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BOOK REVIEWS

Agronomy of Grassland Systems. (Second Edition.) By C. J. Pearson and R. L. Ison. Cambridge: Cambridge University Press (1997), pp. 222, paperback £19.95. ISBN 1-57808-005-3.

Agronomy has a broad and comprehensive meaning in this stimulating book. New material in the second edition takes the subject beyond traditional confines to a commendable systems approach. Among main themes are that changes in the state of grasslands are governed much more by events (for example, drought periods) than by gradual ecological succession, and that people and societies are integral to their state and functioning. The book as a whole is well ordered, with convenient subsectioning to help teaching. Philosophical introductory material leads to six central chapters giving a highly factual account of growth, production, grazing ecology, sward management and animal husbandry. A final chapter considers grasslands within a wide ecological and social context. The authors' aim, in which they succeed, is to provide a broad understanding from which individual readers might move to more specialist areas. So, while modern approaches to resource acquisition and use are followed (much as they would be in a book on crop physiology or agronomy), there is little detail on the effects of water or temperature on grassland ecology. A warning for the reactionary: in places, the authors, perhaps indulgently, venture too far into abstraction, sometimes to the point of bafflement (try the last but one paragraph). Readers might query, for instance, whether this book is the place to make a point of distinguishing between *a problem* and *an issue* or between *logical* and *causal* thinking. And hardliners might baulk at the occasional mystic auntie-ish sentiment ('in the process of remaking nature we also remake ourselves'). Still, these add a personal touch. At the end, you will have read a book rather than a collection of chapters. Whether your field is tropical or temperate, this is a text that should greatly inform and enlarge your perception of both agronomy and grasslands.

G. R. Squire

Facilitating Sustainable Agriculture: Participatory Management and Adaptive Learning in Times of Environmental Uncertainty. Edited by N. G. Röling and M. A. E. Wagermakers. Cambridge: Cambridge University Press (1998), pp. 316, £50.00. ISBN 0-521-58174-5.

This interesting volume explores the implications of the adoption of ecologically sound agriculture by land users and other stakeholders from a social perspective, arguing that institutional and behavioural change must lie at the heart of any improvement. It is a compendium of papers, written by a combination of biological and social scientists that explores both theoretical and practical aspects of the development of more sustainable forms of agriculture. Three chapters, two at the beginning of the book and the conclusion, provide a theoretical context arguing for a rejection of the traditional environment. The case study chapters are based on research in both developed and developing countries and provide insights into the application of theory to practice, well illustrated by an excellent chapter on integrated pest management in Indonesia. This is a challenging and fascinating book, occasionally irritating in its style, and not always well edited into clear English. It should be read by natural and social scientists and by anyone who wishes to learn about moving towards more sustainable farming systems.

R. W. Slee

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Encyclopaedia of Seed Production of World Crops. Edited by A. F. Kelly and R. A. T. George. Chichester: John Wiley and Sons Ltd (1998), pp. 403, £75.00. ISBN 0-471-98202-4.

As the word encyclopaedia in the title suggests and the editors' preface confirms, the book is intended as a reference work. There are two main sections. The first section entitled 'Principles' consists of six chapters. The first two chapters describe the seed industry and international and national legislation, with examples drawn from six countries and the European Union, all by different authors from the various countries. This international coverage from specialists, along with more than 300 crops, for which methods of seed production are described in Section 2, justifies the term 'World Crops'.

Unusually, the contributing authors have written parts of Chapters with presumably unattributed parts being written by the editors. Chapter 3 (Technical Aspects of Quality Control) has three parts from other authors and three from the editors interspersed. Such an editorial organization could lead to lack of cohesion and possible repetition but for the most part this is not evident.

This is undoubtedly a useful reference book which is well produced and referenced. As is appropriate for a reference book, the three indices (subject, scientific and common crop names) are full and clear, which make it a valuable book for the shelves of seed technology lecturers, administrators and practitioners.

Stanley Matthews

African Cereal Stem Borers. Economic Importance, Taxonomy, Natural Enemies and Control. Edited by A. Polaszec. Wallingford, UK: CAB INTERNATIONAL (1998), pp. 592, £95. ISBN 0-85199-175-0.

