Book reviews

Journal of Agricultural Science, *Cambridge* (2001), **137**.
DOI: 10.1017/S0021859601211034,

Planning Agricultural Research: A Sourcebook, eds G. Gijsbers, W. Janssen, H. Hambly Odame & G. Meijerink. xv + 328 pp. Wallingford: CAB International (2001).

This book was produced primarily through ISNAR. That impressive pedigree is evident throughout but does betray a particular perspective and, from time to time, fails to draw on wider sources as much as one would like. It is claimed to be aimed at the 'practitioner' but the target audience is not clear. Part I is about context so it is not about project planning but policy; approaches to research commissioning rather than actual project management on the ground. So, many readers of the *Journal of Agricultural Science* might feel that this sourcebook is not for them, but they would be wrong for a number of reasons and should seek out the nuggets to be found here. There is no respite in the need to treat our funders as customers and this book gives an insight into how that can be done more effectively. So at the very least it could help improve communication.

Although the reader may be left with the thought of what organization the editors have in mind, many of the chapters are relevant at a variety of levels and prompt interesting questions that we should apply wherever we work. For instance, what is the role of NARS in the context of globalization and the appearance of strong regional networks? This is worth examining in the context of either developing country issues or those in the North. This is what we are about to see in the strengthening of the European Research Area appearing under proposals for the EU's Sixth Framework Programme into which many of us will be bidding. I was surprised to find that the emerging multi-stakeholder Global Forum for Agricultural Research did not get a mention though the regional elements were referred to (e.g. CORAF, ASARECA).

With as many as 36 authors in 300 pages problems of consistency and superficiality could arise. The former is dealt with by a structure that does not become rigid or tedious, in which each chapter finishes with the relevance of the topic to agricultural research and some case studies. Only a few authors convey the feeling of being practitioners who know about really doing agricultural research and I would highlight chapters by Sperling, Kissi and Henman as better examples. The problem of superficiality is not overcome and the reader is left with too many truisms and statements without implications or substantiation. For instance, I would like to know a convincing source for (on page 138) "If project funding exceeds about 35% of an organisation's operating budget then [it] may be unable to maintain its independence and strategic direction". The annotated further reading lists found only in chapters from Conant and Bruneau should be more widely used.

The glossary is good and useful, but the index could have been more thorough, given the audience.

Readers should not be put off by Part I or by the emphasis on developing countries. Everyone should read the chapters on planning programmes, projects, experiments and finance. There are reminders of what we should always be doing but may occasionally forget. The interactions between these and the 'Tools' in Part IV are not developed at all so the reader must work these out. It is easy reading so whatever your place in agricultural research you will certainly find something of value and interest here. Not a book that many researchers will buy, but all should make sure that they know how to get hold of a copy for quick reference.

S. JAMES

Journal of Agricultural Science, *Cambridge* (2001), **137**.
DOI: 10.1017/S0021859601211125,

Shades of Green: a Review of UK Farming Systems, ed. P. B. Tinker. 101 pp. Royal Agricultural Society of England (2000).
£10 paperback (£5 to RASE members).
ISBN 0 902629 99 9.

The growth in demand for organic food, and the much quoted statistic that 70% of all organic food consumed in the UK is imported, has focused attention on the potential for expansion in this system of food production at a time when the state of the agricultural industry generally is depressed. Consequently, the perceived need to evaluate the characteristics of organic production systems vis à vis more conventional approaches has given birth to this intriguing publication produced by the Royal Agricultural Society of England with support from the Fertiliser Manufacturers' Association and the Crop

Protection Association. One could be excused for wondering at first inspection what objectives the publishers had in mind in bringing together such a distinguished team of specialists to contribute to this work but neither the preface or introduction disclose the motives. What we are presented with is a collection of six principal chapters, plus introductory and concluding sections, written by a total of 11 authors who aim to draw appropriate comparisons between organic and more conventional systems. Such an approach is inevitably fraught with difficulties not least by the fact that the latter include a wide range of approaches some of which employ many of the core features of organic farming.

