This book provides a comprehensive, clearly written and well-explained introduction to the wide topic of plant biotechnology. It is divided into three sections covering Plant Tissue Culture, Genetic Material and its Organization, and Recombinant DNA Technology. Section I starts with an introduction to the term biotechnology with a timescale of development up to 2005 with sequencing of the rice genome. Wide-ranging chapters on plant tissue culture then follow from basic lab organization, protocols, types of culture, somaclonal variation and cryopreservation. Section II covers genetic material and its organization, processing and control. Section III on recombinant DNA technology is by far the largest section of the book, though it might have been better to further divide this section.

It begins with basic lab techniques for handling DNA molecules, then gives detailed information on cloning, PCR, mutagenesis, transposons and gene tagging, gene isolation and molecular markers. The genomics, bioinformatics and intellectual property chapters would have followed on from here, but are interrupted by chapters on gene transfer in plants and into chloroplasts and mitochondria, and then chapters on transgenic crops, impact and risk of the technology, which may have been better in a fourth section. However, this in no way detracts from the value of the book as a wide-ranging text on the subject of crop improvement under the heading of biotechnology.

I highly recommend it to both undergraduates and those starting their post-graduate careers in this field. Each of the sections would stand alone for those with an interest in any of the three parts.

Julie Graham

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Advances in Haploid Production in Higher Plants. Edited by A. Touraev, B. P. Forster and S. Mohain Jain. Heidelberg: Springer (2009), pp. 347, £139.50. ISBN 978-1-4020-8853-7.

Haploid plants possess only one set of chromosomes and these plants can be 'doubled' to produce valuable breeding material. This technique is one of the most successful of all biotechnological plants breeding tools and is widely applied to both practical and research programmes. This volume (which is based on the proceedings of a 2006 conference) attempts to give a broad overview of this wide topic, and also presents some recent findings and concepts. The text is dense throughout, and each article very extensively referenced. The illustrations and generally informative images are in black and white, but there is, unfortunately no index. The introductory chapter attempts to set the scene, but would have been much more useful to the general reader if made simpler rather than presenting 15 pages of references, some of which are quite obscure. The all-important table of species that have been responsive to the technology could also have been made much clearer and informative. No doubt any researcher in haploid production would find this a very valuable source of information, compiled by experts in the field and drawing on the expertise of many of the acknowledged leaders in this area of science. For a general reader, there is a wide range of chapters, encompassing useful subjects such as patents and haploids, and in many cases providing a wealth of information, though some remain reports of work in progress.

Steve Millam

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Biological Control of Tropical Weeds Using Arthropods. Edited by R. Muniappan, G. V. P. Reddy and A. Raman. Cambridge: Cambridge University Press (2009), pp. 495, £70.00. ISBN 978-0-521-87791-6.

Classical biological control of weeds makes use of their natural enemies and is considered a sustainable method for managing invasive and exotic weeds. The approach is particularly interesting for large-scale application where chemical or mechanical means of control would be less feasible due to high costs or negative environmental impacts. This peer-reviewed anthology covers the ecology and distribution of 20 model invasive tropical weed species and presents the successes and failures of biological control programmes using arthropods. The book starts with a useful introductory chapter and concludes with three, slightly redundant, chapters on

national and regional biological control programmes. What most of the case studies show is that effective and sustainable biological control with arthropods requires substantial financial and temporal investments, mainly for research. They can nonetheless generate very high economic returns. Particularly impressive cases presented in this book include the control of different cacti and aquatic weeds like water lettuce, water hyacinth, azolla and salvinia in various parts of the tropics. Arthropods are less likely to have significant impact on witchweeds (*Striga* spp.). The chapter devoted to these species therefore seems a bit out of place in view of the book title. The book is a useful resource for professionals working on biological control of invasive tropical plants as it provides guidelines for techniques and approaches that can serve the introduction of biological weed management in developing countries. The insights in to insect and weed ecology provided by the various case studies will be of interest to both entomologists and weed scientists.

Jonne Rodenburg

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Environmental Soil Science. 3rd edition. By K. H. Tan. Boca Raton Fl, USA: CRC Press (2009), pp. 557, £36.00. ISBN 978-1-4200-7280-8.

This third edition seeks to incorporate the rapid increase in the awareness of soils in the broader environmental context which has developed in recent years. The first two-thirds of the book is similar to many standard soil science texts, beginning in Chapter 1 with a discussion of soil development and soil classification in the context of soil taxonomy and the distribution of soil orders. The next two chapters deal with the basic inorganic and organic building blocks of the soil, followed by a short chapter on the gas phase in soils and a substantial chapter on the liquid phase, with brief consideration of the environmental impacts of soil solutes. Chapter 6 deals with the familiar topics of texture and structure and also the thermal properties of soils. Chapter 7 deals concisely and clearly with the topic of electrical charge in soil and soil reaction. The final four chapters deal specifically with soils and the environment. Chapter 8 considers soil and crop production, touching briefly on the environmental impact of crop protection, no-till farming, organic farming and low input sustainable agriculture. Somewhat surprisingly Chapter 9 deals with soil-less agriculture! Chapter 10 summarizes some of the impacts of recent biotechnology developments in food and agricultural management. The final chapter takes an overview of the problem of soil pollution with a focus on pollution from agriculture and waste management with brief comments on soil remediation and soil resilience. The focus throughout is on agriculture, but there are some 'quirky' additions, such as a section on space weathering, the Law of the Sea and bio-piracy.

Stephen Nortcliff

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Wheat Science and Trade. Edited by B. F. Carver. Ames, Iowa, USA: Wiley-Blackwell (2009), pp. 569, £124.99. ISBN 978-0-8138-2024-8.

This ambitious book covers an enormous range of topics in considerable detail, with up-to-date and relevant information on each subject, particularly from a US perspective. There are 23 chapters in four sections: Making of a Wheat Plant: Making of a Wheat Crop; Making of a Wheat Cultivar; and Making of a Wheat Industry. The signposting of sections and subjects is excellent, enabling the reader to find areas of interest quickly and easily.

After discussing origins of wheat, growth and development of the plant, underlying genes controlling developmental events and flowering, the book moves on to a very comprehensive discussion of major challenges to production. These include diseases (genetic variation, basis for resistance), challenges of cultivation technique to disease control, problems caused by insect pests, weed competition, nitrogen use and an excellent chapter on drought stress. Unfortunately there is no chapter on viral diseases. The section on breeding reviews techniques thoroughly, explores the benefits of new technology (including sections on new synthetics and transgenic wheat), and speculates as to how genomics studies will improve efficiency. The industry section deals with the complex