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The Handbook on Climate Change and Agriculture. Edited by A. Dinar and R. Mendelsohn. Cheltenham, UK: Edward Elgar Publishing (2011), pp. 544, £145.00. ISBN 978-1-84980-116-4.

This tome is a worthwhile addition to the growing literature in this area, comprising a series of chapters covering a very wide gamut of multi-disciplinary aspects, focusing on adaptation and mitigation. This adaptation to climate change is nothing new in global agriculture, but increasing globalization adds complexity and also resilience to the system through trade, aid and transfer of technology. Growing population and an increase in wealth and dietary aspirations of that population, together with limited water resources, increase the pressures on agriculture. Recently, the link between food security and social unrest has been clearly demonstrated.

The book covers agronomic studies on climate impact and adaptation through economic studies on agricultural impacts and on the wider economy (particularly crucial in developing countries) through agricultural mitigation and adaptation of agricultural and economic systems. Both the effect on crops and the more complex effects on livestock production are covered, though, perhaps, there is insufficient consideration of the positive effects of climate change on crop and pasture performance, an area now receiving welcome attention. The different dynamics of C₃ and C₄ crops and weeds are also covered, as are a wide range of models on effect, adaptation and mitigation to climate change, with emphasis on the Ricardian approach. The mitigation effects of trade, institutional change and technological innovation are described, as are the adverse effects of biofuels and insurance and the positive role of sustainable intensification. Renewed investment in research and development to 'fuel' these initiatives is rightly emphasised.

This thought-provoking and wide-ranging handbook covers a very wide range of multidisciplinary approaches to climate change and rewards the diligent reader.

Keith Dawson

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Crops and Carbon. Paying Farmers to Combat Climate Change. Edited by M. Robbins. London: Earthscan (2011), pp. 288, £49.99. ISBN 978-1849-7137-57.

This book provides useful and detailed coverage of many issues around the area of the mitigation of greenhouse gases (GHGs) by carbon sequestration. Agriculture is responsible for 12% of anthropogenic emissions (Intergovernmental Panel on Climate Change or IPCC). Nitrous oxide and methane provide the majority of impacts, nearly 90% of mitigation opportunities are provided by carbon (IPCC). This book's premise is that farmers could benefit from enhancing carbon sink potentials of land by effective management by direct payments or through carefully targeted development.

The soil pool is double the size of the atmospheric carbon pool and 1.5 times that of standing biomass. Agriculture has caused huge losses from this soil pool since its advent. Techniques highlighted show that increased sequestration into the soil pool often benefits rural poverty in fragile ecosystems. Role of carbon trading is examined in encouraging positive carbon management. Agricultural sinks are excluded from the Clean Development Mechanisms and unlikely to be eligible under Kyoto2, but many techniques provide a 'win⁴' for mitigation, adaptation, poverty alleviation and soil conservation.

The authors question the underlying assumptions of carbon trading being a 'real deal' and also the 'real additionality', sequestration permanence and difficulties of monitoring and verification. Climate change effects on agriculture are covered, as are global and local contexts, the complexity of relations between different GHGs and the need for further research into the 'unanswered questions' of sequestration. More coverage of opportunities for the management of other GHGs would have been useful, as would increased emphasis on some of the other 'unquestioned answers' in this complex area.

Keith Dawson