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BOOK REVIEWS

Delivery and Perception of Pathogen Signals in Plants. Edited by N. T. Keen, S. Mayama, J. E. Leach and S. Tsuyumu. St. Paul, USA: APS Press (2001), pp. 268, US$59.00. ISBN 0-89054-259-7.

A synthesis of information on signal transduction is always difficult because of the complexity of such processes. This book contains 26 chapters on a wide range of topics that cover signalling molecules produced by pathogens, and their perception by the plant. Most of the chapters are not written as wide-ranging reviews but as fairly narrow-based research areas. There is a lot of interesting information in this book though it sometimes seems to be buried. For example, I have found fascinating pieces of information in many chapters that initially I did not think were relevant to my own areas of interest.

We are currently in an era where enormous progress in cloning and characterizing resistance genes has been made and we are now beginning to obtain massive amounts of information from microarrays. Our understanding of plant-pathogen signalling is, in many ways, still in its infancy compared with animal signalling, but these are exciting times and it feels like we are on the verge of an explosion in our understanding of many signalling processes. In five years time, this book may well appear dated but currently it is very timely and useful. There is something for everybody in this book.

G. D. Lyon

A History of Farming Systems Research. Edited by M. Collinson. Wallingford, UK: CABI Publishing (2000), pp. 432, £65.00. ISBN 0-85199-4059.

This book is an analytical history of important developments in recent agricultural research, which until now have been loosely gathered under the term Farming Systems Research (FSR). It is divided into five parts. The first four cover the early history of FSR, its early applications and subsequent events up to and including the most recent applications and a prognosis of the future fate of FSR. Each part is introduced by some of the most admirable syntheses of FSR I have seen, prepared by Collinson. Articles are included from virtually every major contributor to FSR during the past 30 years. The fifth and final part courageously deals with cutting edge methods, abiding issues and the future for FSR.

The book is not a methodological guide, but it captures admirably the diversity of farming systems approaches developed under the influence of disciplinary, institutional, and geographical needs. The editor does a good job at ferreting out all the conceptual linkages between different applications and, without being exclusive about any type of FSR, manages to guide the reader to a thorough understanding and appreciation of the approach. He also gives a clear insight into the unique role of FSR as a means to address smallholder agriculture in a holistic, interdisciplinary way, in which participation of the farm community plays a crucial role.

In attempting to sum up the FSR experience over the last 30 years, it is in my view too modest about the benefits. FSR is now part of most research systems, and the flow of information between breeding and other component technology development and FSR is natural and conditions both. FSR has changed the way agricultural research is designed and conducted, in particular in developing country-based smallholder communities. Its principles have found an important application in natural resources management research and have led to a deeper understanding of the effects of technological and policy change on land use and its sustainability.

This book is an outstanding documentation of the development of FSR, and is highly recommended.

Hubert Zandstra

Shades of Green – A Review of UK Farming Systems. Edited by T. B. Tinker. Stoneleigh: Royal Agricultural Society of England (2000), pp. 101, £10.00. ISBN 0-902629-99-9.

It is unfortunate that so much acrimonious debate has polarized views and attitudes concerning the relative merits or demerits of conventional and organic farming methods. This is the observation of Professor R. Plumb, one of the authors of *Shades of Green*.

As the organic movement continues to gather momentum, the Royal Agricultural Society of England (RASE) presents this book as an unbiased, scientific assessment of organic farming in relation to conventional and integrated farming practices. Authors appear to have been selected on the basis of wide and varying experience and, apparently, were guaranteed complete independence.

The authors, scientists acknowledged in their fields, deal with their respective subject areas of soils and plant nutrition; pests and diseases; livestock systems and animal husbandry; comparative economics of farming systems; biodiversity and environment; and food quality and health.

The text is easily understandable by lay readers and is both informative and readable. The editor, Dr Bernard Tinker, notes how many subject areas are deficient in good research results. Highlighting some of these areas may help the search for scientifically valid answers in a debate that is likely to be ongoing.

Lorna C. Holland

Field and Laboratory Methods for Grassland and Animal Production Research. Edited by L. 'tMannetje and R. M. Jones. Wallingford, UK: CABI Publishing (2000), pp. 447, £65.00. ISBN 0-85199-351-6.

