and single cell protein. It also examines in a very timely manner the potential of solid-state fermentation of horticultural waste for the production of microbial inoculants, bioactive compounds, enzymes and biofuels. The final chapter summarizes the current commercial application of these technologies and looks at future prospects, some speculative. This book is largely well written and it is aimed at the non-specialist. Each chapter provides an overview and gateway to enable the reader to gain an understanding of the subject area. Some of the chapters lack details of current practice and describe technologies more aspirational than real. Personally I would have enjoyed more recognition of the need to develop these technologies in conjunction with the regulatory environment (environmental and pharmaceutical).

Kerry Burton

Quantifying and Understanding Plant Nitrogen Uptake for Systems Modeling. Edited by L. Ma, L. R. Ahuja and T. W. Bruulsema. Boca Raton, FL, USA: Taylor & Francis Group, (2008), pp. 312, US$149.95. ISBN 978–1-4200–5295-4. doi:10.1017/S0014479709007704

Modern agriculture is an exact science, with numerous models developed to best manage crops. Most plants are limited in growth by nitrogen, but this can be eliminated with fertilization. However, how much should be applied to maximize crop yield but minimize wasted cost, energy expenditure and environmental damage is somewhat of an inexact science.

Ma *et al*. have compiled the latest developments in modeling plant nitrogen uptake. Through 13 chapters the contributing authors cover topics from the rhizosphere and roots to mycorrhizae and Michaelis-Menten kinetics. Each chapter is straight to the point and focuses on a different model and crop, which is useful as an introduction to each model as well as insightful into specific crop behaviour. A good overview of model structure is provided for each model, and most are tested against data.

The book is, however, put together a bit piece-meal, – the selection of models and crops seems random at times, and there is no unified, robust model tested against all of the data presented in the chapters. There is redundancy in the chapter introductions (justification of why plant nitrogen uptake is important). Many of the models are empirically designed for one specific crop. Still other models are too complex to parameterize or simply not believable.

Nonetheless, for anyone interested in modeling plant nitrogen uptake, this should be the first source to go to for a solid overview of quantifying and understanding plant nitrogen uptake for systems modeling.

Joshua B. Fisher

Rice Improvement in the Genomics Era. Edited by S. K. Data. Boca Raton, Fl, USA: CRC Press/Taylor and Francis Group (2008), pp. 481, US$169.95. ISBN 978-1-56022-952-0. doi:10.1017/S0014479709007716

The advent of genomics has unleashed a plethora of information on gene structure and function, thereby opening new opportunities for accelerated and more precise breeding. It is indeed a daunting task for any individual to attempt to present such information in a single book, especially for a crop that has received so much scientific attention such as rice. Nonetheless, this excellent book contains contributions from eminent scientists describing the applications of biotechnology and genomics to rice improvement, such as in breeding for abiotic stress tolerance, insect-and disease-resistance, as well as nutritionally dense rice (rice with elevated levels of iron, zinc and β-carotene in the endosperm). The first chapter is rightly assigned to the ground-breaking work in the complete sequencing of the rice genome and its potential applications in rice research. The book then details the tools and approaches deployed for gene expression studies using microarrays, haploid breeding, hybrid rice technology, molecular marker-assisted breeding and use of transgenic technology to introduce new gene combinations or to suppress or over-express certain proteins. The authors acknowledge that these new tools do not offer a panacea for rice breeders and that many challenges remain to be surmounted in order to exploit this new information in breeding for more complex traits or traits not presently known in the rice gene pool. The arguments against some of the new technologies such as transgenics are highlighted but several authors in the book provide strong evidence in support of the technologies.

Baboucarr Manneh