This book is a comprehensive and well-documented account of mirid bugs (Heteroptera: Miridae), and is a welcome addition to the entomological literature. The text is presented in two-column format, using a clear typeface, and runs to 338 pages. This is complemented by appendices, a glossary and over 100 pages of references. Twenty-four colour plates are included, as are numerous tables, figures, line drawings and diagrams.

The text is subdivided into 18 chapters, which form five main sections. Part I (Background) (Chapters 1–4) is an overview of mirid classification, feeding habits and hosts. Part II (Perspectives) (Chapters 5–8) includes reviews of family characteristics, ecology, behaviour, morphology and physiology; this is concluded by a section on mirids and plant diseases, with particular reference to the role of mirids as vectors of viruses and other pathogens. Parts III (Phytophagy) (Chapters 9–13) and IV (Zoophagy) (Chapters 14–15) deal with mirids as plant and animal feeders, respectively. The text is completed by Part V (Conclusions) (Chapters 16–18), that covers ancestral feeding habits and feeding trends and, usefully, includes suggestions for future research. The sequential numbering of chapters, and absence within the text of distinct breaks between the five main sections, is consistent with the logical and integrated nature of the overall presentation.

Within an agricultural context, the crop by crop reviews of mirids as pests, including their role as vectors of plant viruses and other pathogens, are particularly useful summaries of current knowledge. The kinds of injury and damage caused by mirids are discussed and illustrated in some detail, the author reviewing the subject over a wide range of host plants – including weeds and agricultural and horticultural crops. There is much here to interest readers involved in crop protection. In addition, the extensive sections dealing with mirids as predators (and also that discussing the natural enemies of mirids) will be of particular value to entomologists and other workers associated with biological control and integrated pest management. On a wider front, the book will serve as an important source of reference for anyone seeking information on mirid biology.

D. V. ALFORD
soil erosion from China and Indonesia suggests no significant effect on productivity. The effect of soil deterioration is likely to be greater under poorer populations because the richer have a broader base of consumer demand, and access to more diverse and efficient technologies and practices.

Clearly, international concerns, increasing research costs, and the widening impact of R&D application imply a minimum critical mass for the scientific community and resource base. Economies of size and spill-over/spill-in effects are explored at the beginning of the section on genetic improvement. The authors of Chapter 9 draw on their experience of the international agricultural research institutes (CIMMYT in particular). Issues are raised about South–South spill-over effects, conflicts because regional research often overlaps political boundaries, relations between international and national R&D, and the design and funding of research proportionately to major beneficiaries, taking spill-over into account. All are pertinent policy questions for the near future.

This is a helpful and imaginative book, bringing the reader up-to-date on a broad front of agricultural R&D topics from the experience of internationally established scientists and economists. Exciting frontiers are currently being pursued to feed the growing and desperately needy world population. Much of the necessary technical and applied policy research is politically sensitive. The topics explored seem biased towards the plant and soil sciences, leaving the reader to wonder why the animal and the social sciences featured so little. However, much of the discussion embodies socio-economic considerations of the policy implications of applying the expanding agricultural science frontiers; the analysis is clearly economic. Even if the book’s scope is a little circumscribed in terms of the disciplines, it is encouraging to see these results of considerable multidisciplinary cooperation. The concluding chapter attempts a summary, which is no substitute for the analytical detail and the perceptions of the issues raised and pursued with professional thoroughness in the main body.

D. A. G. GREEN

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Assessments of the potential impacts of climate change on agricultural production have in recent times moved towards integrated studies of farm- and region-scale production. The responses of crops to future weather have become only one part of multidisciplinary approaches that also draw on expertise within economics, land-use planning and natural resource management. This book takes us back to the basic crop responses. It aims to quantify the impact of altered climatic factors on different crops.

The book comprises five parts of different lengths. The two editors contribute the first part (7 pages) with a very general overview of climate change and global crop productivity. Part II (49 pages) provides a succinct review of climatic change and variability, followed by a consideration of the contributions of agricultural practices to greenhouse gas emissions. Then the real substance of the book begins with Part III (348 pages), a chapter by chapter account of the responses of a single crop, or related crops, to climatic change. All the world’s major cereal crops, soybean, cotton, tuber crops, and vegetables are dealt with first, in a total of 7 chapters, each written by experts for that particular crop. Most chapters review the effects of elevated atmospheric carbon dioxide (CO₂), temperature and water availability on the growth and yield of the crop. Herein lies both a strength and weakness of this book by crop approach. For the student or researcher seeking information on the response of a specific crop to climatic change, each chapter provides an excellent coverage of the studies to date. Such specific information can be accessed quickly. The chapter on wheat is among the strongest of these accounts. However, the reader with more general interests is faced with a handful of different accounts of common topics, such as the direct effect of CO₂ on the rate of photosynthesis.

