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BOOK REVIEWS

Pest Management of Rice Farmers in Asia. Edited by K. L. Heong and M. M. Escalada. Manila, The Philippines: International Rice Research Institute (1997), pp. 245, HDC US\$19.74, LDC US\$5.15. ISBN 971-22-0102-3.

This book is a compilation of chapters describing pest management methods in resource-limited rice farming in Asia. The initial chapter deals with the methodology for research in such areas, describing ways of obtaining objective data on knowledge, attitudes and practices from the farmers themselves. There are then fourteen chapters dealing with specific Asian rice-growing regions and a final chapter making a comparative analysis of the pest management practices.

The document is sound, comprehensive and extremely impressive in the depth of coverage, and embodies a very large resource in human endeavour. It is apparent, however, that in spite of the many years during which integrated pest management (IPM) has been emphasized, use of pesticides still plays the most important role where intervention is necessary. Many examples are given of local practices being available as alternatives to pesticide deployment, but these are generally idiosyncratic and unproven. The integration of pesticide use with other methods has clearly gained momentum to the extent exemplified in these surveys, but there is little consistency in the performance or types of alternative treatments that are available to the farmers. Indeed, it would seem that, contrary to the popular view that technologies exist for the replacement of pesticides, merely needing better technology transfer or an improved understanding of farmer attitudes, we are in fact in the position of having few effective IPM components, beyond pesticide use, that would be either socially or economically acceptable.

There seems to be a strong recommendation that more research be put into providing such alternatives by scientific rather than socio-economic approaches, since it appears from most of the chapters that the farmers are eager and able to take up new technologies, where these are developed as appropriate to their needs and resources. If this is not undertaken, then in future surveys, apart from changes in the nature of pesticides or the addition of new pest-tolerant cultivars, including those developed as a consequence of recombinant DNA techniques, the overall situation will remain largely as it is now. Nonetheless, this book will be invaluable to those agencies planning how to deploy resources most effectively in the interests of Asian rice farming, and to students and scientists wishing to contribute in this area.

J. A. Pickett

Forage Seed Production. Volume 2. Tropical and Subtropical Species. Edited by D. S. Loch and J. E. Ferguson. Wallingford, UK: CABI Publishing (1999), pp. 479, £85.00. ISBN 0-85199-191-2.

All aspects of growing, harvesting, cleaning and testing tropical and subtropical forage seeds are covered; an overview and a very pertinent concluding summary brings the material together. Fifteen case studies deal with species or areas – nine are from Australia and four from Latin America indicating the localized nature of production and research. The species are restricted to tropical and warm-season subtropicals, avoiding overlap with Volume 1 on temperates. Tabulated data on sixty-nine grass species and subspecies and fifty-one legumes show the great specific range compared with the few in temperate agriculture (which have many cultivars); many are barely domesticated so their seed production and harvest are difficult. The book, which reviews the literature thoroughly

and provides much practical advice, satisfies a long-felt need. Availability of seed of locally adapted material is a major constraint to developing forage in many tropical areas; commercial seed production is very localized, mainly Australia, and only a restricted range of material is available commercially. Where non-commercial cultivars are needed to suit local conditions, institutions have to devise methods of producing seed. This book will be of great assistance to workers in tropical forage and seed production; it should be in all institutions involved with such forages.

J. M. Suttie

The Epidemiology of Plant Diseases. Edited by D. G. Jones (1998), pp. 460, £170.00. ISBN 0-412-78330-4.

A comprehensive approach to the subject area of plant disease epidemiology is a difficult remit for any text on this area of research. However, '*The Epidemiology of Plant Diseases*' succeeds in introducing the reader to the general concepts. It is written so that it will be useful to both undergraduates coming to plant pathology for the first time and to the more specialist reader. As such it will be a useful reference text. Like many previous texts, the subject area covered by the book has its starting point in the work of van der Plank. However, given the size of the area it is not surprising that there are some notable omissions. For example, gene flow, which is of increasing relevance in plant disease epidemiology, is covered sporadically in several different areas. Another notable omission is the application of remote sensing techniques in epidemiology; this could have been included as a case study. Some of the contents of the book already look dated, especially those relating to the measurement of rainsplash. Nevertheless, the book would be a very worthwhile addition to the bookshelf of any reader with an interest in plant disease epidemiology.

R. Kennedy

Containment Facilities and Safeguards for Exotic Plant Pathogens and Pests. Edited by R. P. Kahn and S. B. Mathur. St. Paul, Minnesota: APS Press (1999), pp. 213, US\$69.00. ISBN 0-89054-197-3.

This book constitutes the first comprehensive review and collation of current principles, concepts and data together with guidelines relating to the risk management of quarantine plant pests and pathogen introductions through the design of containment facilities and associated safeguards. Logically arranged in four sections, each of the 25 contributed chapters is presented as guidelines to assist others in planning similar facilities. The first section reviews the biological principles and regulatory concepts that determine the need and subsequent design of containment facilities, safeguards and operating procedures. The remaining three sections systematically address the design specification and function of containment facilities and safeguards from 18 international centres in 13 countries involved with importation of seed, vegetative propagating materials, and high risk plant pests and pathogens. Practical guidelines and considerations for the design and construction of quarantine glasshouse facilities (Chapters 11 and 25) are particularly informative and should find universal consultation as technical baselines to others.

This book is an excellent source of easily indexed practical information and guidance, and is particularly well written with terms and concepts clearly defined. It will no doubt become an indispensable reference text for those involved in pest risk management of quarantine organisms, including designers, planners and users of containment facilities as well as regulatory officials devising and implementing safeguards and operating procedures.

