

utilize both temporal and spatial data from a wide variety of sources to provide practical tools that can be used to increase efficiency, quality and yield.

Mark Young

*Handbook of Plant Nutrition*. Edited by A. V. Barker and D. J. Pilbeam. Boca Raton, FL, USA: CRC Press, Taylor and Francis Group (2007), pp. 613, £79.99. ISBN 0-8247-5904-4. doi:10.1017/S001447970800625X

This internationally authored book is concerned with the principles of plant nutrition from a historical perspective to the current day and provides an excellent source of references to knowledge of the nutrient element requirements of major crop plants. The book has one chapter for each element and these are grouped together into sections: i) the macronutrients N, P, K, Ca, Mg and S; ii) the micronutrients B, Cl, Cu, Fe, Mn, Mo, Ni and Zn; and iii) the so-called beneficial elements Al, Co, Se, Si, Na and V, i.e. those elements which may stimulate growth or are required only by certain plants. Each chapter has its own style, tailored to the element in question, but the nutrient element chapters generally follow the pattern of a historical perspective, descriptions of metabolism and function, diagnostic testing of plants and soil, and fertilizer composition and use. Because of the controversy surrounding the classification of elements as 'beneficial' the section on these elements makes interesting reading and widens the appeal of the book. Described on its rear cover as having 'great value to growers, agricultural consultants, agronomists and plant scientists' the book has more relevance to theory than to practice and as noted in the preface will also be useful to soil scientists. The visible effects of nutrient stress on plants are illustrated by monochrome photographs, some of which fail to impress. However, a CD-ROM, with full colour photographs and pdf files of each printed chapter, is included with the book.

Charles Shand

*Introduction to Statistics for Biology. Third edition*. By R. H. McCleery, T. A. Watt and T. Hart. Boca Raton, FL, USA: Chapman and Hall/CRC (2007), pp.273, £27.99. ISBN 13: 978-1-58488-652-5. doi:10.1017/S0014479708006261

After a gap of 10 years the third edition of this textbook for first year undergraduate biology students puts greater emphasis on planning and designing experiments, provides a more consistent framework for hypothesis testing and replaces exercises by worked examples. The book comes with a free trial edition of Minitab on disc.

With relatively few examples the authors try to instill an understanding of the why and how of statistical science. The style is persuasive rather than didactic but 'you do need to read this book from start to finish, rather than dipping in for the bit you want'. There is a lot of reading, but I found the text generally very clear and easy to read. Part of the reason the authors have needed so many words, of course, is that they have not used any mathematics. Where necessary they have used mathematical notation but only after painstaking explanation.

The usual topics are covered: probability, distributions, estimation, confidence intervals, regression, analysis of variance, design of experiments, categorical data and non-parametric tests. While these are all covered at an introductory level an excellent chapter on 'Managing Your Project' would be equally valuable in a statistics guide for post-doctoral biology researchers.

Overall the authors balance well the need for an understanding of statistical ideas with the practical skills of using software to plot the data and implement the methodology.

Jim McNicol

*Plant Breeding and Biotechnology. Societal Context and the Future of Agriculture*. By D. J. Murphy. Cambridge: Cambridge University Press (2007), pp. 423, £29.99 (paperback). ISBN 970-521-53088-0. doi:10.1017/S0014479708006273

In this informative and thought-provoking book on international plant breeding and biotechnology the author blends history, science and socio-economics. In looking at the past and future of global agriculture, the roles and contributions of the public and private sectors are scrutinized and the so-called agbiotech revolution, especially the development and management of transgenic or GM crop varieties, is critically examined. In doing so the author exposes the exaggerations of all those involved in the GM debate. A strong case is made for a more

balanced approach in crop improvement both within and between the public and private sectors. Whilst the book is international in its scope, the chapter on public sector breeding in the UK is mainly confined to events in England and Wales

There are six parts: The science of plant breeding (three chapters); The social context of plant breeding (three); Turmoil and transition: the legacy of the 1980s (four); The agbiotech paradigm (three); Increasing global crop production: the new challenges (two); Plant breeding in the twenty-first century (three); followed by a set of Conclusions and Recommendations. Additionally, there are lists with nomenclature and terminology; abbreviations and glossary; an up-to-date, comprehensive set of references, which also provides web-links to articles available on-line; and a set of more than 900 notes.

This book deserves a wide readership that includes government, academic and commercial company policy makers, plant breeders and geneticists, agronomists, conservationists, biotechnologists, economists, advisors to government departments and charitable trusts involved in aid to developing countries.

N. L. Innes

*Soil Carbon Management, Economic, Environmental and Societal Benefits*. Edited by J. M. Kimble, C. W. Rice, D. Reed, S. Mooney, R. F. Follett and R. Lal. Boca Raton, FL, USA: CRC Press (2007), pp. 268, £74.99. ISBN-13: 978-1-4200-4407-2. doi:10.1017/S0014479708006285

This book is a compilation of 14 solicited chapters dealing with the subjects of the book's title and divided into three sections: i) overview, policy and economic, ii) on-site benefits, and iii) off-site benefits of soil carbon management. The book is largely oriented towards the American market with all case studies, policy analysis and most of the references sourced from North America. This regional focus, however, also works in the book's favour. Chapter 3 presents case studies from farmers 'in their own words' – this makes interesting reading. The second section deals mainly with the science of soil carbon management, as have previous books in the series; the chapters summarize succinctly the state-of-the-art in North America. The third section covers a number of the co-benefits (e.g. erosion prevention, water quality, flood management, wildlife benefits) of soil carbon management.

Most chapters in the book end with policy recommendation, all of which make good sense, but the most detailed, specific and well-argued sections on policy recommendations are found in Chapter 2 by Debbie Reed. Ms Reed has held a number of influential positions in government, as described in the 'About the Editors' section, and her deep understanding of policy in the United States is apparent in this chapter. For those of us working in this field, this chapter shows how we need to engage with policy makers, if we wish to make our science an implemented reality. In summary: a good multi-disciplinary country level case-study for encouraging better soil carbon management.

Pete Smith

*The Rhizosphere: Biochemistry and Organic Substances at the Soil-Plant Interface. 2nd Edition*. Edited by R. Pinton, Z. Varanini and P. Nannipieri. Boca Raton, FL, USA: CRC Press (2007), pp. 447, £86.00. ISBN 0-8493-3855-7. doi:10.1017/S0014479708006297

This text covers the biochemistry of the plant–soil interface or rhizosphere. Rhizosphere processes involve complex interactions between plant roots and the soil and organisms that surround them. This text does well to cover this topic in 14 chapters. Subjects included are: types of exudates; rhizodeposition and specificity of microbial populations; involvement of exudates in responses to nutrient availability (new to 2nd Edition); effects of nutrient availability on root architecture (new to 2nd Edition); effects of plant physiological status on exudation; plant membrane activity and transformations relating to nutrient uptake; function of siderophores;. Chapters also discuss specifically interactions between plants and mycorrhizal fungi and *Rhizobia*. Root–root and root–microbe signalling are new to this edition, as are discussions on manipulation of the system for rhizosphere management. A chapter on modelling of the rhizosphere is included and finally chapter 14 discusses gene flow (new to 2nd Edition). The writing style makes an easy read while remaining informative. Many of the figures give clear illustrations of processes and models, but some of the tables are less useful.

The bias is generally towards discussions of processes and interactions that influence, or are directly influenced by, nutrient uptake. While considered, implications of abiotic stress on rhizosphere processes are