

BOOK REVIEWS

Soils, Land and Food: Managing the Land During the Twenty-First Century. By A. Wild. Cambridge: Cambridge University Press (2003), pp. 246, £19.95 (paperback). ISBN 0-521-527597.
DOI: 10.1017/S0014479703211522

The first part of this book (Chapters 1–6) is essentially a guide for non soil scientists to the well-established facts of the relationship between soils, land management and crop production. Specialists may find points to quibble about, and some environmentalists will disagree with certain aspects. Nevertheless, it is refreshing to read a sound, scientific presentation of the essential need for inorganic fertilizers if food crop production is to be sustained against increasing demand. Inevitably this part of the book is a very abbreviated treatment of the topic but it is supported by an excellent and extensive list of references.

The second part (Chapters 7–11) deals more specifically with the need to apply technology founded in sound science to increase and sustain food production in the future. The message is essentially optimistic, even for Africa, subject to the proviso that the methods used to increase production avoid soil degradation. This will only be possible through continuing research on farming systems and their effects on water and soils, and the implementation of the results thereof.

Uncertainties remain about predictions of the rate of future population growth. The author uses the UN medium-rate projections as most recent writers have done. However, trends in the last few years suggest that the low-rate projections may be achieved. If the potential of genetically modified crops is utilized, and the land is managed according to best practice indicated by soil scientists, then the disastrous outcome predicted by Malthusians and some other environmentalists, should be avoided. Professor Wild's book deserves to be studied by a wide audience.

Dennis Greenland

Seeds of Concern – The Genetic Manipulation of Plants. By D. R. Murray. Wallingford, UK: CABI Publishing (2003), pp. 156, £19.95 (paperback). ISBN 0-85199-725-3. DOI: 10.1017/S0014479703221529

The author aims to provide information to interested members of the public about the genetic manipulation (GM) of plants. However, the technical nature of the early chapters is likely to be incomprehensible to the layman. Overall, the author demonstrates a strong anti-GM and pro-organic bias, while admitting that GM-technology may have some uses. I am dismayed by his prejudice against agribusinesses. As increasing numbers of governments withdraw financial support for public sector plant breeding, the private sector often provides the only means of bringing crop improvements to growers, for which private companies must be allowed some financial return. The author also perpetuates some of the myths about the use of biotechnology. An independent review of the Showa-Denka tryptophan incident showed that this resulted from a failure in the purification process. Other problems laid at the door of GM technology, such as acquired resistance, are found equally with conventional plant breeding. Although I am critical of parts of the book, it is nevertheless a stimulating read, with the chapter on Intellectual Property Issues of particular interest. 'Seeds of Concern' will provoke much debate. The views expressed will attract support from those opposed to the use of GM technology. For those wishing a more objective view, wider reading is essential.

Bill Macfarlane Smith

Ecoagriculture: Strategies to Feed the World and Save Biodiversity. By A. McNeely and J. Scherr. Washington: Future Harvest and IUCN: Island Press. (2003), pp. 323, no price quoted. ISBN 1-55963-644-0; 1-55963-645-9 (paperback). DOI: 10.1017/S0014479703231525

The sub-title explains the ambitious aim of this book: the main title is proposed as a concept and rallying cry. The book has been well received by those sympathetic to its ideals – those who can afford to think beyond

food production to broader issues of conserving germplasm for future use. The authors seek to encourage the maintenance of a world with its current array of organisms. They argue that it is possible to balance agricultural efficiency while designating and husbanding more land and water to conserve wildlife.

As a thesis it will fail to excite and persuade those who put economic development foremost. The reviewer read a soft-back version and was disappointed by the paucity and quality of figures and photographs and by an inadequate list of acronyms. The work is at its best as a reference source to the array of organizations and projects that are already trying to slow down the rate of destruction of the environment and, in particular, the erosion of plant and animal biodiversity.

Part 1 covers the thorny issues of intensification of agriculture, rural poverty and shrinking biodiversity. The second part attempts to show that coexistence is possible by integrating wildlife systems into a caring agriculture, and refers to encouraging instances that could help achieve the authors' aims. The policy responses in Part 3 comprise instances of numerous existing attempts and enterprises. The bottom line though, and the phrase is used deliberately, is that the book ends with an appeal for more money. The plea for more incentives, subsidies, investments, institutions, resource rights and so on serves to demonstrate the up-hill battle that conservationists are fighting.