S. R. H. Langrell

Plant–Microbe Interactions. Volume 4. Edited by G. Stacey and N. Keen. St. Paul, Minnesota: APS Press (1999), pp. 283, US\$59.00. ISBN 0-89054-228-7.

As the preface to this volume emphasizes, information about plant–microbe interactions is growing exponentially as increasingly sophisticated techniques become available to probe both mutually dependent and parasitic relationships. It is therefore to be applauded that the American Phytopathological Society has begun to publish a series of books solely devoted to providing syntheses of a diversity of fast-moving, specialist areas of research. The chapters in this volume will aid non specialists who wish to gain easy access to particular subjects, as well as those who will provide the new generation of researchers responsible for future advances. The topics covered are:

- Products of bacterial genes important in mediating nodulation of legumes (Hanin *et al.*) and pathogenesis of *Xanthomonas* spp. (Gabriel).
- ‘Natural’ biological control of the chestnut blight fungus by infectious RNA (Fulbright).
- The processes of active oxygen generation by plant cells and its role in pathogenesis (Baker and Orlandi).
- Molecules produced by fungi that suppress plant defence responses (Shiraishi *et al.*)
- The techniques of molecular genetics used to identify genes in plants and microbes important in determining the outcome of interactions (Gresshoff).
- The importance of competition for iron in interactions in the rhizosphere and its role in biological control (Weisbeek and Gerrits).
- The regulation of plant genes in response to pathogens and their metabolites (Rushton and Somssich).

The quality of these contributions is uniformly high and a feature of the whole volume is that much valuable information is conveyed in summary tables and diagrams. This has enabled the chapters to be both comprehensive and reasonably concise. The lists of cited work are extensive but for a book processed electronically and published in 1999, it is disappointing that mention of work that appeared in 1998 is scarce. I can recommend this volume as an accessible set of informative and interesting reviews of relevance to all those with an interest in plant–microbe interactions.

I. R. Crute

Banana, Breeding and Biotechnology. Commodity Advances through Banana Improvement Project Research. 1994–1998. Edited by G. J. Persley and P. George. Washington DC: The World Bank† (1999), pp. 62, US\$22.00. ISBN 0-8213-4498-6.

This is a report on the 18 projects within the Five-Year Banana Improvement Programme (BIP) initiated by the World Bank in 1994. An impact assessment indicates a return of 20–33% on the investment. BIP had two objectives:

1. To develop and evaluate improved banana varieties with export potential, increased productivity and durable disease resistance.
2. To develop efficient integrated disease management practices, especially for black Sigatoka disease.

The book claims that these objectives were met. This is questionable. However, the book should be read to get an insight into the ‘exciting discoveries’, ‘new knowledge’ and ‘important advances’ which are claimed. Resistance to black Sigatoka, nematodes and the threat of *Fusarium* are now better understood. Molecular tools to transform bananas have been developed. Key banana

†Pricing of publications by the World Bank. The World Bank has agreements with sole distributors in most countries. The prices quoted in US\$ are for the USA. For UK prices it is necessary to consult the UK agent, Microinfo Ltd, PO Box 3, Alton, Hants, UK.

breeding programmes have been strengthened and the means of controlling some virus diseases are now available.

The establishment of an International Banana Biotechnology programme (Biobanana) is proposed whose purpose is to fund research to generate biotechnology-based solutions to the disease problems: black Sigatoka, *Fusarium* wilt and virus diseases.

Although the BIP has achieved some remarkable successes, the book makes no mention of social, economic and ethical problems. Is the consumer ready to accept genetically modified bananas?

R. W. Smith

Impact of Rice Research. Edited by P. L. Pangali and M. Hossain. Manila, The Philippines: International Rice Research Institute (1998), pp. 428, HDC US\$54.00, LDC US\$14.25. ISBN 971-22-107-4.

This book contains a series of papers presented at an international conference on rice research. An introductory review summarizes the progress in technology development and the impact on productivity and poverty. Rice research in Latin America and West Africa is included, but the emphasis is on Asia, where rice is by far the most important cereal.

Since their introduction in the 1960s, new varieties, fertilizers and extension of irrigation systems have led to an average annual increase of 2% in rice yields in Asia. Both IRRI and the national programmes have been major contributors. However, the future challenge is to increase production by 50–60% over the next thirty years to cope with population increase and elimination of hunger among 600×10^6 people. How to achieve this provides an informative discussion, especially as present yields are reaching a plateau in several countries.

Initially there was much criticism that the 'Green Revolution' discriminated against the poorer sections of the population but a re-examination now shows how poor people, including women, have benefitted.

This book is to be recommended, not only to those involved with rice farming but to those interested in tropical agriculture generally, in demonstrating how well-planned research can contribute to enormous changes in the rural economy.

J. Coulter

Remote Sensing in Water Resources Management. The State of the Art. By W. G. M. Bastiaanssen. Colombo, Sri Lanka: International Water Management Institute (1998), pp. 118, US\$25.00 (developing countries US\$12.50). ISBN 92-9090-363-5.

This book provides a timely review of the application of remote sensing to irrigated agriculture. As such, the title is deceptive because the author does not deal with the full breadth of water resources but focuses on crops; basin management is briefly covered. The book cannot be used as an introductory text as the reader should have a basic knowledge of remote sensing. A short section on vegetation indices, together with an annexe, bring together information which is generally dispersed in the literature. Key crop parameters are very well treated in a section which, for each parameter, gives its definition and purpose and then describes the methods for deriving the parameter from remotely sensed data. An extensive bibliography provides a good resource for those who wish to investigate particular topics in greater detail. A short section suggests topics which would benefit from further research and development. I have no hesitation in recommending this slim volume to anyone wanting to acquire quickly some knowledge on the current practices for applying remote sensing to irrigated agriculture.

J. Finch