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Plant Breeding for Abiotic Stress Tolerance. By R. Fritsche-Neto and A. Borém. Heidelberg, Germany: Springer (2012), pp. 175, £126.00. ISBN 978-3-642-30552-8.

Plant Breeding for Abiotic Stress Tolerance is edited and written by Brazilian research scientists, and occasionally this shows in their use of English. The book's perspectives are the problems faced in Brazil as a result of bringing marginal land into cultivation and the likely consequences of climate change. Two introductory chapters set the scene in terms of the challenges for plant breeding and the concepts of stress-tolerance and resource-use efficiency. Next is the longest chapter, on the physiology of abiotic stresses, with an emphasis on satisfactory plant growth and crop yield in tropical environments. This is followed by individual chapters on breeding for nitrogen-, phosphorus- and water-use efficiency and tolerance of salinity, aluminium and heat-stress. The final chapter is on breeding *Eucalyptus* species for water deficiency conditions in Brazil, as an example of abiotic stress tolerance in a perennial forest crop. Each chapter on breeding has a similar format with up-to-date information and references on the seriousness of stress, how to induce it for scientific study and how to select for tolerance, germplasm availability, genetics and breeding methods, and the use of biotechnology. The book contains valuable information on the mechanisms of tolerance and useful ideas on how to breed for tolerance, with examples of the progress achieved to date. Some of the transgenic approaches look particularly promising, but will need to be confirmed under field conditions. However, the book's shortness and Brazilian focus mean that it cannot be considered a fully comprehensive review of the subject.

John E. Bradshaw

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Rainwater Harvesting for Agriculture in the Dry Areas. By T. Y. Oweis, D. Prinz and A. Y. Hachum. Leiden, The Netherlands: CRC Press/Balkema (2012), pp. 262, £63.99. ISBN 978-0-415-62114-4.

Water issues dominate the thinking and efforts of agriculturists in dry areas, where what little rain that falls commonly occurs in intense storms and provides only short-term benefits to the growing crops. By encouraging and collecting runoff, water harvesting increases and extends the availability of water for crops and reduces risk. The basic principle is to harvest the water from one area of land to support cropping on another. The water is also used for livestock and human consumption.

Eight chapters of this book describe the principles and practices of rainwater harvesting in dry areas, covering a wide range of water harvesting systems, from those developed by ancient societies to present-day systems, which can now be designed using remote sensing and modern tools such as Google maps. Throughout the text are line drawings and photographs, which are particularly well done, as are the additional 25 pages of colour plates. The last two chapters, which address associated socio-economic and environmental aspects of rainwater harvesting, complement the strong practical engineering focus of the book.

Readers will find this book to be a valuable source on rainwater harvesting. Its appeal could have been broadened by discussing in considerably more detail topics such as the geographic scope and agroecological definition of 'dry areas'; the methods used to distribute water to crops; and the potential role of crop simulation and risk analysis in managing water supplementation, which is an increasingly pertinent issue as the climate changes.

Eric Craswell

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Weed Science: A Plea for Thought—Revisited. By R. L. Zimdahl. Heidelberg, Germany: Springer (2012), pp. 73, £44.99. ISBN 978-94-007-2087-9.

This intriguing short volume is a series of philosophical essays pleading for weed scientists to consider more carefully their research and its consequences for society, human health and the environment. Zimdahl first

wrote an essay for a 1993 USDA symposium. This one revisits it and asks whether weed science has 'overcome the paralysis of the pesticide paradigm'. He presents his thoughts through historical perspectives as to why the 'pesticide paradigm' developed, that weed scientists have worked in apparent isolation and a lack of forethought as to the consequences of their output and how societal responses have developed. He asks whether weed science is changing and questioning, or whether the 'pesticide paradigm' remains at its core. Zimdahl also recognises signs of evolution, but that it should go further in understanding weeds and their behaviour and the analysis of risk in technical change for humanity and the environment so that we can use available technologies more wisely.

I suspect that weed science has evolved more in those directions than indicated in Zimdahl's largely US-biased review. Nevertheless, I recommend this to all who wish to consider how weed science could develop; but not only weed science. This is a salutary tale for all scientists – remember that there is a wider world out there!

Ken Davies

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Introduction to Modern Climate Change. By A. Dessler. Cambridge, UK: Cambridge University Press (2012), pp. 252, £29.99. ISBN 978-0-521-17315-5.

This well-written and approachable textbook would also provide a useful book for the interested layperson. It covers the widest range across the subject in a clear and informative way for both science students and non-scientists. Particularly welcome are the sections on policy and political debate and how they link to the science.

The first seven chapters cover the science of climate change in all its various aspects. The last six chapters move through models and emission scenarios, and through impacts, social change and aspects of growth, mitigation and adaptation on to emission reduction policies of carbon credits/cap and trade systems. The final chapter gives a short history of the political debate, and the climate science behind it, and pull together the strands into one particular strategy. Greater consideration of China's role here would have been instructive and useful, as would that of agriculture.

The role and credibility of the Intergovernmental Panel on Climate Change (IPCC) is accepted rather unquestioningly and counter debates and data and the role of scientific partiality are dismissed too lightly in places. More recent work highlighting the increasingly poor fit of models to observed current effects and divergence of global CO_2 levels and temperature are not covered. Nitrous oxides (not even in the index) in both greenhouse effect and mitigation as significant greenhouse gas contributors are worthy of greater coverage. These reservations aside, the book deserves a wide readership.

Keith Dawson

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Organic Fertilisation, Soil Quality and Human Health. Sustainable Agriculture Reviews 9. Edited by E. Lichtfouse. New York: Springer (2012), pp. 352, £135.00. ISBN 978-94-007-4113-3.

This book is an eclectic collection of 11 scientific reviews in crop production and soil science. It follows previous books in the series by covering a range of themes related to sustainable agriculture. Topics range from conservation tillage, to tomato production for human health, to jute biology and cultivation, to organic and mineral fertilisation in Sub-Saharan Africa. For two of the chapters, including one on mineral fertilisation and the use of plant growth retardants in cotton, it is difficult to see any connection with the theme of sustainable agriculture, however broadly defined sustainability may be. Each of the review papers stands alone and there are no summarising or introductory chapters that would link various contributions. The reviews vary in their scope, length and quality. Some suffer from several spelling and grammatical errors, and include a number of relatively low-quality reproductions of black and white photographs. Generally, the reviews provide an up-to-date picture of the state of the art, but mostly remain limited in the extent to which they present novel concepts,