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Book reviews

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Principles of Tropical Agronomy, by S. N. AZAM-ALI & G. R. SQUIRE. 238 pp. Wallingford: CAB International (2002). £25.00 (paperback).
ISBN 0 85199 136 X.

Tropical agronomy is a vital component in agricultural curricula in the developing world, due to the importance of food production in these regions through successful management of established crops. Furthermore, proper management of food, cash and industrial crops of the tropics ensures a significant return to investment by resource-poor farmers.

In this context, this book is a valuable source of information to all agricultural students in the tropical regions and to those interested in studying tropical crop production and management in the temperate regions.

The publication sets the theme for scientific management of tropical crops through the first section identified as 'Contexts'. This provides a valuable and appropriate definition of agronomy, which encompasses all parameters of crop production. Thereafter the section delves into the importance of climate, which is one of the most important determinants of successful crop production in the tropics and which cannot be controlled by humans. Emphasis has been placed upon radiation and water – which are indeed important in the tropics. However, the impact of other climatic parameters, notably temperature and wind, which could affect tropical crop production has not been adequately addressed in this section.

The second section, titled 'Essential choices: Genotype, Timing, Configuration', covers very important crop management strategies. Crop selection, timing of planting and management are addressed in three sections, which have been well written and are very informative. Recent references have been quoted, and the figures and tables highlight the points made in the text. These aspects makes this section interesting reading.

The final section, titled 'Integration', presents the manipulating fluxes and synthesis of tropical agronomy. The impact of management on crop growth is discussed in the chapter on manipulating fluxes. The method of presentation is unique and well developed to present clearly the important aspects. However, the importance of crop nutrition and weed control could have been addressed further, due to the importance of these two aspects on tropical cropping and its success. The chapter on synthesis highlights the value of agronomy to tropical agriculture. This is a very useful and important section, which brings together all facets of tropical agronomy, which is generally not addressed in most other publications on the subject. The book also contains very useful references and appendices. The inclusion of terminology and units used in agronomy and agriculture will be very useful to researchers, teachers and students.

Overall, the book is well written and covers the subjects addressed adequately. However, there was a lack of emphasis on some important aspects of tropical agronomy, which do have a significant impact on yield and productivity. It is presumed that these would be covered in a subsequent book. However, this book will be a very useful source of information to students of tropical agriculture, especially for introductory courses on tropical or even general agronomy in both the developing and the developed world.

U. R. SANGAKKARA

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Plant Genotyping – the DNA Fingerprinting of Plants, edited by R. J. HENRY. xiii + 325 pp. Wallingford, UK: CABI Publishing (2001). £45.00 or US$100.00 (hardback).
ISBN 0 85199 515 2.

Genetic fingerprinting is now familiar to the general public and has widespread application. This book examines its value in plant identification, breeding and research. It contains 21 chapters, written by recognized leaders in a broad range of research areas, and examines the DNA marker technologies available and their application in natural population studies, germplasm maintenance and plant breeding programmes. The chapters are grouped into five sections which comprise comparisons of marker systems in current use; genotyping of genetic resources; genotyping cultivated and wild germplasm (including examples from tropical species such as tea tree, taro and sugarcane as well as wheat and barley); future marker development; and bioinformatics issues together with practical applications.

State-of-the-art marker technologies suitable for automation, such as microsatellites (SSRs) and single

nucleotide polymorphisms (SNPs), are discussed by a number of authors and, although there is some repetition, their different views are illuminating. Use of microarrays and non-gel-based techniques including RT-PCR are also considered and point to future developments in areas of research that are developing rapidly. Fast progress means that some topics of current interest are hardly mentioned such as linkage disequilibrium/association analysis in relation to genetic resources. However, despite some omissions the book generally provides a good breadth of information and I would recommend that anyone contemplating work on genetic fingerprinting in a new crop/species should look through it. It is also relevant to those who want to make use of marker information in well-characterized plant species. As one of the authors points out, converting the mass of data being generated from research on genomics, transcriptomics and proteomics into information which has real value for crop improvement, genetic resource management and molecular ecology is a major challenge for the future. The development of bioinformatics strategies to enable this will be critical. The final chapters consider applications of marker systems for commercial use including plant breeding. They discuss use of marker information in decision-support computer programs and strategies for implementing marker-assisted selection. The scenarios presented mainly refer to inbreeding cereals, although the final chapter partly compensates for this by considering marker development in out-breeding forages.

In general the book should be readable to anyone with a smattering of molecular genetics and there is a good index, although an additional glossary of the many abbreviations that pervade the subject would also have been useful.

M. O. HUMPHREYS

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Nutrient Deficiencies and Toxicities of Plants (*CD-ROM*), by THE AMERICAN PHYTOPATHOLOGICAL SOCIETY, 600 digital images. St Paul, Minnesota: APS Press.