J. T. Walker

Sustainable Food and Agriculture. By I. G. Malkina-Pykh and Y. A. Pykh. Southampton: WIT Press (2003), pp. 366, £118.00. ISBN 1-85312-937-2. DOI: 10.1017/S0014479703241521

The concept of sustainability in relation to agriculture and food production is gaining acceptance worldwide. There are, however, many different definitions of sustainability and any well-balanced review has to take account of all aspects of this complex subject. This is not an easy task. Is this book successful in its aim? The answer is yes – on the whole. It covers the history and definitions of sustainability agriculture, systems analysis, agriculture resources, agriculture technology, economics, society, human health, law and environmental factors such as desertification, climate change, biodiversity and agriculture pollution. The text is densely packed with well-referenced and up-to-date information. Of particular use are a number of web-site addresses. Readers' reactions to Chapter 2, which is an in depth classification of food and agriculture models, will vary from the deeply fascinated to the slightly daunted. The book has no list of abbreviations or acronyms. This is unfortunate since the text, particularly in Chapter 2, makes much use of these. The greater part of the book is directed at identifying all those practices that influence agriculture and food production. It is comprehensive, detailed and logically laid out. The book would benefit, however, from a concluding chapter integrating the major constraints on achieving sustainability in agriculture and food production. With a distinct shortage of books on what is an enormously challenging subject those who want to begin to come to grips with the subject should welcome this treatise.

Carol Duffus

Groundnut. By R. Schilling and R. Gibbons. London and Oxford: Macmillan Education Ltd (2002), pp. 146, £7.85. ISBN 0-333-72365-1. DOI: 10.1017/S0014479703251528

The publication of 'Groundnut' adds one more useful text to the Tropical Agriculture series. Importantly it is a readable text that is a well-balanced mix of agricultural science information and the practical aspects of groundnut production and post-harvest handling. All main features of this crop – its botany, field production and harvesting, pests and diseases and work on crop improvement – are covered concisely. The text moves easily between features of small-scale and larger scale crop production and harvesting, and provides good coverage of post-harvest operations including the maintenance of pod and seed quality. Importantly, one chapter is dedicated to seed production, including the institutional aspects of effective seed services. The text respects the contribution to groundnut improvement of both national and international research systems, with examples of the gains made through their networking. There are some slips (but only a few) in quality and accuracy. For example, the photograph of nodules is poor and will confuse any reader who is not familiar with this common feature of legume roots. Attributing the common name, striga, to the parasitic plants *Alectra volgeii* is questionable. Far better to keep to the common name, yellow witch weed, and restrict striga to *Striga* spp. only.

F. M. Quin

Quantitative Analysis of Data from Participatory Methods in Plant Breeding. Edited by M. R. Bellon and J. Reeves. Mexico, DF: CIMMYT (2002), pp. 144, £15.00. ISBN 970-648-096-X. DOI: 10.1017/S0014479703261524

This publication presents the proceedings of a workshop on 'Quantitative Analysis of Data from Participatory Methods in Plant Breeding' that was held in the Justus Liebig University, Germany in August 2001. Twenty-one scientists took part, representing 10 centres of the Consultative Group on International Agricultural Research (CGIAR), the Justus Liebig University, the University of Wales and Michigan State University. They covered different disciplines (breeding, social science, biometry and agronomy) and crops (maize, rice, potatoes, cassava, sorghum, barley and agroforestry). There are nine papers, each with abstract and discussion summary, followed by an appendix of current participatory breeding projects conducted by eight of the CGIAR centres. Whilst new cultivars are, in general, more likely to be adopted and have impact if breeders involve end users in deciding objectives and selecting germplasm, this workshop was about involving small-scale farmers in developing countries. The publication will be of most interest to those concerned with increasing food production and security in developing countries and the consequences of participatory plant breeding for on-farm conservation of landraces of our major food crops. It covers the following topics: the use of mother-and-baby trial designs, which combine a central researcher-managed trial of all treatments with farmer-managed satellite trials of subsets of treatments; appropriate statistical models and analyses for irregular (unbalanced) trial designs with data as ratings and rankings as well as measurements; and practical ways of getting farmers to assess germplasm and give feedback on the importance of various traits. I liked the cards with happy, serious and sad faces on them and hope that participatory plant breeding will lead to more happy faces.

