

Expl Agric. (1998), volume 34, pp. 341–343

Printed in Great Britain

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BOOK REVIEWS

Facing Barriers to Movement of Plant Varieties for Agricultural Development. Edited by D. Gisselquist and J. Srivastava. Washington DC: The World Bank† (1997), pp. 147, US\$20.00. ISBN 0-8213-3991-5.

This report is essential reading for anyone engaged or interested in the strategic imperatives of plant breeding and biotechnology within the international agricultural research community. Fifteen papers on key issues underpin an invaluable overview of the subject and generate eleven constructive recommendations.

The barriers are addressed thoroughly and cogently, be they scientific or regulatory, economic or political, protectionist or specious. The benefits of sound intellectual property protection, industry self-regulation, voluntary quality standards, relevant phytosanitary regimes and constructive germplasm exchange are well presented. The results of recent regulatory reform (liberalization) in four countries make encouraging reading.

The crop improvement sector of international agricultural research is small but possessed of huge potential to deliver real benefits; effectively it is a global village but to date, one in which two communities, public and private (commercial), have competed rather than collaborated. The World Bank Workshop reported here represents a 'sea-change' in attitude within both communities.

The report overview clearly supports a shift to more liberal regimes for seed and plant variety movement in developing countries. Providing related constituencies, international agricultural research centres (IARCs), national agricultural research systems (NARS), donors and others support the World Bank lead, this workshop may foreshadow a new era of truly relevant public and private partnership in the sector.

T. Martin Clucas

An Introduction to Agricultural Biochemistry. By J. M. Chesworth, T. Stuchbury and J. R. Scaife. London: Chapman and Hall (1998), pp. 490, £24.99. ISBN 0-412-64390-1.

This is a well produced book designed to guide students of agriculture or applied biology through the principles of biochemistry. It differs from text books designed for biochemistry undergraduates *per se* by taking examples from plants and animals of agricultural importance, and by having a greater emphasis on nutrition. For example, ruminant animals have a fascinating and distinct biochemistry which is rarely mentioned in more general texts. The book has four major sections. The first two deal with the cell and cellular constituents, and with metabolism in general. The third describes strategies for processing of nutrients in plants and the fourth for processing of nutrients in animals. In my own speciality area, lipid chemistry/biochemistry, the subject matter is certainly well written, accurate and up to date, and this also seems to be true of other topics. The book is more readable than many comparable texts, and is illustrated with clear metabolic schemes. At times I wondered whether the approach of treating specific metabolic process in plants and animals in the same section did not over emphasize similarities, when it is the differences that provide the spice in life and biochemistry. Also, this approach sometimes made it difficult to see each process in relation to the whole. These quibbles apart, the book can be thoroughly recommended.

W. W. Christie

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History of Agricultural Research in Mauritius. By J. Manrakhan. Mauritius: Editions de l'Océan Indien (1997), pp. 629, £10.00. ISBN 99903-0-247-2.

The island of Mauritius, originally uninhabited, was settled by the Dutch in 1638 but then abandoned in 1710. Five years later it was claimed by the French who began to settle there in 1721. It was captured by the British in 1810 and ultimately became an independent republic in 1968.

Mauritius was originally exploited for its timber and the agriculture which followed the clearing has been dominated by sugarcane. It is now densely populated (more than a million people in 1864 km²) with a cosmopolitan population comprised of the descendants of the French planters, African slaves, Chinese traders and (in large numbers) Indian indentured labour (brought in to replace the African cane field worker on the abolition of slavery in the 1830s).

Although agriculture is no longer dominant in the economy (tourism and clothing manufacture have now taken the lead), it is still important and successful. The success owes much to research, and no one is better qualified to give an account of how it developed than Jagadish Manrakhan. He was Professor of Agriculture during an important early phase of the development of the University of Mauritius and subsequently became its Vice-Chancellor. Equally important, although trained as an agricultural scientist and as an economist, he has a passion for history. Moreover, he has an ability to grasp the detail in forgotten documents in dusty archives and to weave these into a story in which the special qualities and idiosyncracies of key individuals are brought to life.

The result is a book which anyone professionally involved in the agriculture of Mauritius could hardly be without. Beyond this, anyone interested in agricultural development would find here a fascinating case history.

Eric H. Roberts

Phosphorus Loss from Soil to Water. By H. Tunney, O. T. Carton, P. C. Brookes and A. E. Johnston. Wallingford, UK: CAB INTERNATIONAL (1997), pp. 467, £65. ISBN 0-85199-156-4.