In considering the questions of soil and plant nutritional features, and aspects of crop protection, the text focuses on how effectively essential nutrients can be provided in an organic system and the approaches needed for effective pest and disease control. The section on animal production addresses particularly the issue of health care which is seen as the biggest area of difference between the contrasting systems. The environmental benefits of organic farming are seen by many as a major attraction of the system and, in reviewing this subject, particular emphasis is placed on the consequences for biodiversity. While in general it seems that wildlife is more abundant and diverse on organic farms, this trend is not necessarily consistent in all the comparisons that have been made. The assessment of the comparative economics of the contrasting systems draws on relatively recent studies which are still few in number. Interesting trends are apparent indicating greater profitability of organic over conventional, at least in the case of general cropping and dairying (but not for lowland cattle and sheep) with the differential increasing following the decline in returns for conventional farming. Clearly, however, wide variation in performance between farms exists within each system. The chapter on food quality and health aims to test the validity of popular perceptions about conventional and organic food. For many consumers, the appeal of organic food is its image of wholesomeness and safety. In reviewing the scientific evidence available, however, the authors conclude that at present there is no reason to believe that organic food is any safer to the consumer than conventionally produced food. The tendency for certain kinds of organic food to contain higher concentrations of vitamin C is nevertheless noted.

Some of the contributors to this publication could be accused perhaps of being less than even-handed in their analysis and the tendency to reveal personal leanings is all too apparent in one or two cases. Nevertheless, the work makes a very useful contribution in reviewing a wide range of information relevant to the debate on the future of farming systems. If it was the intention to reach some definitive statement on the relative merits of these alternative systems then the reader may feel that the conclusion is rather disappointing. This is perhaps inevitable. The motives for adopting a particular way of farming are often complex and what may ultimately determine the choice of system is not necessarily production level, or even primarily a consideration of food quality, but rather a more deeply held belief in what is the right way to manage our land and animals.

P. D. JENKINS

Journal of Agricultural Science, *Cambridge* (2001), **137**.
DOI: 10.1017/S0021859601211046,

Seeds: The Ecology of Regeneration in Plant Communities, ed. M. FENNER. xi + 410 pp. Wallingford: CAB International (2000). £60.00 (hardback). ISBN 0 85199 432 6.

The first edition of this book in 1992 provided an extremely useful overview of reproductive biology and ecology of plants. There is a view that seeds are 'easy' to experiment with: all you need to do is put some seeds in a Petri dish, add some water, wait and count those which germinate. As an Editor of *Seed Science and Technology* I do sometimes despair at the number of submissions of this sort, which generally do nothing to relate the laboratory conditions to those seeds actually experience in the field. The simplistic views that all seeds are the same and stay the same irrespective of age and 'storage' conditions leads to inappropriate experiments and facile interpretations of investigations which do seed research a great disservice. This book provides the evidence that seeds are live complex biological entities which respond to their environment and are important for the survival and evolution of individual species, important to our own understanding and enjoyment of vegetation and not least to sustain our food production systems.

This second edition retains the aim of the first in providing an overview of current ideas and interpretations of sexual reproductive ecology in plants. The chapters cover the general themes of seed production and relationships with the parent plant, dispersal and fate of seeds, factors influencing the transition from seed to seedling and the role of seeds in contributing to survival and change in vegetation. The chapters of the first edition have been updated to reflect the often considerable increase in our understanding. Four new chapters have been added. These review the evolutionary ecology of seed size, the challenges of seedling establishment, the challenges of establishment from seed in fire-prone habitats and the role of disturbance and vegetation gaps in creating opportunities for seedling establishment. The authors

of all the chapters have provided thoughtful reviews of their subjects. Inevitably, there is some overlap of topics between chapters and it is refreshing to see how different viewpoints can lead to different interpretations.

I am sure this volume will prove useful to scientists who work with seeds and will provide up-to-date reviews of our ideas and understanding of how seeds work and what they do. This book should also be compulsory reading for seed researchers before they are let loose to experiment with seeds.

R. E. L. NAYLOR

Journal of Agricultural Science, *Cambridge* (2001), **137**.
DOI: 10.1017/S0021859601211113,

Grassland Ecophysiology and Grazing Ecology, eds G. Lemaire, J. Hodgson, A. Moraes, P. C. de F. Cavalho & C. Nabinger. 432 pp. Wallingford: CAB International (2000). £65.00 (hardback).
ISBN 0 85199 452 0.

