will fail to learn something about at least one of the hugely wide range of issues discussed. Within the sphere of ecologists and evolutionary biologists, I would certainly recommend these books as extracurricular reading for undergraduates and, probably, postgraduates. Note, however, that I did not believe quite all of the authors' stories; but then I do not expect that they would want me to – that would be far too dull, and anyway, science demands skepticism.

Finally, a twist that only the wizards' computer realizes is that the Roundworld universe contains, somewhere within its vastness, Discworld itself, turtle, The Project and all. This impossible mutualism captures both the importance of self-referentiality [1] and the unusual juxtaposition of science and fiction that Messrs. Pratchett, Stewart and Cohen so competently achieve.

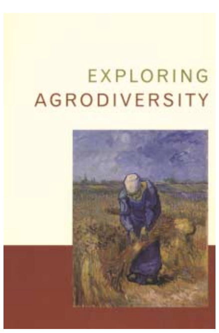
Ian C.W. Hardy
School of Biosciences, University of Nottingham, UK LE12 5RD.
e-mail: ian.hardy@nottingham.ac.uk

Reference

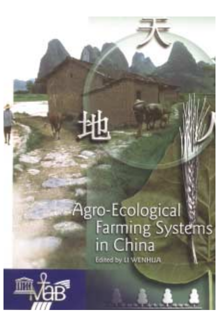
1 Hardy, I.C.W. (2002) A play on worlds. *Trends Ecol. Evol.* 17, 489–490

Published online: 29 July 2002

Incorporating ecology into agriculture



Exploring Agrodiversity
by Harold Brookfield.
Columbia University Press, 2001.
US$75.00 hbk, US$35.00 pbk.
(370/348 pages)
ISBN 0 231 10232 1/ 0 231 10233 X



Agroecological Farming Systems in China
edited by Wenhau Li.
Parthenon Publishing, 2001.
US$104.95, hbk.
(433 pages)
ISBN1 85070 631 X

Growing concerns about the impacts of habitat fragmentation and land conversion on biological diversity, and how these might be alleviated through landscape-scale considerations, have heightened interest in the impacts of agricultural management on ecosystem processes. Thus, the market for books that consider how to incorporate diversity into agricultural management, and how to exploit ecosystem services that would otherwise be derived from chemical inputs, is growing. Unfortunately, both these books fall short of providing support for the arguments (or convictions) of ecologists that there is value to incorporating diversity into managed systems.

Exploring Agrodiversity is primarily an account of the history and diversity of farming systems, and there is little consideration or discussion of ecological processes. The book relies heavily on case studies from research done by Harold Brookfield (the author) and his students, and focuses mainly on the cultural and social drivers of changing agricultural practices in developing countries in southeast Asia, Africa and South America. These case studies highlight different components of what Brookfield classifies as the four main elements of agrodiversity: agrobiodiversity, management diversity, biophysical diversity and organizational diversity. Although the case studies do a good job of fostering an appreciation for the diversity and complexity of indigenous farming methods and local knowledge, there is little consideration of (and no data provided for) the ecological and/or biological processes that are affected by these changes in management. What is provided is elementary and overly simplistic. For example, the chapter on soil processes and soil–plant dynamics includes a definition of pH, a list of plant macronutrients and their function, and a very brief description of nutrient cycles presented at a level that might be covered in a freshman-level biology course.

One theme that is well developed by Brookfield is the relative resiliency of these farming systems to external and/or international stimuli and the error of considering indigenous farmers as 'enemies of the ecosystem'. Brookfield gives substantial treatment to the rise and consequence of 'the green revolution' and the implications, myths and facts about biotechnology, and how these are shaping farming systems in the developing and developed world. However, the level of discussion is more appropriate for a lay audience, or perhaps for an undergraduate seminar on cultural and ecological issues in developing sustainable agricultural systems, than for students of ecology or agriculture.

By contrast, *Agroecological Farming Systems in China* is targeted at a more technical audience, because it contains considerable detail (and data) on a broad range of cropping systems. The book is a contribution of the 'Man in the Biosphere Series' and all of the listed contributing authors are Chinese. However, the authors of specific chapters are not given, so it is unclear what each individual contributed. A valuable feature of *Agroecological Farming Systems in China* is that it summarizes a wealth of information on integrated farming systems that was previously published only in Chinese journals and so is largely unavailable to Western scientists. The book is well written and organized and the introductory chapters provide a thoughtful discussion of the challenges faced by Chinese scientists in meeting the needs of a large and growing population from a small and diminishing base of natural resources. China is currently home to ~20% of the world's population (1.3 billion people) and has <7% of the world's arable land, an average of <0.1 ha per person. Producing sufficient food to feed a growing population under any form of agricultural management is an incredible challenge, but one that is not new to Chinese agronomists and farmers.

The historical review of agricultural systems in China from the Stone Age to modern times is a particularly intriguing part of the book. Unfortunately, most of the book (over 75% of the chapters) focuses on the 'achievements of agriculture in China' and is largely a compendium of success stories. A wide range of farming systems is described, including intercropping, polyculture (including aquaculture and silviculture), and multi-use systems involving a variety of animals. Remarkably, all of these systems have 'significantly increased production'. Although there is no *a priori* reason to doubt the veracity of these examples, it seems a little incredulous that there are no low-yielding combinations (or failures) in these systems. Also, although ecological principles are included in these integrated farming systems, many (if not all) of them rely heavily on inorganic inputs. In the introductory chapter, the authors report that Chinese agriculture relies heavily on chemical inputs (inorganic nitrogen fertilizer application averages 293 kg ha^{-1}) and this creates pollution and environmental quality problems that are not easily addressed. Sustainable agricultural development is a complex issue in China because of the major challenges of meeting the demands for food security, increasing both the quantity and quality of food produced, and enhancing environmental quality. It is not likely that these challenges can be met only by incorporating ecological and economic principles into traditional farming systems. Although the authors' goals are lofty, their acknowledgement that 'Food security for the poor must be ensured before the promotion of ecological security' makes it clear that the global consequences of high input agricultural systems in China (and elsewhere) will not be ameliorated without a coordinated international effort. The book should be required reading for anyone interested in global processes and issues, because it makes clear the challenges that need to be addressed. Unfortunately, neither this book, nor that by Brookfield, provide any guidance as to the solutions.