John E. Bradshaw

Plant Tissue Culture: 100 years since Gottlieb Haberlandt. By M. Laimer and W. Rucker. Springer/Verlag/Wien. New York (2003), pp. 260, £54.50. ISBN 3-211-83839-2. DOI: 10.1017/S0014479703271520

This is a scholarly volume of interest to anyone working in plant tissue culture, particularly those who wish to learn more of the history and applications of this fascinating applied science. Taking the theme of the 100th anniversary of Haberlandt's landmark publication presenting the concept of totipotency in plants, the first part of the book describes early developments in plant tissue culture. The historical aspects of the science are comprehensively discussed, and a facsimile of Haberlandt's original German language paper is included. In addition, the chapter by Hoxtermann on cellular elementary organisms contains an extensive review of the developments made in the first hundred years of plant tissue culture. The second half of the book presents a series of chapters describing more recent applications of plant tissue culture.

Deep and detailed in parts, including useful chapters on applications of micropropagation and *in vitro* conservation methods, this section is unfortunately not comprehensive, a fact acknowledged by the editors in the Preface. The addition of a few more chapters (for instance, the topic of somatic hybridization is not covered) would have made this book indispensable. The layout is unconventional. For example, the excellent quality, colour pictures relating to each chapter appear at the end of the book rather than in the text, but it contains some significant reviews and is extensively referenced throughout.

Steve Millam

Evolution and Adaptation of Cereal Crops. Edited by V. L. Chopra and S. Prekash. Enfield, NH, USA: Science Publishers Inc (2003), pp. 295, US\$89.50. ISBN 1-57808-190-4. DOI: 10.1017/S0014479703281527

In aiming to meet the needs of students, teachers and researchers interested in the biology, improvement and use of cereal crops, the contributors have, in general, hit the target. The book is concerned primarily with breeding issues, past, present and future, of a select group of cereal crops, namely, rice, wheat, maize, barley, sorghum and millet. Rye and oat are omitted and macaroni wheat is glossed over. Each chapter deals with a separate crop and is written by individual experts. This naturally provides diversity in presentation and (sometimes entertaining) writing styles, but biased and contradictory opinions are prevalent. For example, wheat, maize and barley are all proclaimed as being the most widely grown cereal. Such inconsistencies should have been edited out, and comparisons/contrasts in crop breeding strategies, biotechnologies, histories, uses and gene resources edited in. The chapters, therefore, are best viewed as separate entities and as such provide excellent introductions to their respective cereal crop. The chapters do not, however, fully address the title of the book as mutation, a major

mechanism in evolution and adaptation, is barely mentioned. This is the only major flaw in an otherwise useful reference book.

Brian Forster

Crop Variety Improvement and its Effect on Productivity. The Impact of International Agriculture Research. Edited by R. E. Evenson and D. Gollin. Wallingford, UK: CABI Publishing (2003), pp. 544, £75.00. ISBN 0-85199-549-7. DOI: 10.1017/S0014479703291523

This is a comprehensive account of the genetic research and crop variety improvement which has been done over a long period of time at several of the International Agricultural Research Centres – some for more than 40 years. The International Rice Institute (Philippines) and the International Maize and Wheat Improvement Programme (Mexico) are such examples. These two Institutes were credited in the 1960s with instituting the ‘Green Revolution’. Data are presented from eleven crop analyses and three country studies.

The book has been published at a time of interest throughout the world and particularly in Europe: that of modern methods of genetic manipulation in many important crops, popularly called ‘GM Crops’. Much of the recent work, and certainly the more controversial aspects thereof, on GM crop has been done by large international companies who inevitably are driven by profit incentives. In contrast the research reported in this book was much less concerned with profit motives and, indeed, the majority of the targets were smallholder farmers in developing countries. Inevitably there have been critics of the International Agricultural Research Programmes and this book is one attempt to present very detailed data on how the research was done and the benefits derived from that work. Several years were spent on the analysis, with contributions from many scientists. This record will now stand for the foreseeable future and be an important reference work for plant breeders throughout the world.

James Watson

Knowing Poverty 2002: Critical Reflections on Participatory Research and Policy. Edited by K. Brock and R. McGee. London: Earthscan (2003), pp. 212, £15.95. ISBN 1-85383-894-2. DOI: 10.1017/S0014479703301528

This book presents a series of reflections from researchers on poverty research involving participatory poverty assessments (originally introduced by the World Bank) and the contribution these have made to the process of making policy for poverty reduction. The book examines how participatory research has influenced the way knowledge about poverty is framed and understood, and how that understanding has been acted on in policy processes for reducing poverty.

