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BOOK REVIEWS

Plant Evolution and the Origin of Crop Species. 2nd Edition. By J. F. Hancock. Wallingford, UK: CABI Publishing (2004), pp. 313, £60.00. ISBN 0-85199-685-X. DOI: 10.1017/S0014479704212443

The first edition of this well-known book dates back to 1992 (Prentice Hall) since when it has served a useful purpose as a student textbook, covering a range of levels, mainly for courses in crop evolution. This edition is considerably enlarged, though only partially improved. The first part is essentially an up-dated review of the genetic mechanisms operating in plant evolution as revised in the light of DNA technology.

The second half is concerned with the emergence and diffusion of crop species. The chapters on crop evolution are grouped into sections of plant type – cereal grains, oils and fibres etc – the individual crops being dealt with in fairly skimpy fashion compared with Simmonds' editing of crop specialists' accounts in his 1976 *Evolution of Crop Plants*. (Longman, London and New York). This text lacks that work's elegant cartouche-style diagrams and maps.

This book seems to have been produced in a hurry, so that the tables, in particular, are ridden with typographical errors such as 'super oxide dismutatse', '*Avena valviloviana', 'D. cayenensis*, 'the chickpea *V. unguiculata', 'Aripithecus ramidus' and Oenothera lamarchiana*.

Chapter 6, 'The Origins of Agriculture', is best totally ignored in favour of specialist writing, as the description of hominid evolution is, in many instances, wrong. This is not the place for mistakes and oversimplification about hominid taxa and statements such as 'jaw more interlocking' when authentic literature on human evolution delivers much more accurate information.

The last part of the book redeems the mid-section with a fine bibliography containing almost 1100 references covering most aspects of the work on the subject.

J. T. Walker and Alan Walker

The Oil Palm. 4th Edition. Edited by R. H. V. Corley and P. B. Tinker. Oxford: Blackwell Publishing (2003), pp. 284, £115.00. ISBN 0-632-05212-0. DOI: 10.1017/S001447970422244X

This is a completely revised, enlarged and modern edition of the book by C. W. S. Hartley. It has the typical broad coverage of a tropical monograph, but is more detailed than most, and more authoritative even than previous editions. Chapters cover the origins and spread of the crop, classification and taxonomy, climatology and soils, crop physiology, agronomy and nutrition, genetics and breeding, pests and diseases, products and marketing. The authors include much new research material gathered over the previous 20 years in physiology, genetics and mineral nutrition. The arguments are scientifically rigorous and well supported by graphs, tables and diagrams. This is therefore a definitive, and also accessible account of a major crop, presented clearly and attractively and well illustrated. There are few monographs as complete and successful as this, and few authors in the tropical scene who have the depth of experience and the ability to synthesise with authority outside their own specialisms. The oil palm has been a major success as a cash crop, not least, as shown here, because investment in research has demonstrably returned better varieties and better agronomy. Its spread and commercialization has also very strongly affected the economies and environments where it has been introduced, and while the final, short, chapter touches on loss of forest, pollution and sustainability, there is still scope for a fuller treatment of the ecology of palm plantations. Notwithstanding this, it is an excellent book.

Geoff Squire

Seed Conservation. Turning Science into Practice. Edited by R. D. Smith, J. B. Dickie, S. H. Linington, H. W. Pritchard and R. J. Probert. Kew, Surrey: Royal Botanic Gardens (2003), pp. 1023, £59.95 paperback. ISBN 1-84246-052-8. DOI: 10.1017/S0014479704232446

This book has 56 chapters written by 103 contributors from 21 countries across six continents. It is the outcome of a workshop held in July 2001 at the Wakehurst Place site of Kew's Royal Botanic Gardens to review the science and technology underpinning *ex-situ* seed conservation activities. Although some crop seed conservation is covered, the emphasis is on non-domesticated seed conservation. There are three main themes: 'Planning and Collecting' (14 chapters); 'Processing and Testing' (18), and 'Storage and Utilization' (22) plus 'Conclusions' (2). Topics are diverse, from 'Access and Benefit-sharing Agreements' designed to meet the Convention on Biological Diversity to 'Classification, Biogeography, and Phylogenetic Relationships of Seed Dormancy'.