Although we would not include either of these books in our personal libraries, both would be valuable resources to have in our departmental library. They both provide interesting perspectives on the challenges to developing sustainable agricultural systems in the developing world and meeting the conflicting demands of producing secure and diverse foodstuffs and improving environmental quality.

Katherine L. Gross
Richard G. Smith
W.K. Kellogg Biological Station and Dept of Plant Biology, Michigan State University, Hickory Corners, MI 49060, USA.
e-mail: kgross@kbs.msu.edu

Published online: 29 July 2002

Corrigendum

In the article 'Evolution of wind pollination in angiosperms' (T.M. Culley, S.G. Weller and A.K. Sakai, *Trends Ecol. Evol.* 17, 361–369), several taxa were coded incorrectly in Fig. 3, which should have appeared as follows:

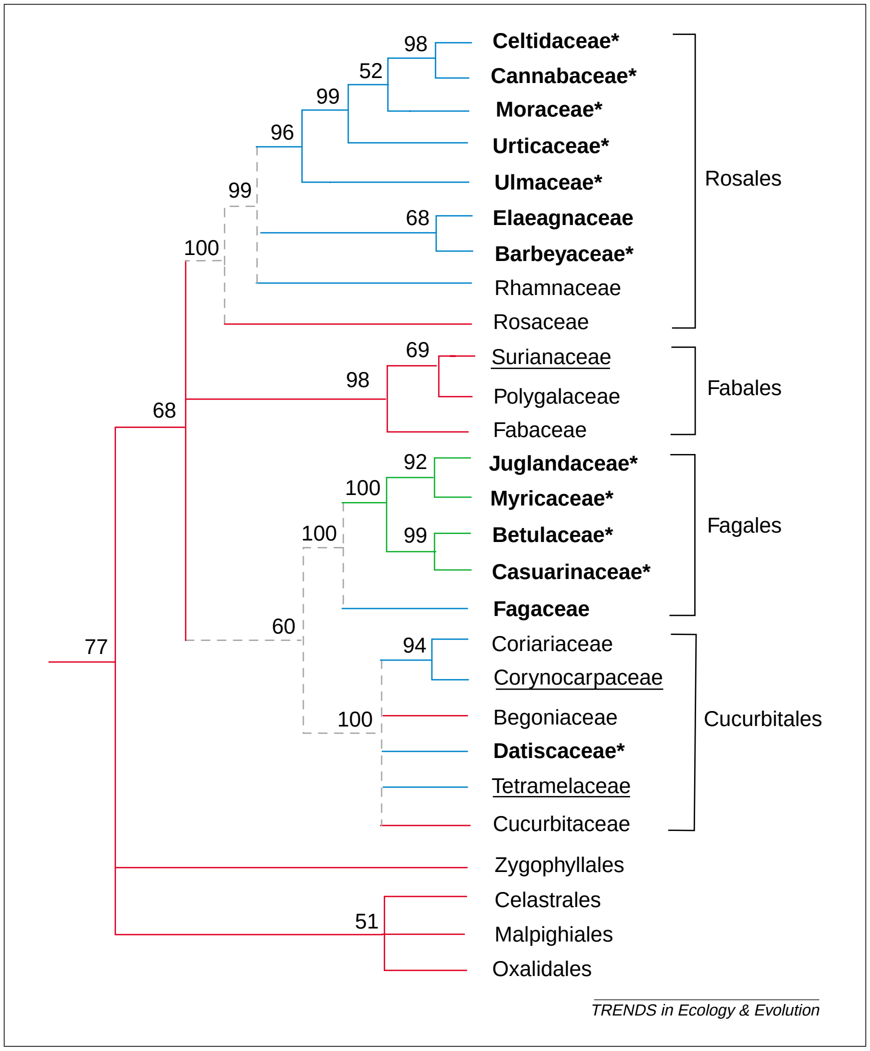


Fig. 3. Perianth condition mapped onto a cladogram of the nitrogen-fixing clade of the lower rosids, following the method of Linder [19]. Pollination mode (wind or biotic pollination) and perianth condition (absent, green; reduced, blue; well developed, red; equivocal, gray dashed) represent general characterizations of each family and were obtained from Judd *et al.* [53] and Linder [19]. Numbers above branches indicate bootstrap values. Families that are predominantly wind pollinated are designated in bold with an asterisk and those with an uncertain pollination mode are underlined. The Fagaceae [11] and the Elaeagnaceae are characterized by both wind and biotic pollination (shown in bold without an asterisk). Families designated in normal type are biotically pollinated. Outgroups are orders comprising mainly biotically pollinated families with well developed perianths, with the exception of a few families in the Malpighiales (e.g. the Salicaceae and Euphorbiaceae). Wind pollination occurs primarily in families with reduced or absent perianths, whereas families with well-developed perianths are primarily biotically pollinated. Figure adapted, with permission, from [73].

We apologize to the readers for these errors.

PII: S0169-5347(02)02589-2