Finally, a review of trade and regional climate change assessments of the impacts of climate change comprises Part V (18 pages).

The book concludes with a consideration of how crop breeding and biotechnology may mitigate the impacts of climatic change on crops (Part IV, 30 pages). An intriguing question is posed: has there been inadvertent selection during the second half of the last century for crop plant types that were better adapted to the increased concentration of CO₂? Finally, a review of trade and regional climate change assessments of the impacts of climate change comprises Part V (18 pages).

So, what about non-specialist readers who are interested in an integrated approach to the problem of
climate change and agriculture? Such readers are provided with a wealth of detailed reviews on crops and climatic change by the many authors of this book. But if they want a general consensus on climatic change and crop productivity, then they will have work that out for themselves.

T. Wheeler

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The stated aim of this book is to provide an overview of a whole range of GMO issues – biology, regulation, private and social economics and politics. It originates partly from a conference organized by the University of Illinois on ‘GMO Regulations, Food Safety or Trade Barriers?’ held in Chicago in 1999. The first part of the book examines the biology of three commercial GM crops in the USA – glyphosate-resistant soybeans, Bt corn and Bt cotton. It presents an economist’s approach to evaluating new technologies and uses this to assess market and non-market effects in the three GM crops. A lot of the information in this part of the book is quite specific to US agriculture and some of the economic arguments and models are not easy reading. However, dipping into this section can provide an insight into how economic analysis may be applied to this complex subject. The chapter on ‘The Stakeholders and the Struggle for Public Opinion, Regulatory Control and Market Development’ is very readable and widens the context of genetic modification beyond scientific issues. Quite rightly, environmental concerns are separated from food issues.

The second part of the book comprises a series of short chapters which cover a range of contrasting views on the benefits and concerns associated with the application of GM technologies in agriculture. The final part of the book presents a more in-depth look at selected topics including: a brief history of agricultural biotechnologies; an overview of the biology of three commercial GM crops in the USA – glyphosate-resistant soybeans, Bt corn and Bt cotton. It presents an economist’s approach to evaluating new technologies and uses this to assess market and non-market effects in the three GM crops. A lot of the information in this part of the book is quite specific to US agriculture and some of the economic arguments and models are not easy reading. However, dipping into this section can provide an insight into how economic analysis may be applied to this complex subject. The chapter on ‘The Stakeholders and the Struggle for Public Opinion, Regulatory Control and Market Development’ is very readable and widens the context of genetic modification beyond scientific issues. Quite rightly, environmental concerns are separated from food issues.

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This work, translated and updated from a French volume produced in 1997, is a comprehensive overview of the status of plant breeding in almost every tropical crop of any importance. In 24 chapters, arranged in alphabetical order according to crop, specialists describe the evolution, use and breeding of species ranging from maize and cassava to those grown on a smaller scale such as okra and eggplant. Several major French research and development organizations, with strong links to developing countries, have supplied authors for this work and clearly it builds particularly on the role these organizations have played in the development of tropical crop breeding programmes. It is perhaps for this reason that tea is the only major tropical crop not to be covered.

Nevertheless, coverage is comprehensive and the book is an extremely valuable introduction to the subject. Each chapter in itself represents an excellent
overview for students, geneticists, breeders and all those interested in the use of improved germplasm as a tool for development. For each crop, the text is accompanied by high quality plates.

Clearly the tropical environment presents particular challenges for the breeder. However, the value of this book extends beyond its subject matter and those involved with the study of crops in temperate countries can also gain much from it.

Several common factors emerge. The first is the importance that has been attributed to establishing international collaborative networks. These have been set up for nearly all crops, involving in many cases partnerships between public and private sector organizations. The second is the great challenge faced in bringing varieties to the marketplace, in terms of, for example, seed certification schemes, distribution of materials, and farmer uptake.

