

using land to grow crops for food and in conversion of natural or semi-natural landscapes. The aim of this book is to map routes of sustainable bioenergy use and to provide guidance for policy makers to develop a framework for sustainable use of biomass for energy.

The book builds on a special report by the German Advisory Council on Global Change (WBGU). It examines, in detail, the issues surrounding bioenergy from a global perspective and depicts differing motives of industrial, newly industrializing and developing countries in connection with use of biomass for energy. More than 60 bioenergy pathways are assessed, including traditional biomass use, biogenic wastes, and residues and energy crops, in terms of their contribution to global shift towards sustainable energy systems.

A comprehensive summary for policy makers is provided at the start of the book (in the preamble), but is not mentioned in the Contents so could be missed. Policy recommendations given are aspirational and laudable, but a slight criticism is that this chapter could be improved by more fully taking into account the reality of current market structures and technical maturity of various bioenergy processes.

In conclusion, the book provides an excellent resource for those working in this area and for students of environmental technology, in addition to providing thought-provoking material for policy makers.

Elaine Booth

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*Soil Quality and Biofuel Production.* By R. Lal and B. A. Stewart. Boca Raton FL, USA: CRC Press (2010), pp. 201, £82.00. ISBN 978-1-4398-0073-7.

This book addresses a highly controversial area of science, namely the long-term ecological sustainability of biofuel production. From this perspective the book is very timely and should be read by anyone interested in the current debate surrounding the selection of options for greenhouse gas mitigation. The editors nicely bring together 27 authors, largely from Austria, USA and Brazil, in a series of eight chapters to present a state-of-the-art review of soil properties and processes impacted upon by biomass crop harvesting. Overall, the book takes a global view although some authors do focus on their own national data to exemplify key issues. The chapters address the ecological consequences of a range of biofuel/bioenergy production systems. It offers advice for maintaining soil quality in such systems and achieving economic balance in the competition for arable land between food and biofuel production. One strong aspect of the book is that each chapter contains a good final summary allowing the reader to become quickly versed with the major issues. The final synopsis chapter also highlights current major areas of uncertainty and future research directions. It clearly highlights the complexity in assessing the sustainability of biofuel production systems and the need to take a holistic view.

In summary, the book is well written and contains lots of valuable information. The presentation and figures are of high quality and the book contains a wealth of information suitable for a range of audiences. In my opinion this book represents a worthy purchase although the price is somewhat restrictive for students. It will make good reading for many agronomy, plant nutrition and agricultural extension professionals.

Davey Jones

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*Soil Biochemistry.* By K. Haider and A. Schaffer. Enfield, NH, USA: Science Publishers (2009), £40.00, pp. 116. ISBN 978-1-57808-579-8.

Micro-organisms are of fundamental importance in soil development and productivity, and therefore, in turn, of prime significance for agriculture and human health. This book gives an account of the important processes that are driven by microbial activity in soil, and is an updated translation of the book originally published in German. It is clearly written, albeit with a rather abrupt or note-like style (perhaps a consequence of the translation), but this makes presentation of key facts and statements very clear. The book opens with a survey of soil properties and methods for microbe quantification, with two chapters then detailing aerobic and anaerobic organic matter decomposition, with emphasis on plant materials. N, S and P turnover in soil is then

outlined, followed again by a chapter on organic matter decomposition in relation to composting, and methane production. This is followed by an account of trace gases in soil, especially nitrogenous gases and methane, and finally a chapter on heavy metals as pollutants, together with a brief account of toxicity, environmental aspects and microbial resistance. The text includes a good number of figures and tables, which clearly relate to the text, and there is an ample bibliography, which could lead readers to more detailed accounts of the topics discussed. Clearly the topic is huge, and the authors have succeeded in greatly simplifying and reducing to the most important points in this short volume. The book is of value to undergraduate and postgraduate students, or indeed other readers new to the field.

Geoffrey Michael Gadd

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*Soil Ecology and Management.* By J. K. Whalen and L. Sampredo. Wallingford, UK: CABI (2010), pp. 296, £37.50 (paperback). ISBN 978-1-84593-563-4.

This modular textbook will be particularly suited for undergraduates, lecturers and practitioners interested in soil systems. It is written with some authority with over 100 scientific articles on soil ecology between the authors. The modular nature of the book allows the reader to select those chapters of greatest interest. Each chapter presents selected highlights in focus boxes with more in-depth information. However, the modular nature also means that the book falls a bit short of a systems approach as the interactions between groups and processes are more difficult to identify. The first part of the book provides the reader with basic information on the soil environment and soil-forming factors, and is particularly aimed at those new to soil studies. The larger part of the book deals with the organisms in soil, covering microorganisms, micro-, meso- and macro-fauna, with each section describing the biology, the diversity, and methods for collections and quantification. Interactions between various groups are discussed by considering their roles in the food web. The ecology is then linked to functions of the food web, covering primary production, decomposition, nutrient cycling and biological control. The final two parts of the book deal with management of the soil environment and address the impact of climate change on the food web. These last two chapters are a bit short and might not satisfy a reader specifically interested in management or the impact of global warming. Overall the book strikes a balance between depth and breadth of soil ecology and offers helpful links to web pages for each of the chapters for further study. Undergraduates and those new to the field will find this a useful book.

Wilfred Otten

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*Manual of Methods for Soil and Land Evaluation.* Edited by E. A. C. Costantini. Enfield, Science Publishers (2009), pp. 549, £76.99. ISBN 978-1-57808-571-2.

This book is an English language revision of a text first published in Italian. The book aims to provide an operational and educational tool for land evaluation for agriculture and forestry based on knowledge of soil. The introduction covers the history, definitions and concepts of soil and land evaluation. This is followed by seven chapters in Part II on Soil and Land Evaluation covering land capability classification, soil protection, irrigation, erosion, hydrology and restoration; and in Part III on Land Suitability and Land Zoning 25 chapters present a wide variety of detailed examples of land suitability for row crops (bread wheat, durum wheat, maize, rice, alfalfa, potato, tobacco, soybean, sugar beet), small-scale niche cultivation (emmer wheat, truffles, ash-tree manna, cactus pear, lentils), and tree cultivation (including common ash, walnut, citrus, olives, stone fruits, apple and pear, kiwi fruit). These chapters provide clearly organized descriptions of suitability assessments focused largely through cultivation techniques and crop requirements for each species. Two final chapters cover land evaluation for Italian conifers and land suitability for grazing.

The focus of the book on Italian soils and crops is clear and limits the utility of the text to be mainly an applied manual for those interested in these crops in areas with soils and climates similar