Chapter length varies considerably, with a range (omitting the title page) from two pages ('Seed Conservation at the Centre for Genetic Resources, The Netherlands') to 67 pages ('Predicting Seed Longevity: the use and abuse of seed viability equations'). Each chapter has its own reference list and there are taxonomic and general indices at the end of the book. Most tables, figures and boxes are very clear but some readers may have difficulties with figures 19.3 and 19.4. The penultimate chapter contains a thought-provoking synthesis by the editors of salient points in the other chapters, of issues arising from discussions at the 2001 Workshop and of information from recent publications. This is a well-produced and informative book that is essential reading for genetic conservationists. It should also be a readily available reference volume for geneticists, plant breeders, seed and taxonomy specialists, and policy makers.

N. L. Innes

The Regulation of Agricultural Biotechnology. Edited by R. E. Evenson and V. Santaniello. Wallingford, UK: CABI Publishing (2004), pp. 320, £65.00. ISBN 0-85199-2. DOI: 10.1017/S0014479704242442

Agricultural biotechnology is not new. However, recent years have seen a worldwide debate, complicated by the existence of many bodies that attempt to regulate the technology and trade in the end products. The editors have pulled together a wealth of information from authors in different parts of the world, reflecting very different views. They also provide a significant service in their Introduction by summarizing many aspects. The book highlights the differences in protective mechanisms on opposite sides of the Atlantic and between their respective consumers. An important issue is the specific difficulties of developing countries that are not only at risk of seeing their natural genetic resources exploited with inadequate protection or financial return, but also see their need for food at affordable prices opposed by health and environmental concerns. Matters such as compliance with regulation, trade protectionism, weak protection on Plant Variety Rights, incentives for crop improvement, conservation of biodiversity, the cost of identity preservation of GM/non-GM commodities, and traceability of these, only serve to underline a complex situation. Even the puzzle of why biotechnology innovation should be so prolific in Europe but public acceptability of the end products so low, gets an airing. This is a 'must read' book for supporters of the many different views on biotechnology, who will gain a better understanding of the problems and viewpoints of others if they read it in totality. The editors and their contributors must be congratulated on an excellent publication.

W. H. Macfarlane Smith

Concise Encyclopaedia of Bioresource Technology. Edited by A. Pandey. Binghamton, NY, USA: Haworth Press (2004), pp. 735, US$149.95. ISBN1-56022-980-2. DOI: 10.1017/S0014479704252449

Daunting as it is to review an encyclopaedia, at least this volume justifies the term 'concise'. It comprises 75 brief articles aggregated under three sectors: environmental biotechnology, encompassing wastewater treatment and treatment of industrial effluents; food biotechnology; and industrial biotechnology, encompassing alcoholic fermentation, bioconversion of agro-industrial residues for bioprocesses, microbial enzymes, organic acids, and solid-state fermentation for bioconversion of biomass.

Each article is but a few A5-size pages long and includes an introduction, conclusions, and 'suggested readings'. Clearly no single article can be an authoritative account. The 50 illustrations are relatively simple

black-and-white productions, none of the 60 tables is complex, and the 'suggested readings' are few in number – six or less. With regard to content and coverage of bioresource technology, the assemblage of articles is essentially eclectic and fascinating. In the best tradition of encyclopaedias, the articles are all factual rather than conjectural and aim to give a forward look in their conclusions. Professional biotechnologists will be intrigued by the sheer diversity of topics that range from biobeneficiation, biological control of air pollution, microbiologically influenced corrosion, tannery effluent, Kefir yeast technology, prebiotics and probiotics, fuel ethanol production and biosurfactants, to the design of bioreactors for solid-state-fermentation.

All of the articles have merit as up-to-date snapshots of important aspects of environmental, food and industrial biotechnology. Students will find the accounts particularly useful, and I suspect that most benefit will be gained from the environmental and industrial biotechnology sectors – food biotechnology has a raft of excellent literature already. Your library deserves a copy!

John R. Hillman

Improving Biocontrol of Plutella xylostella. Edited by A. A. Kirk and D. Bordat. Montpellier, France: CIRAD (2004), pp. 273, £30.00. ISBN 2-87614-570-7. DOI: 10.1017/S0014479704262445

Diamond-back moth (DBM) is a major pest of vegetable crops worldwide. Because of its cosmopolitan distribution and resistance to many synthetic pesticides and Bt toxins, many research centres around the world have invested in work to develop biocontrol agents, IPM systems and resistant varieties (GM and conventional).

