how to describe and understand the complex processes involved in soil erosion and deposition. It also points out some failures in the past promotion of specific soil conservation practices, and highlights the importance of stakeholder participation in developing and disseminating more effective production practices that not only conserve the soil and water resources but also produce benefits to farmers.

R. Howeler
CIAT Regional Office for Asia
Department of Agriculture, Chatuchak, Bangkok 10900
Thailand
E-mail address: ciat-bangkok@cgiar.org

Agrobiodiversity: Characterization, Utilization and Management

From the outset of this comprehensive book, a strong case is made for including agricultural biodiversity more convincingly in the international biodiversity debate. The schism between agriculturalists and environmentalists is explored, and the need to move toward the ‘middle ground’ where increased food production and the protection of the environment are jointly pursued is promoted. The main purpose of the book is described as the need to promote a more rational, technically sound and functional view of agrobiodiversity. Three major themes are covered: (1) the current status of the concept and usage of the word agrobiodiversity and its relation to biodiversity; (2) a review of the nature, role and function of various components of agrobiodiversity, how they impact on agricultural production, and how agrobiodiversity can best be managed for sustained food production; and (3) whether the extensive knowledge of the management of agrobiodiversity can provide models and practices for the wider management and conservation of biodiversity.

The breadth of coverage of this book is vast and includes crops and domesticated animals (and a history of the domestication of each), soils, pathogens, insects, agricultural landscapes, traditional management of agrobiodiversity, plus the implications for genetic diversity of plant breeding, pest management strategies, alternative tillage systems and seed management systems.

Chapter 8, which covers the determinants of agrobiodiversity in agricultural landscapes, gives two interesting examples of very different agroecosystems that are rich in species and shows how intensification does not necessarily adversely affect the level of biodiversity. However, the authors make it clear that it takes a very long time for ecological communities to adjust to environmental change; thus it is the speed of recent and sometimes widespread land-use changes that makes intensification a threat to biodiversity in many areas. The following chapter on traditional
management of agrobiodiversity highlights the contributions traditional farmers in many parts of the world are making towards maintaining, managing and improving biodiversity. Several examples of systems that are evolving with a mix of modern and traditional varieties are given (maize, cassava and potato). Given increasing costs of labour and market forces that lead towards specialization, there will be a continued decline in traditional management strategies that maintain numerous traditional crops and animals, unless there is a conducive policy environment that supports farmer management of biodiversity.

Useful information for policy makers concerning some of these policies, particularly government regulations of inputs trade and use, is provided in Chapter 16. Suggestions of policies or regulations that more effectively promote or protect agrobiodiversity include taxing pesticides, banning broad spectrum poisons (coupled with the promotion of alternatives such as integrated pest management), adoption of voluntary variety registration, and refocusing of phytosanitary import controls on realistic pest and disease threats.

The issues surrounding the various aspects of conservation of agrobiodiversity are covered, and a framework for valuing on-farm crop genetic resources is described. This framework is aimed at helping to identify targets for ex situ versus in situ conservation, and assisting in the development of policy recommendations to support on-farm conservation. For example, participatory plant breeding is described as a way of providing incentives for farmers to maintain crop populations that are identified as key genetic resources.

In the concluding chapters, the relationship between agrobiodiversity and the ongoing debate over diversity, stability and ecosystem functioning is tackled. Some suggestions are made as to ways of optimizing agrobiodiversity for productive agricultural development. A convincing argument is made for increasing investment in agricultural research and development, especially in the areas of enhanced genetic resistance of animals and plants to pests and diseases, integrated pest management, transgenic crops (I would add livestock as well), and technologies, policies and management strategies that lead toward more stable, less risk-prone agriculture and specialization and intensification on high quality land (to reduce pressure on lower quality or fragile lands).

This book is appropriate for agricultural development specialists, researchers, teachers, and policy makers interested in food production and biodiversity issues, whatever their disciplinary background. Perhaps, given the focus on natural systems that many ecologists lean towards, this book offers particularly valuable information for them. It contains a wealth of literature for many of the wide range of issues covered. It is a timely addition to the biodiversity literature which, as the editors aptly point out, tends to give short shrift to the important role of agriculture in maintaining global biodiversity.

P. Kristjanson
International Livestock Research Institute (ILRI)
PO Box 30709, Nairobi, Kenya
E-mail address: p.kristjanson@cgiar.org

0308-521X/00/$ - see front matter © 2000 Published by Elsevier Science Ltd. All rights reserved.
PII: S0308-521X(00)00017-2