This CD contains *c*. 600 digital colour images of a wide range of macro and micro-nutrient deficiency and toxicity symptoms in 37 different agricultural and horticultural crops. The CD can be run using Windows 95, Windows 98 or Windows NT.486/25 Mhz microprocessor or higher, with a minimum of 8MB of RAM. Each image is in jpeg file format which can be exported into presentation slideshows or documents. The images can be selected either by scrolling through thumbnail images or using the search system which is simple and easy to use. Each thumbnail can be enlarged on screen for closer inspection when some additional information is shown. However, this only provides a very brief description of the symptoms but no other information which might usefully have been included – e.g. circumstance and nutrient analysis of image, typical occurrences, diagnostic methods, control methods. Bearing in mind that nutrient-related symptoms in plants are notoriously difficult to diagnose and are commonly not simply related to single nutrient factors, confirmation of how each diagnosis was reached would have been useful. The collection appears to have been put together using mostly existing material from a range of sources. Some images are field shots, some of pot-grown plants and some close ups of plant leaves. It is unfortunate that there are gaps in the collection where there are no examples of common plant/nutrient deficiencies/toxicities. This may annoy those users seeking a comprehensive collection.

This collection is a useful initiative using electronic technologies which many potential users will have access to. It contains some useful material which should help educationalists who have already have a background in nutrient management. However, for the farmer or agriculturalist dealing with real-world crop problems, more supporting information is really needed.

P. DAMPNEY

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Compendium of Potato Diseases, 2nd edition, edited by W. R. STEVENSON, R. LORIA, G. D. FRANC & D. P. WEINGARTNER. viii + 134 pp. St Paul, Minnesota: APS Press (2001). US$49·00.
ISBN 0 89054 275 9.

This book is a revised edition of the excellent 1981 publication. It is somewhat shorter in length due to the omission of sections on seed certification and aphid identification together with a reduction in the number of sections on potato viruses. The latter change has been compensated for by a detailed table on viruses and viroids affecting the crop. The number of colour illustrations has been increased, from 87 in the first edition, to 193 in the new edition, all of which are of very good quality. There is a new section on mechanical damage and an expanded section on chemical injury.

There are sections covering 30 fungal diseases, 5 bacterial, and 12 viral, as well as 6 on nematodes. Equally comprehensive are the 26 sections dealing with non-pathogenic disorders due to physiological causes. Each section covers symptoms, cause, epi-

demiology and management in sufficient details for the general user and has selected references for further reading on each topic. The book also contains a detailed glossary of terms and index. This volume is of immense value to anybody working on diseases of potato, particularly those involved in disease diagnosis and consultancy. At US$49·00 it is outstandingly good value in these times of budgetary restraints in agricultural science.

The contributors and publishers are to be congratulated on maintaining the high standards of the APS Disease Compendium Series.

T. LOCKE

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Diagnosing Plant Diseases Caused by Nematodes, by M. C. SHURTLEFF & C. W. AVERRE, III. American Phytopathological Society. vi + 187 pp. St Paul, Minnesota: APS Press (2000). US$79.
ISBN 0 89054 254 6.

The first chapter is a practical introduction to plant parasitic nematodes including the major genera, their economic importance, biology and general morphology. Of particular use to readers new to nematology are the figure showing the relative size and morphology of genera and the practical procedures involved in identifying nematodes using light microscopy. Chapter 2 gives practical advice on how to sample soil and plants and subsequently extract nematodes from these media. Methods to prepare nematodes for microscopy, including protocols for fixing and preparation of slides are detailed.

The main section of the book concerns the classification of nematodes, including detailed descriptions of class, order, family and genera. Descriptions of genera typically include a list of host plants, parasitism and habitat and a detailed morphological description.

Each chapter is well supported by relevant references for further reading. Of particular value to those newly introduced to the plant nematology is the comprehensive glossary where nematological and related terms are explained in a concise, jargon-free manner.

In the last decade molecular diagnostics have become more widely used and have in many cases become the standard technique for species identification, e.g. the use of PCR for the identification of *Globodera* to species level in the UK. This book concentrates on traditional taxonomy without discussion of molecular methods. Its readership would be considerably wider if molecular methods had been included, even if only as a list of references to guide the interested reader.

The text is broken throughout by the inclusion of line diagrams. Those of nematodes and equipment are generally of good quality but the diagrams of damage symptoms lack clarity. This shortcoming is partially counteracted by the inclusion of 39 small colour plates but these are insufficient to provide the reader with reliable diagnostic features for identification of symptoms in the field. The restriction in the use of colour plates is probably due to the need to minimize the cost of the book to make it accessible to as many interested people as possible. At $79 this book represents good value for money, but I would rather pay extra to have more quality plates of disease symptoms. A way forward would be to produce this book as an interactive CD-ROM enabling the inclusion of many more images, searchable identification keys and glossary etc.

The authors have managed to give this book global appeal by the inclusion of most of the important genera of plant parasitic nematodes found in the world. This text would be of benefit for those with little or no nematological experience through to the experienced professional wishing to use it as a reference work for the identification of individual nematodes to genera level.

P. P. J. HAYDOCK