This book is divided into two sections: Section one contains nine reviews on the taxonomy and biocontrol of the pest. These give geographical coverage of Africa, South and Central America, N. America, Asia and Oceania, emphasizing regional variations in cropping systems, available biocontrol agents, biopesticides and taxonomic expertise. I found this section to be informative and containing good summaries of current knowledge. This section should be useful to DBM specialists as well as researchers and students generally interested in the current application of biocontrol (particularly parasitoids) and IPM worldwide.

Section two contains 38 short proceedings of an international symposium held in Montpellier, France in October 2002. Although several chapters covered similar ground, they highlighted interesting new developments in DBM research. These included the use of molecular markers to study DBM (migration, population structure) and to identify taxonomically different groups of biocontrol agents, particularly parasitoids. The use of simulation models to predict optimal deployment of multiple biocontrol agents in IPM systems was also useful. Climate matching models to improve selection of suitable natural enemies for introduction were also featured.

Overall the book gives a useful summary of past and current research on IPM of a major pest and points the way to future areas where molecular and bioinformatics methods will have a major impact. It is good value as an up-to-date reference book for graduate students and IPM researchers.

A. N. E. Birch

Raised Field Technology. The Raised Fields Projects around Lake Titicaca. By A. Morris. Aldershot, UK: Ashgate (2004), pp. 140, £45.00. ISBN 0-7546-1790-4. DOI: 10.1017/S0014479704272441

This book is concerned with the possibilities for reviving a 'lost' technology (an extensive deep bed system) in the areas around Lake Titicaca. Those who were involved in the 'experiment' between 1960 and 1980 and later, failed to draw on the lessons from other attempts to impose a technological fix without taking into account the socio-political context, either of the period in which the technology flourished, or of the present day. There also seems to be evidence for widely fluctuating changes in soil and ground water relationship through successive periods of drought and flooding which might have affected the sustainability of the technology.

The author, and many others, are clearly fascinated by the possibility that these ancient systems might a) be restored and b) hold the key to the development of more sustainable systems of land management and livelihoods for today's populations. However, the historical evidence is contested and not clear and the efforts of many different research agencies involved in the reconstruction and related 'development' projects have no common agreement about how to sustain these systems, many of which have been abandoned.

There are many unanswered questions here which relate to the history and current land tenure situation, the lack of analysis of whole farm systems which include livestock, the importance of out migration, both historically and at present, and the lack of contributions from the current users and potential users of this technology. The maps and photographs add little to the clarity of the story or the arguments of the author.

David Gibbon

Books currently under review

Pest & Vector Control By H. F. van Emden and M. W. Service. Cambridge: CUP (2004), pp. 349, £30.00 (p.b.) ISBN 0-521-81195-3.

The Regulation of Agricultural Biotechnology. Edited by R. E. Evenson and V. Santaniello. Wallingford, UK: CABI Publishing (2004), pp. 320, £65.00. ISBN 0-85199-742-2.

Good Statistical Practice for Natural Resources Research. Edited by R. D. Stern, R. Coe, E. F. Allan and I. C. Dale. Wallingford, UK: CABI Publishing (2004), pp. 388, £27.50. ISBN 0-85199-722-8.

Below-ground Interactions in Tropical Ecosystems. Concepts and Models with Multiple Plant Components. Edited by M. van Noordwijk, G. Cadish and C. K. Ong. Wallingford, UK: CABI Publishing (2004), pp. 440, £75.00. ISBN 0-85199-673-6.

Introgression from Genetically Modified Plants into Wild Relatives. Edited by H. C. M. den Nijs, D. Bartsch and J. Sweet. Wallingford, UK: CABI Publishing (2004), pp. 403, £75.00. ISBN 0-85199-816-X.

Fundamentals of Soil Ecology. 2nd Edition. By D. C. Coleman, D. A. Crossley Jnr, P. F. Hendrix. Burlington, MA, USA: Elsevier Academic Press (2004), pp. 386, US$39.99. ISBN 0-12-179726-0.

Developing Smallholder Agriculture – A Global Perspective. By R. L. Tinsley. Brussels: AgBe (2004), pp.437, US$49.00(paperback). ISBN 981-05-0873-5.

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*.

Consumer Acceptance of Genetically Modified Foods. Edited by R. E. Evenson and V. Santaniello. Wallingford, UK: CABI Publishing (2004), pp. 256, £55.00. ISBN 0-85199-747-3.

Mites (Acari) for Pest Control. By U. Gerson, R. L. Smiley and R. Ochoa. Oxford: Blackwell Science Ltd (2003), pp. 539, £120.00. ISBN 0-6320-5658-4.