This book summarizes current knowledge on the increasingly important contribution of agriculture to the eutrophication of surface waters. It contains a great deal of recent research information from the USA and Europe and will appeal both to active researchers in the field and to those developing policies to minimize phosphorus loss from agricultural land to water. Readers will require a basic understanding of the different forms of phosphorus found in soils and waters, but the messages contained here will benefit developed and developing countries alike.

The book brings together the papers and posters presented at an international conference held at Wexford in Ireland in September 1995. Full chapters cover the amounts, processes and pathways of phosphorus loss in land run-off and how our understanding of these influences management of phosphorus inputs. The views of the agricultural industry and the EU Commission are also included. Very useful, brief two- to three-page summaries of posters presented at the conference provide more detailed information on specific issues (for example, surface run-off, leaching and erosion, catchment studies, modelling and management).

The publication of this book is very timely and will provide an impetus for developing a more precise understanding of this complex environmental issue.

Paul J. A. Withers

Principles and Practice of Managing Soilborne Plant Pathogens. Edited by R. Hall. St. Paul, Minnesota: APS Press (1996), pp. 330, US\$219.00. ISBN 0-89054-223-6.

This book grew from the session on soilborne diseases at the 1993 International Congress of Plant Pathology in Montreal. There are fourteen chapters on a wide variety of topics and agents of disease, including bacteria, fungi and nematodes but, curiously, no viruses (or vectors). The chapters are

divided into four sections entitled Prologue, Fundamentals, Cases and Epilogue. All the authors are well recognized in their fields and provide useful but usually only summary accounts of important research topics or more practical examples of disease control. Perhaps because of the gap in time between the original session in Montreal and publication, the molecular revolution is only hinted at, although the power of molecular techniques is very evident in a chapter on the molecular basis of antibiosis in the rhizosphere by Thomashow and Weller. Soil remains an intractable substrate for study and the need for new techniques, especially quantifiable ones, which overcome its density, opacity and heterogeneity is cogently argued by Kerry and Evans in their chapter on nematodes. There has been progress, however, in understanding the dynamics of colonization of substrates and thereby in managing the consistent application of inoculum of biocontrol agents. Consistency of control will remain a major goal in managing disease. It will not be easy, but in recent years the difficulty has at least been recognized and the barriers to progress identified. This useful, but expensive account of progress can be recommended to those wishing to stay abreast of the topic and to lecturers teaching undergraduates. I doubt, however, if it will be regularly consulted by researchers or by pathologists involved in giving practical advice about controlling plant disease.

J. M. Duncan

Weed and Crop Resistance to Herbicides. By R. De Prado, J. Jorin and L. Carcia Torres. Dordrecht, The Netherlands: Kluwer Academic Publishers (1997), pp. 340, £104.00. ISBN 0-7923-4581-9.

The phenomenon of herbicide resistance has captured the imagination of scientists and the public at large, mainly because of the opportunities for producing transgenic crop plants. Of no less importance is the continuing development of resistance to herbicides in major weed species. This rather delayed book, containing papers from a meeting in Cordoba in 1994, provides a useful update of research in both of these areas.

An introductory chapter discusses the need for new strategies for managing herbicide resistance, ranging from field harrowing to the use of resistant crops. Thereafter, topics include the development of herbicide resistant weeds in Europe, USA and elsewhere; mechanisms underlying herbicide resistance, emphasizing specific biochemical pathways or individual weed species; the genetics and biology of resistant weeds; possibilities for, and problems associated with, the use of herbicide-resistant crops; unexpected benefits arising from transgenic plants conferred with herbicide resistance, such as tolerance to various stresses; and finally, the more applied aspects of herbicide resistance. In a concluding chapter, an unqualified statement is made that herbicide-resistant crop plants will be of great benefit to agriculture – it remains to be seen whether public perception will be equally favourable.

All of the chapters in this book are well referenced. They contain a wealth of information provided by recognized experts in the field. The book will be of considerable interest to both student and researcher – but it is rather expensive.

T. H. Thomas

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

Rains-Asia. An Assessment Model for Acid Deposition in Asia. By R. J. Downing, R. Ramankutty and J. J. Shah. Washington DC: The World Bank (1997), pp. 67, US\$20.00. ISBN 0-8213-3919-2.

The Impact of Environmental Assessment. A Review of World Bank Experience. World Bank Technical Paper No. 363. Washington DC: The World Bank (1997), pp. 146. US\$20.00. ISBN 0-8213-3923-0.

Experiences with Integrated-Conservation Development Projects in Asia. World Bank Technical Paper No. 388. By M. A. Sanjayan, S. Shen and M. Jansen. Washington DC: The World Bank (1997), pp. 39, US\$20.00. ISBN 0253-7494.