

## BOOK REVIEWS

*Agroecology: Ecological Processes in Sustainable Agriculture.* Second edition. By S. R. Gliessman. Boca Raton, FL, USA: Lewis Publishers (CRC Press) (2007), pp. 408, £29.99. ISBN 0-8493-2845-4. doi:10.1017/S0014479707005364

Agricultural systems, or agro-ecosystems, are amended ecosystems. Modern agricultural systems have amended some of their properties to increase productivity. Sustainable agro-ecosystems, by contrast, have to seek to shift some of these properties towards natural systems without significantly trading off productivity. Modern agro-ecosystems have tended towards high through-flow systems, with energy supplied by fossil fuels directed out of the system (either deliberately for harvests or accidentally through side-effects). For a transition towards sustainability, renewable sources of energy need to be maximized, and some energy flows directed to fuel essential internal trophic interactions (e.g. to soil organic matter or to weeds for arable birds) so as to maintain other ecosystem functions.

But converting an agro-ecosystem to a more sustainable design is complex, and generally requires a landscape or bioregional approach to restoration or management. An agro-ecosystem is a bounded system designed to produce food and fibre, yet it is also part of a wider landscape at which scale a number of key ecosystem functions are important. For sustainability, interactions need to be developed between agro-ecosystems and whole landscapes of other farms and non-farmed or wild habitats (e.g. wetlands, woods, riverine habitats), as well as social systems of food procurement. This is a classic text book of some 350 illustrated pages from Stephen Gleissman and his agroecology team at University of California Santa Cruz. It is clear, insightful, well illustrated and referenced, and the 21 chapters contain many useful case studies. It deserves to be in every library, and is a pleasure to read.

Jules Pretty OBE

*Field and Laboratory Investigations in Agroecology.* By S. R. Gliessman. Boca Raton, FL, USA: Lewis Publishers (CRC Press) (2007), pp. 320, £19.99 (paperback). ISBN 0-8493-2846-2. doi:10.1017/S0014479707005376

This excellent book accompanies Stephen Gleissman's *Agroecology* textbook. Its purpose is to give students opportunities to gain direct experience with the concepts that make up agroecology, its application, and its principles of design and management. Agroecology crosses disciplinary boundaries, and the 24 investigations in this manual teach a range of ecological and agronomic concepts and practices. The five sections of the book parallel those sections in the *Agroecology* textbook: environmental factors, population dynamics in crop systems, interspecific interactions in cropping communities, studies of farm and field systems, and food system studies. Examples of investigations include those on microclimate and seed germination; soil moisture content; canopy litterfall; root systems responses to soil type; management history and weed seedbanks; census of soil surface fauna; bioassays for allelopathic potential; *Rhizobium* nodulation in legumes; herbivore feeding preferences; effects of weedy borders on insect populations; trees in agro-ecosystems; on farm energy use; and local food market analysis.

The investigations are written for both students and instructors. Students could use them as a source of step-by-step planning and implementation of research projects, data analysis and report writing. Instructors should find them useful for planning, preparation and supervision. There are helpful specific appendices for instructors, with a range of datasheets ready to copy and use. This is a valuable manual, and vital for all concerned with learning and teaching in agricultural courses. It deserves to be widely used.

Jules Pretty OBE