The authors, who come from diverse backgrounds and disciplines, present critical and rich reflections on the various aspects of the relationship between participation and policy, spanning different levels, from the researcher in country-level studies in Myanmar and Uganda to multi-country studies of the World Bank. They pose various questions: technical, ethical, operational, political and methodological. Insights are offered: (i) into the dynamics that are set up in participatory poverty research which can affect the way knowledge is generated and legitimized for policy change; and (ii) the loss and decontextualization of information that can occur as information, collected at the micro-level, is aggregated towards higher levels of generality and abstraction. The trade-offs between specificity and generality are real and pervasive.

The book makes a significant contribution to improving our understanding of the opportunities and risks posed by participatory poverty research. Its value to social science students and researchers lies in the reflexive analysis of a set of pro-poor research practices that leads to an ethical conclusion that ‘responsible knowing’ for advocacy and action includes the exercise of informed caution when asserting social facts at a global scale.

Amir Kassam

Pesticides: Problems, Improvements and Alternatives. Edited by F. den Hond, P. Groenewegen and N. M. van Straalen. Oxford: Blackwell Science (2003), pp. 256, £79.50. ISBN 0-632-05659-2. DOI: 10.1017/S0014479703311524

This book brings together the thoughts and results of researchers from the Netherlands, United Kingdom and Japan on the broad subject of pesticide usage, mainly in developed Western agriculture. It addresses the

benefits of pesticide use as well as some of their negative aspects, such as, the effect on the environment due to over-reliance on chemical control. The notion that the era of purely chemical control is coming to an end and a more environmentally acceptable approach will be needed threads throughout the book. Chapter 1 sets the scene by reviewing pesticide application from the post-war period to the present. In the second chapter, Struik and Kropff make the comment that the 'chemical era of crop protection will come to an end ... for certain pathogens', leading the way to greater use of novel techniques. Later, Vogelesang-Stoute reviews the legal implications of pesticide application, particularly that relating to EU Directive 91/414/EEC and its effect on pesticide marketing in Europe. Other chapters deal with innovation in the agrochemical industry, regulation of pesticides in the UK, the mathematical aspects of economics in farmer's decision-making, and the variation and environmental impact of pesticide usage. The remainder of the book deals with 'the way forward' with the use of integrated pest management, targeted application methods, biotechnology, and food industry initiatives as ways to reduce pesticide usage. Although this book appears to have been written with Europe in mind, many of the aspects eventually will be relevant to agriculture that has increased, or is about to increase, its reliance on pesticides and this should help to avoid some of the problems experienced in Europe.

S. C. Gordon

Trees, Crops and Soil Fertility. Concepts and Research Methods. Edited by G. Schroth and F. L. Sinclair. Wallingford, UK: CABI Publishing (2003), pp. 437, £65.00. ISBN 0-85199-593-4. DOI: 10.1017/S0014479703321520

This book is aimed at researchers in tropical agroforestry systems (with scant reference to silvopastoral systems). It is described as a manual for research in agroforestry with emphasis on the effects of trees on soil and soil fertility. The first two chapters deal with the economics of agroforestry, experimental design and data analysis. The remaining chapters group into soil fertility (nutrients and acidity, soil organic matter, decomposition and nutrient supply from biomass, nutrient leaching, nutrient capture, atmospheric exchange); soil physics (soil structure, soil water, erosion); and biology (roots, biological nitrogen fixation, mycorrhizas, rhizosphere processes and macrofauna). This structure leads to inevitable overlap between some chapters, such as with soil water and nutrient leaching.

The chapters are mostly divided into: firstly, the relevance to agroforestry practices, followed by a section on methods. The analytical methods are not specific to agroforestry soils, and chemical methods for soil analyses have been described in more detail elsewhere. Recommended methods using isotopes assume access to well-equipped laboratories and the soil-centred approach ignores plant tissue analyses to assess nutrient status, important when trees are a part of the system. Social considerations are a vital part of agroforestry in the developing countries as the chapter on economics indicates, and this is highlighted in the chapter on soil erosion, which includes farmer's responses to experimentation on the subject. References are combined in one large list at the end.

Berwyn L. Williams

Rural Planning in Developing Countries: Supporting Natural Resources Management and Sustainable Livelihoods. By B. Dalal-Clayton, D. Dent and O. Dubois. London: Earthscan (2003), pp. 226, £25.00 (paperback). ISBN 1-85383-939-6. DOI: 10.1017/S0014479703331527

Written by a planner, a soil scientist and a forester the book records experiences in the use of land resource surveys and participatory methods towards better natural resource management. Drafted in 1999 before UK publication in 2003, it emphasizes the need for the integration of the biophysical and human dimensions of land use. In this reviewer's eyes the first two chapters. Lessons from Experience, and Conventional, Technical Planning Approaches, could have been better organized. To seek complete logic in exploring the biophysical/human interface in natural resource management, a rapidly evolving interdisciplinary arena, is perhaps too much to ask. Chapters three and four on Approaches to Participation in Planning, and A Basis for Collaboration respectively, are a most useful compendium of concept and experience on the human side of the NRM interface. The final chapter. The Way Forward, includes a series of recommendations on process at local, intermediate and national levels; their foundations in experience gives these value. The book is a good source for practitioners

wanting to explore others' experiences. It includes over three hundred references, many from ground operations.

