.95 (paperback). ISBN 1-56022-948-9
- Organic Fruit Growing.* By K. Lind, G. Lafer, K. Schloffer, G. Innerhofer and H. Meister. Wallingford, UK: CABI Publishing (2003), pp. 281, £55.00. ISBN 0-85199-640-X
- Invasive Plant Species of the World. A Reference Guide to Environmental Weeds.* By E. Weber. Wallingford, UK: CABI Publishing (2003), pp. 560, £75.00. ISBN 0-85199-695-7
- Sustainable Agriculture* Second edition. By J. Mason. Collingwood, Victoria, Australia: Landlinks Press (2003), pp. 205, AU\$49.95. ISBN 0-643-06976-7
- Soil Fertility Decline in the Tropics. With Case Studies on Plantations.* By A. E. Hartemink. Wallingford, UK: CABI Publishing (2003), pp. 384, £65.00. ISBN 0-85199-670-1
- The Ecology of Soil Decomposition.* By S. M. Adl. Wallingford, UK: CABI Publishing (2003), pp. 335, £60.00. ISBN 0-85199-661-2
- Sustainable Soils. The Place of Organic Matter in Sustaining Soils and their Productivity.* By B. Wolf and G. H. Snyder. Binghamton, NY, USA: Haworth Press (2003), pp. 352, US \$49.95 (paperback). ISBN 1-56022-917-9