Looking at plant breeding objectives, pathogen and pest resistance both pre- and post-harvest stand out. For nearly all the species covered in this book programmes of genome mapping and molecular marker development are underway. Clearly this will be a major focus of future efforts in this area.

However, the importance of an effective infrastructure for the transfer of new varieties into agricultural practice cannot be overstated.

M. ABBERTON


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This book, in four chapters, is based on papers given at a colloquium of the American Phytopathological Society in 1996. It contains four chapters by authors experienced in the area of research on the rusts of cereals and their control by plant breeding for resistance. Although not evident from the title, this is mainly the story of research and control of black stem rust, caused by *Puccinia graminis* f. sp. *tritici*, on wheat in North America in the 20th century. It does not include accounts of other important work on stem rust of wheat, such as that carried out in Australia, for instance. The first chapter outlines the earlier history, from classical times, of the recognition of this rust as a devastating disease, and the gradual understanding of it being caused by a fungal pathogen. During this process the association of the disease with the presence of barberry bushes was recognized. Early epidemics of stem rust on wheat in North America, and their association with barberry lead to a national programme of destruction of these bushes in the USA. This continued until recent years, with funding changing from national to state origin and gradually diminishing. The second and fourth chapters record the recognition of the variation in the pathogen, and the beginnings of control by understanding and exploiting the genetics of resistance. The remarkable control of stem rust that has resulted from these two processes has led to freedom from epidemics of the disease for the last 40 years in spring wheat and the last 20 years also in the winter wheat areas of Nebraska and South Dakota. The third chapter reports the semi-secret work carried out in the USA on the potential use of black rust as an agent of biological warfare, funded by military money during the Cold war. Many of the data remained unpublished and the large stockpile of spores was incinerated in 1972. Much of the work was epidemiological, and involvement with non-military organizations allowed publication of some important results about the spread of the disease in the USA and Canada, and the effects of climate and cultivar on this process.

This book has value as a historical account of an important body of work on this important plant disease and its control. It finishes with a useful warning that success in control of the disease should not lead to slackening in the efforts to maintain cultivars with adequate genetic resistance, and that probable resurgence of barberry should be borne in mind now that funding for its control has virtually stopped.

The book could be of interest for those engaged in research on rusts of cereals and for those interested in the history of a scientific endeavour. It is well produced and there are not many misprints.

R. JOHNSON


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Given China’s recent accession to the World Trade Organization (WTO), this book is a timely addition for those seeking to gain a better understanding of a vast, complex and very important food market. The 17 chapters presented are a result of a 4-year study into the beef industry in China, which involved interviews with industry participants across 14 provinces and Hong Kong, coupled with two major consumer surveys. Following an introduction and an outline of the emergence of China’s beef industry over the last 15 years, the book takes the reader through
the beef chain from production to processing to marketing and trade before summarizing by examining the bigger issues and opportunities. Included within the ‘production’ chapters is a coverage of the different beef breeds and the structure of the cattle sector. Further to this three separate chapters cover the economics of the three main production methods, providing budgeted analysis of each. Attention then turns to live cattle marketing and processing before chapters covering the leather sector (with exports worth nearly US$10 m) and beef distribution and marketing are given. The consumer surveys conducted provide the basis for a chapter on consumer attitudes and a chapter examining price, income, seasonality and ethnic issues gives a wider view of the market. The Hong Kong market is given a separate chapter, before trade aspects are reviewed.

This book represents a vast undertaking by the Agricultural Economics Group at Queensland and it is to their credit that the volume reads as a single book rather than a collection of separate chapters added together. The book is well signposted throughout and the reader can easily dip into a chapter to gain the required information. Interspersed throughout are flow charts, small case studies and photographic images to help give more of a feel for the structure of production and marketing of beef in China. As noted in the book one of the great difficulties in this kind of work is the lack of reliable secondary data upon which to base any discussion. This leaves the authors providing a cautious tone in many places, but this does not detract from the validity of what is presented. Although the book examines the entire beef chain it also provides a level of detail within each chapter to hopefully address the needs of most readers. China represents a vast food market and with an increasingly global trade in food, understanding competitors in production and the preferences of potential consumers will be of ever-increasing importance. This is a useful addition to anyone involved in the beef industry at any level. As the rationale for the book is to explore the opportunities that the Chinese beef market provides for both internal and external investment it is most suited for those working in marketing, agribusiness and trade.

P. WILSON