This book evolved from drafts written for a series of training courses held in East and West Africa. It brings together, and summarizes, much of the widely scattered knowledge concerning the lepidopterous stem borers that cause considerable loss of yield to cereal crops throughout Africa. Twenty-eight chapters have been contributed by more than twenty authors who cite over 2500 references and provide over 700 figures and other illustrations. Well over half of the book is devoted to the natural enemies of the pests, with taxonomic keys and illustrations that should enable the reader to identify many of the commonly occurring species. Other aspects of the ecology and control of these pests are afforded relatively little space. In the preface, the editor wisely cautions that this book is not intended to be read from cover to cover but that the individual chapters should be used to provide basic information required for region-specific integrated pest management development. It should be an invaluable addition to the library shelf for all those with a professional interest in stem borer pest management. Unfortunately its price may deter many who would benefit from its contents.

W. Reed

Maize Seed Industries in Developing Countries. Edited by M. L. Morris. Boulder, Colorado, USA: Lynne Rienner Publishers (1997), pp. 401, hardback £43.95, paperback £23.95. ISBN 1-55587-799-3.

Sponsored by CIMMYT, this book succeeds in its intention to provide a comprehensive reference source on the global maize seed industry, albeit at a time of rapid evolution. It gives a well-structured and tightly-edited series of authoritative contributions, opening with a useful overview of the world maize economy, with special reference to developing countries. It describes the state of the art in maize breeding, seed production and distribution and goes on to describe the evolution of maize seed industries in nine different countries.

A stated aim of the book is to explore why in many developing countries the Green Revolution successes experienced in wheat and rice have not been repeated with maize. Although this issue is not addressed directly, perhaps unsurprisingly in a book focused only on one input of production, there

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are pointers throughout the text to other factors involved – including management, fertilizer usage and climate – and their implications for seed programme development. Thus in a typical developing country situation, involving subsistence farming communities often in marginal production areas, large private seed firms are unlikely to provide much assistance, and farmers should look instead to state-supported organizations for necessary assistance. Conversely, the profit potential of a strong commercial farming sector soon attracts investment by private seed firms.

In the concluding section the likely future evolution of the industry in developing countries is examined. The analysis of relative roles, merits and de-merits of state and private enterprise in a maize seed industry deserves careful study by those involved in agriculture policy making. They hold lessons which are relevant well beyond this particular crop.

J. B. Warren

Crop Improvement. Volume 2. Stress Tolerance. By U. S. Gupta. Enfield, New Hampshire, USA: Science Publishers Inc. (1997), pp. 303, US$79.50. ISBN 1-57808-005-3.

This book forms part of a three volume series. Volume 1, *Physiological Aspects of Dryland Farming*, was first published in 1975. Volume 2 is essentially an update of Volume 1 in which the author U. S. Gupta and some of the original authors (though we are not told which) have updated the chapters of the previous volume. The book is methodical and logical in its progression of chapters. There are 11 chapters with topics ranging from salt tolerance, low pH, iron toxicity and drought to parasitic weeds. The introductions of the chapters are informative in giving general descriptions, background and references for each stress. Each chapter follows a basic formula of sections on: Variability, Genetics, Selection and Physiology. Although this is useful in providing basic information, it does not inspire. As might be expected, Volume 2 has a strong physiological bias with arguments that breeding efforts should concentrate on selection for physiological traits. This is a major weakness, as there are very few physiological traits that have been found to have relevance to the field performance of crop plants under stress. The emphasis today is changing towards selection using genetic markers; unfortunately, there is no mention of marker-assisted selection in this volume. It is hoped that this will be addressed in Volume 3. Physiology can, however, play an important role in developing initial tests for tolerance to stress and the book covers these adequately.

There are some good bits in this book, and I would recommend it as an initial read on stress in crop plants, with the warning that genetics and breeding for stress tolerance has moved on.

Brian Forster

Seed Biology and the Yield of Grain Crops. By D. B. Egli. Wallingford, UK: CAB INTERNATIONAL (1998), pp. 178, £35.00. ISBN 0-85199-241-2.