This publication replaces, in updated form, the book *Measurement of Grassland Vegetation and Animal Production* first published in 1978. The editors have assembled an impressive team of authors from around the world to add to the new volume. The title is perhaps a little misleading. This is more than a 'recipe book' of methods. Many of the 16 chapters provide a sound introduction to aspects of grassland and rangeland science before describing a range of methods and techniques. Topics covered by the book include pattern analysis, measurement of botanical and structural composition, population dynamics and biomass. Other chapters deal with evaluation of species and cultivars, nutritive value of forages, measurement of animal performance and design of animal production studies. Newer techniques involving remote sensing are also covered. There is a particularly good introduction to modelling pasture and animal production by Rickert, Stuth and McKeon. Assessment of rangeland condition and aspects of soil science (including soil chemistry, physics and biology) are also covered. In recognition of the fact that applied grassland and rangeland research includes a social element, the final chapter deals with socio-economic methods. Although written from the perspective of developing countries, researchers in developed countries would find much of interest and relevance. This book provides an excellent introduction to grassland and rangeland research methods. Each chapter is well referenced to guide the reader to further and more-detailed information. Though coverage of the topics is comprehensive, it is disappointing that some newer techniques such as geo-statistical and spatial analysis techniques or molecular ecology are not covered since they are likely to be important in grassland research in the future.

A. Wright

Nutrient Elements in Grassland. By D. C. W. Whitehead. Wallingford, UK: CABI Publishing (2000), pp. 369, £60.00. ISBN 0 85 199 4377.

This book presents an encyclopaedic knowledge of nutrient cycling in temperate grassland grazed by

ruminants. The author has built upon his considerable research experience to write a text that is a definitive reference source, concentrating particularly on the chemistry of nutrient flows between animals, plants and soils. The book is well written and the reference list at the end comprehensive and up-to-date. The repetitive form makes cross-referencing easy, but does not provide a detailed or mechanistic description of the basic processes involved.

As a reference work, the book will be a useful research tool for agronomists, soil scientists and environmental scientists interested in temperate, managed grasslands. The book is not an easy read, however, and so will be of less use to students. I imagine many academic libraries will stock the book.

After a short introduction, three chapters cover soil nutrients, plants and animals, respectively. Thereafter, two hundred or so pages are devoted to a detailed analysis, element by element, of occurrence, distribution and the effect of management on nutrient cycling. Finally, there are fifty-six pages of references. The book is well produced and reasonably priced as a reference work.

Peter Millard

Broadening the Genetic Base of Crop Production. Edited by H. D. Cooper, C. Spillane and T. Hodgkin. Wallingford, UK: CABI Publishing (2001), pp. 452, £75.00. ISBN 0-85199-411-3.

This is a substantial book covering many aspects of plant genetic resources. It follows an FAO (Rome) workshop in 1997 on broadening the genetic base of crops. The book examines approaches to conserving plant genetic resources and then concentrates on germplasm evaluation, subsequent transfer and utilization in a number of crop case studies. The chapters are split into four main themes covering: I. General Principles; II. Crop Case Studies; III. Population Management; and IV. Other Approaches to Broadening the Genetic Base of Crops. A number of authors are brought together to cover their respective specialist subjects within the different chapters. It is difficult within the one book to cover such diverse subject matter across different crops, together with the varied problems that confront research workers. The book examines examples within a range of crops, rather than all aspects of a few crops.

Molecular techniques, as applied in a number of studies on various crops to assess evolutionary relationships and markers are discussed. The book would have benefited from including more detailed discussions on the potential applications of marker technology and emerging gene transfer techniques to pre-breeding and breeding in order to broaden the genetic base of crops, particularly the transfer of characters between species. In summary, this book is successful in parts and most readers from undergraduates through research scientists to public and commercial plant breeders will find something of interest and benefit.

Finlay Dale

Seeds: The Ecology of Regeneration in Plant Communities, 2nd Edition. Edited by M. Fenner. Wallingford, UK: CABI Publishing (2000), pp. 416, £60.00. ISBN 0-85199-432-6.

Many eminent scientists from around the world have contributed to this volume. The product is an excellent synthesis of current research on the ecology of seeds and their importance in reproduction and population dynamics. Subjects covered range from allocation of resources to reproduction, through predation and dispersal, persistence, losses from the soil seed bank and theories of dormancy, to germination and seedling establishment. The book discusses studies from a range of habitats including forests, deserts, grassland and agricultural land, highlighting throughout where ecological theory is upheld, but also outlining areas of divergence.

This second edition has been published within a decade of the original, reflecting the importance of current research activities in this field. Chapters have been added to give a more complete account of the subject area. Others have been updated significantly, and thorough referencing allows the reader access to the current literature. With a range of authors given a wide remit there is inevitably overlap between chapters, sometimes with different interpretations. This is most apparent in the accounts of dormancy, but it reflects the state of knowledge in areas that remain under discussion.

The book gives detailed but concise assessment of current knowledge whilst highlighting many areas where comparatively little is known. This volume will be valuable for both researchers and readers with less specialist interests.

N. E. Jones

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