

BOOK REVIEWS

Expl Agric. (2012), volume 48 (3), © Cambridge University Press 2012

doi:10.1017/S0014479712000178

Molecular Plant Breeding. By Y. Xu. Wallingford, UK: CABI (2012), pp. 752, £59.95. ISBN 9781845939823.

This is a very impressive and comprehensive single-authored treatise on many aspects of plant breeding in the genomics era. The author, Yunbi Xu, has extensive experience with the breeding of both rice and maize, and is to be congratulated on the major, and successful, effort required to produce this book.

The first chapter provides an effective introduction to the topic and is followed by comprehensive treatments of molecular tools (markers, maps, structural and functional genomics, populations (e.g. doubled haploids, recombinant inbred lines etc) and plant genetic resources (collection, characterisation etc).

Perhaps, the central and the most important sections of the book are chapters 6–9, which deal with the theory and practice of the molecular dissection of complex traits and of marker-assisted selection. The treatment here is clear and authoritative. Subsequent chapters deal with gene isolation and functional testing, transformation and transgenic crops and intellectual property issues in connection with plant variety protection.

The last two chapters are perhaps less expected but add considerable value to the book. Chapter 14 deals with 'breeding informatics': using an information-driven approach to plant breeding focusing on the integration of diverse data sets, from genome to Geographical Information System (GIS). The final chapter discusses decision support tools for breeding, including the role of modelling.

This book can be highly recommended to all those concerned with crop improvement and plant genetics.

Michael Abberton

Expl Agric. (2012), volume 48 (3), © Cambridge University Press 2012

doi:10.1017/S001447971200018X

Crop Stress Management and Global Climate Change. Edited by J. L. Araus and G. A. Slafer. Wallingford, UK: CABI (2011), pp. 352, £95.00. ISBN 978-1-84593-680-8.

This book provides a view of the issues that agriculture will face in the future as a result of climate change. It comprises 10 chapters arranged in four parts. The first part looks to the past and reviews the importance of global climate change, particularly the global warming that followed the end of the last ice age, in triggering the development of agriculture.

The second part considers present and future challenges of climate change in four different agricultural systems, selected on the basis of the significance of their production for global food supply and likely magnitude of the effect of climate change. Systems selected are the dryland systems of the Mediterranean, irrigated rice in southern Asia, Pampean agriculture and horticulture.

This is followed by a section that seeks to present measures for coping with climate change. Extensive reviews are given on the impact of high CO₂ on abiotic stress tolerance, breeding to improve grain yield in water-limited environments, the use of molecular breeding and crop management on a system's perspective aided by information technologies.

The final chapter outlines how efforts to cope with climate change can be coordinated in the future by considering the roles of different forums in agricultural research and topics to be addressed.

Many chapters give excellent reviews of the literature pertaining to the subjects covered. However, a criticism of the book as a whole is that there is a lack of synthesis between different chapters, and little effort to draw

together the information to provide a final conclusion. It is nevertheless a very useful publication for its target audience: researchers in agronomy, plant and environmental sciences.

Elaine Booth

Expl Agric. (2012), volume 48 (3), © Cambridge University Press 2012

doi:10.1017/S0014479712000191

Genetics, Genomics and Breeding of Oilseed Brassicas. Edited by D. Edwards, J. Batley, I. Parkin and C. Kole. Boca Raton, FL, USA: CRC Press (2011), pp. 440, £89.00. ISBN 978-1-57808-720-4.

We live in interesting times! There is a global realisation of the need for greater and sustainable food production – from a shrinking arable area. This comes after a long period of agricultural decline, particularly in Europe and more seriously a very significant decline in agricultural research. The days of the Green Revolution are over and we have nothing to replace it. The only hope is for improved crop production through improved genetics. Traditional methods of breeding have performed well in the past but are clearly struggling with new challenges. The new molecular technologies of genetics and genomics hold the key to future productivity. These technologies are alien to many involved in traditional breeding, and for them this book will be a revelation.

Written by acknowledged experts in their fields, this book provides a window into the future with well-written and very readable accounts of the origins of the brassica oil crops, followed by a series of chapters outlining the latest technologies of genomics and their uses. Each chapter is more or less self-contained and can be read in isolation – there is therefore some understandable duplication in their introductions. The subjects are well referenced and this book will provide an excellent introduction to modern breeding. More importantly, the book clearly outlines the use and capabilities of these technologies.

For any young breeder and any older ones looking for a new lease in life, this book will become an essential reading.

Jo Bowman

Expl Agric. (2012), volume 48 (3), © Cambridge University Press 2012

doi:10.1017/S0014479712000208

Defending the Social Licence of Farming: Issues, Challenges and New Directions for Agriculture. Edited by J. Williams and P. V. Martin. Collingwood, Australia: CSIRO Publishing (2011), pp. 206, AU\$49.95. ISBN 978-0-643-10159-3.

As farms become larger, more intensive and commercial, and as townspeople make increasing demands on the availability and quality of natural resources, the relationship between rural and urban communities has become increasingly strained. This is the background addressed by 19 authors (mostly Australian) of this well-referenced book concerned with the erosion of the ‘social licence’ enjoyed by farmers. Although the text is mainly concerned with competing demands for water by the Australian irrigated cropping sector, consideration is given to other areas of potential conflict such as land-use, biodiversity and conservation, pollution, animal welfare and the general sustainability of rural environment. Attempted solutions to such conflicts may be legalistic or voluntary, but all require trust, credibility and cooperation between farmers, competing groups and governments.

The first section deals with theoretical and historical aspects of the ‘social licence to farm’, followed by consideration of alternative approaches of alleviating tensions between communities. The third section deals solely with institutional and legal solutions, illustrated by case studies, which include some from the United States and Europe.

The book covers the field well, although with considerable overlap between chapters, but the final chapter (and an excellent Preface) pulls the material together into a very readable overview. Although the case studies are useful, some are overly descriptive and lack numerical detail.

The book is recommended for professionals working on rural/urban interface, including representatives of relevant interest groups (including farmers). It would also provide material for students of rural planning by using individual chapters for group discussion, or for application to live case studies.

Mike Daw