Mike Collinson

Encyclopaedia of Soil Science. Edited by R. Lal. New York: Marcel Dekker Inc. (2002), pp.1476, US\$395.00. ISBN 0-8243-0634-X. DOI: 10.1017/S0014479703341523

This book is appropriately American, being the largest in almost everything, (weight three kg, topical editors 46, contributors ca. 420, chapters ca. 360). It contains a huge mass of information organized alphabetically in short chapters of a few pages each. The contributors are of high quality, the main editor has extensive relevant experience, and the book is well and clearly produced, with plenty of tables but rather fewer figures. Most of the chapters are clearly written in a similar style, which indicates strong editing. The subjects range widely and include some from the verges of soil science.

Obviously the questions arise: Is this a useful volume? Is it good value at the massive price? That the short preface only states the importance of the subject it is assumed that the purpose of the book is obvious, presumably as a main reference in departmental science libraries. As such, it is an excellent starting point for a first look into the subject, or as a source of a few quick references for a grant application. It will be less good in an educational function because of the way in which subjects are fragmented into chapters written by separate authors, and organized alphabetically rather than logically. Thus there are 21 chapters whose titles start with Erosion (for water), but Water Erosion is the 16th of these, whereas the principles of water erosion would normally come first. There are many ways to break up a subject, and by using this one some subjects may be overlooked, though this reviewer has not noticed any important cases. There are certainly instances of overlap or repetition between associated chapters, for example, under Desertification. Entry to a subject, therefore, may be easiest through the 23-page Index, which is reasonably comprehensive.

In sum, this is an enormous project that does credit to the editors. It is excellent for quickly covering the basics for virtually all subjects and, in most cases, there is much more in associated chapters. It is recommended for all soil science libraries.

Bernard Tinker

Books currently under review:

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

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

Weed Ecology in Natural and Agricultural Systems. By B. D. Booth, S. D. Murphy and C. J. Swanton. Wallingford, UK: CABI Publishing (2003), pp. 274, £35.00. ISBN 0-85199-528-4.

Weeds and Management on Arable Land. An Ecological Approach. By S. Hakanson. Wallingford, UK: CABI Publishing (2003), pp. 274, £55.00. ISBN 0-85199-651-5.

Indigenous Management of Wetlands. Experiences in Ethiopia. By A. B. Dixon. Aldershot: Ashgate Publishing Ltd (2003), pp. 243, £50.00. ISBN 0-7546-3044-7.

World Agriculture: Towards 2015/2030. Edited by G. Bruinsma. Rome: FAO and London: Earthscan (2003), pp. 304, £35.00 (paperback). ISBN 1-84407-007-7.

Plant Resources of South-East Asia. 17. Fibre Plants. Edited by M. Brink and R. P. Escobu. Leiden, The Netherlands: Backhuys Publishers (2003), pp. 456, Eu 120.00. ISBN 90-5782-129-X.

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*.

Biological Control in IPM Systems in Africa. Edited by P. Neuenschwander, C. Borgemeister and J. Langewald. Wallingford, UK: CABI Publishing (2003), pp. 448, £75.00. ISBN 0-85199-639-6.

- Agrobiodiversity Conservation On-Farm: Nepal's Contribution to a Scientific Basis for National Policy Recommendations.* Edited by D. Gauchan, B. R. Sthapit and D. I. Jarvis, Rome: IPGRI (2003), pp. 47, no price quoted. ISBN 92-9043-575-5.
- In Vitro Collecting Techniques for Germplasm Conservation.* Edited by V. C. Pence, J. A. Sandoval, V. M. Villalosos and F. Engelmann. Rome: IPGRI (2003), pp. 100, no price quoted. ISBN 92-9043-534-8.
- On-farm Management of Agricultural Biodiversity in Vietnam.* Edited by H. D. Tuan, N. N. Hue, B. R. Sthapit and D. I. Jarvis. Rome: IPGRI (2003), pp. 135, no price quoted. ISBN 92-9043-561-6.