Expl Agric. (2012), volume 48 (4), © *Cambridge University Press 2012*
doi:10.1017/S0014479712000518

Plant Biotechnology and Agriculture. Prospects for the 21st Century. Edited by A. Altman and P. Hasagawa. Waltham, MA and London: Elsevier/Academic Press (2012), pp. 586, US$199.95. ISBN 978-0-12-381466-1.

This authoritative and wide-ranging book is a first-class contribution to the literature in the important area of biotechnology. It draws on the collective knowledge of a wide range of contributors to bring together a wide-ranging and detailed review of biotechnology in the 21st century. The book is aimed at a wide range of readers from graduate level students to a range of plant and agricultural scientists. Biotechnology is a key tool in the armoury to feed the world's rapidly growing population with food of the right quality and quantity and to allow crops to grow more efficiently in harsh environments with lower input costs.

The opening sections provide a useful review of the advances relevant to the science of biotechnology in a number of fields such as genomics, tissue culture and genetic transformation, as well as breeding and germplasm technologies. This is followed by a useful section on plants' response to the environment and abiotic and biotic stresses, such as salinity and drought, and pests and diseases, as well as phytoremediation. The area of yield and quality traits is well covered, as are developments in post-harvest and storage quality management and use of plants as 'factories' for production of bioenergy and pharma and other biomaterials. The book is completed by a review and discussion in the crucially important areas of transgene flow, Intellectual Property Rights (IPR), regulatory issues and biotechnology in developing countries. This is a comprehensive and highly useful overview of a crucial area of technology for human survival as we move forward into the new millennium.

Keith Dawson

Expl Agric. (2012), volume 48 (4), © *Cambridge University Press 2012*
doi:10.1017/S001447971200052X

Genetics, Genomics and Breeding of Bananas. Edited by M. Pillay, G. Ude and C Kole. Enfield, NH: Science Publishers (2012), pp. 350, £76.99. ISBN 978-1578-0878-84.

The editors have assembled contributions from several specialists with contemporary skills in plant genetics and molecular biology and who are linked to the Global *Musa* Genetics Consortium, a forum providing for the free exchange of data relating to the genetics of the crop. For many, a polyploid, vegetatively propagated crop like banana is an interesting model for studying genomic evolution in relation to different stresses.

Historically, relatively few organisations have supported sustained research on genetic improvement of *Musa*. The breeders' objectives were driven by the needs of the export trade in dessert fruit, which continues to be dependent on just one genotype (formerly Gros Michel and now Cavendish). Only in the last two decades the need to improve the cooking and other dessert varieties has been addressed.

Genetic improvement of bananas by conventional methods is difficult. Overcoming the problem of sterility in the economically useful cultivars and the fundamental requirement for seedless progeny has been the breeders' major challenge. Conventional breeding is possible and promising clones have been developed, but the process is long and tedious, and insufficient progeny have been produced to readily locate and identify useful genes. Through the new technologies described in this book, information on the genes controlling desirable characteristics (disease and pest resistance, yield, flavour and cooking characteristics, plant stature, harvest interval, stress tolerance) is being accumulated. All the contributions give optimistic forecasts of the opportunities for banana improvement, but it is not clear how long we have to wait for the appearance of such new varieties.

S. R. Gowen

Expl Agric. (2012), volume 48 (4), © *Cambridge University Press 2012*
doi:10.1017/S0014479712000531

Transgenic Plants. Methods and Protocols. Edited by J. M. Dunwell and A. C. Wetten. Methods in Molecular Biology Series, Volume 847. Heidelberg, Germany: Springer (2012), pp. 512, £112.50. ISBN 978-1-61779-557-2.

This is a comprehensive methods book packed with detailed protocols on methods in plant transformation. There are a total of 37 chapters organised into eight sections, including four sections with detailed transformation