This book consists of 20 chapters containing the invited papers presented by 42 authors from 10 countries at an International Symposium on Grassland Ecophysiology and Grazing Ecology held in Brazil in 1999. Chapter 1 introduces the issues and covers goals, concepts and methods. The next 16 chapters cover ecophysiology and grazing ecology and are divided into four parts: environmental constraints and plant responses to defoliation; morphogenesis of pasture species and adaptation to defoliation; plant–animal interactions; and sustainable management of natural pastures. Three chapters on the grazing lands of subtropical and temperate South America complete the book.

In Chapter 1, suggested goals for research on the ecology of grazing systems are (1) to enhance the productivity and stability of production in grazing systems; and (2) to enhance the stability and predictability of grass/legume balance in such systems. There is much in this book about the first goal but much less about the second – many of the chapters concentrate on grass, sometimes exclusively. This is not a criticism of the authors – it reflects past research and the reality that much more is known about grass-only pastures than mixtures with legumes. However we do need to give more attention to mixtures especially in rangelands and natural pastures which often contain a diverse array of species.

The chapters on ecophysiology and grazing ecology cover a range of levels from the molecular to grazing management. Much of our knowledge comes from intensive sown pastures including detailed studies of *Lolium perenne* and to a lesser extent *Trifolium repens*. The authors in Chapter 1 raise the issue of generalizing the detailed knowledge of these species to other species, particularly tropical ones that are much more varied. Unfortunately this has not been examined and the chapters on the pastures of southern America are mainly descriptive.

Although other recent books have dealt with this topic there is room for this book – the books take different approaches to the topics, issues are covered at different levels, and authors have different standpoints or disciplinary views. In common with other multiple-author books there is some duplication between chapters, and different writing styles. However, the book is well produced, the figures are generally clear, and there is a comprehensive index. The book will be a valuable resource for libraries and individuals dealing with the complex issues of managing grazing lands.

J. MCIVOR

Journal of Agricultural Science, *Cambridge* (2001), **137**.
DOI: 10.1017/S0021859601211058,

Agrochemical Discovery, *Insect*, *Weed and Fungal Control*, eds D. R. Baker & N. K. Umetsu. ix + 316 pp. Washington, DC: American Chemical Society. £85.00 (hardback).
ISBN 0 8412 3724 7.

This book, forming part of the American Chemical Society (ACS) Symposium Series, presents refereed papers from the Pan Pacific Conference on Pesticide Science 1999. Although the title suggests a text covering all aspects of agrochemical discovery including biology and associated screening techniques, the book is written primarily for the specialist synthetic chemist/biochemist although the biologist with an interest in advances in chemical synthesis techniques and structure activity relationships will find material of interest.

The book opens with five pages on various aspects of the biology of pest and disease control. The obvious good intent of this section does not, unfortunately, create a good impression as there are many inaccuracies, especially comments on pesticide resistance. However, the chapter can be easily passed over with no loss as it relates poorly to the main text.

Conventional synthesis and chemistry is reviewed in three chapters written by specialist chemists from the agrochemical industry, each presenting a case history for a distinct area of chemistry. Triketone HPPD herbicides from Zeneca, the discovery of indoxacarb by DuPont and synthesis of cyclopropanecarboxamides from Bayer are all covered and present excellent case histories of the evolution of a specific

chemical class. Opportunities for discovery of agrochemicals from natural products and applications of biotechnology are reviewed in the second section and contain more emphasis on the biological aspects, but including chemical explanations of effects where known and exploitable. Section three reverts back to pure chemical synthesis with six chapters on 'combinatorial chemistry', a technique allowing large numbers of related new compounds to be produced very quickly, often employing computer driven robots. Four of these chapters describe the approaches used in the discovery process by four major agrochemical companies (Monsanto, Novartis, Dow AgroSciences and Zeneca) and are very practical illustrations of the commercial application of the techniques to speed up the process and reduce financial outlay. The other two chapters are from Universities in Japan and China and concentrate more on application within molecular modelling and structure-activity optimization.

The final section of four chapters concerns biochemical mode of action studies. The review of new insecticides is particularly valuable and it is a little disappointing that new herbicides and fungicides were not treated similarly, but maybe space and time did not allow this. Concluding chapters on antagonists of ionotropic γ-aminobutyric acid (GABA), the mode of action of brassinazole and neurotoxic action of cyclodienes present specialized case studies of how mode of action studies can be used to optimize biological activity.

P. E. RUSSELL

https://doi.org/10.1017/S0021859601211034 Published online by Cambridge University Press