Plant reproductive biology is central to agriculture, horticulture and forestry – as well as to biodiversity conservation and management. Dennis Egli's masterly, compact (yet comprehensive) book is concerned with the single most important aspect of this subject to cereal, grain legume and oilseed agronomists: the role of the seed in the determination of yield in these crops, and the processes (and regulation thereof) which affect the growth and development of seeds. His stated objective in writing this book was to counter the preoccupation of many physiologists with assimilatory processes.

The book draws heavily on Dennis Egli's own research over two decades at the University of Kentucky. Consequently, many of the examples tend to be USA orientated (with heavy emphasis on soyabean, for example). Nevertheless, since the wider context of specific examples is always made clear, I have no hesitation in recommending the work. The book is suitable for the more able undergraduates upward (each Chapter concludes with a most helpful summary), and is an essential purchase for agriculture and biology libraries. If the book is to meet the objectives intended by the author, it will also need to be in the personal libraries of plant and crop physiologists and agronomists: I believe it should be.

Richard Ellis

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Soil Fertility Management in Sub-Saharan Africa. (World Bank Technical Paper No. 408.) By G. Donovan and F. Casey. Washington, DC. The World Bank† (1998), pp. 61, US$20.00. ISBN 0-8213-4236-3.

Africa is surely the continent in which crop yields suffer most from nutrient deficiency. This book, written by two economists who demonstrate an excellent understanding of crop nutrition, analyses why this is so, and proposes solutions. It covers the use of both mineral and organic manuring and considers small farmers' motivation as the main consideration in the improvement of soil fertility. Modest applications of fertilizer (nitrogen, phosphorus, sulphur, zinc) may give good responses, but the local predictability of these responses is still uncertain, and if subsistence farmers have no cash income, they cannot buy fertilizer. The book emphasizes the need for an integrated approach at the small farm level, combining the use of mineral fertilizers with the admittedly long-term approach of improving soil organic matter levels. It deals thoroughly with questions of economics and national infrastructure, and the difficulty of supplying agrochemicals to remote regions.

The book might have benefited from some diagrams (for example, of typical nutrient response curves, and response maps for nitrogen, phosphorus, sulphur and zinc) and more references, especially to support some of the more controversial statements. Its format (large and thin, with no spine title) means, I fear, that it could end up in obscure box files rather than on shelves, where it might rightly retain the attention of planners.

Alan Scaife

Crop and Seed Improvement. A History of the National Institute of Agricultural Botany 1919–1996. By P. S. Wellington and V. Sylvey. Cambridge: NIAB (1997), pp. 312, hardback £36.00, ISBN 0-948851-11-2, paperback £27.00, ISBN 0-948851-10-4.

This is a clear, well-made, solid work of historical reference, worthy but inescapably somewhat dull. There are 19 chapters disposed in six sections, with seven appendices. The references are condensed under sections and are not well done. Proofs have been well read but the prose hardly sparkles.

The title leads one to expect a history of UK plant breeding, which it is not. The book is strictly about the NIAB's involvement in UK seed supplies (mostly cereals) from 1919 to the present. The UK was late on the scene, Continental Europe having promoted good seeds decades earlier. The UK seed trade was pretty backward and obstructive, too, but slowly yielded to the NIAB's technological good sense. The NIAB, a Trust run by a Council with a subscribing membership, was for many years publicly funded and semi-official, having diverse statutory duties.

The 'noiseless tenor of their way' was interrupted in the 1960s by the Seeds Act, which introduced Plant Variety Rights (PVR), rapidly followed by an endless stream of bureaucratic complications. Recent years have seen the withdrawal of public support, GATT/CAP/EEC-induced chaos, costing and near-market idiocies, fewer and cheaper trials, 'downsizing' of staff, mission statements, 'marketing strategies', burgeoning financial bureaucracy, even the intrusion of DNA, genetically modified organisms and novel foods. The NIAB has been 'fully commercial' since 1996 but at a terrible bureaucratic cost. This interesting book gives an account of the bureaucracy but scarcely mentions seed science. It is for the cognoscenti who already know much of the story, not for the less well-informed.

N. W. Simmonds

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