

Managing Agrodiversity the Traditional Way

Lessons from
West Africa in
Sustainable Use
of Biodiversity
and Related
Natural Resources

Edited by
Edwin A. Gyasi,
Gordana Kranjac-Berisavljevic,
Essie T. Blay,
and William Oduro

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Methodological approaches to the book

Edwin A. Gyasi

Agrodiversity defined

Through case studies in West Africa (principally Ghana; Maps A and B) and drawing from nearly 10 years of research experience of the United Nations University project on People, Land Management, and Environmental Change (UNU/PLEC), this book demonstrates the importance of traditional, indigenous, or local farmer knowledge and practices in sustainable conservation of biodiversity and related natural resources by agrodiversity.

Agrodiversity refers to the processes and products of agricultural diversification. In more elaborate terms, it is “the many ways in which farmers use the natural diversity of the environment for production, including not only their choice of crops but also their management of land, water and biota as a whole” (Brookfield and Padoch, 1994: 9). It comprises four principal elements, namely:

- management diversity, which refers to the various methods of managing the land and associated biophysical resources for agricultural purposes
- agrobiodiversity, which describes the “management and direct use of biological species, including all crops, semi-domesticates and wild species” (Huijun, Zhiling, and Brookfield, 1996: 15)
- biophysical diversity, which refers to the various soil characteristics and their productivity, and the biodiversity of natural (or spontaneous) plant life and the soil biota

- organizational diversity, which describes the diverse socio-economic aspects of farming such as tenurial arrangements, household characteristics, and gender roles (Brookfield, Stocking, and Brookfield, 1999; see also Brookfield 2001; Brookfield *et al.*, 2002).

In varying degrees, the case studies that form the core of the book illustrate all four elements of agrodiversity.

It is believed that agrodiversity has the virtue of:

- strengthening biodiversity
- imparting ecological stability
- providing a genetic pool of plants and animals needed for breeding higher-yielding varieties for food security
- facilitating dietary diversity
- contributing to “(1) increased resource productivity over time, (2) increase in the amount and quality of labour applied to the farm, and (3) insurance and risk reduction at household enterprise level” (Netting and Stone, 1996: 53; see also the other articles in *Africa*, Vol. 66, and Brush, 2000).

Historical context

The mainly econcentric case studies of the book (Jones and Hollier, 1997) are rooted in the pilot West African PLEC (WAPLEC) work, which was initiated in the year 1993, with a focus on understanding agro-environmental changes and farmers’ role in and reactions to them.

That initial, basically investigative work involved studies in three principal sites, centred on Yensiso (subsequently renamed Gyamfiase-Adenya), Sekesua (subsequently renamed Sekesua-Osonson), and Amanase (renamed Amanase-Whanabenya), all located in the southern sector of Ghana’s forest-savanna transition zone (Maps B, C, D, E). The principal outputs of those studies, carried out by scientists from the University of Ghana, Legon, were:

- the development of research links with farmers and increased insights into agro-ecological transformations, which served as a basis for further work
- the scientific paper “Production pressure and environmental change in the forest-savanna of southern Ghana” (Gyasi *et al.*, 1995)
- the book *Environment, Biodiversity and Agricultural Change in West Africa: Perspectives from Ghana* (Gyasi and Uitto, 1997).

Subsequently, the work was extended to additional sites in Ghana’s remaining major agro-ecological zones, namely humid forest and dry savanna, and in wooded savanna portions of the Fouta Djallon mountains of the Republic of Guinea (Maps A, B, C, D, E). The extension was facilitated by:

- integration of more scientists from the University of Ghana, and of additional ones from the Kwame Nkrumah University of Science and Technology

(KNUST) and University for Development Studies (UDS), both in Ghana, and the Université de Conakry in the Republic of Guinea

- increased collaboration with farmers.
- From about 1997, the focus shifted to:
- identification of those aspects of farmer resource usage that appear to favour agrodiversity
 - demonstration and improvement of sustainable agrodiversity management practices as a way of meeting simultaneously the triple objectives of conserving biodiversity, strengthening food security, and enhancing rural livelihoods.

Methodology

The ensuing case studies mainly contain the findings of the post-1997 PLEC research. In carrying out that work and the maiden work that preceded it, participatory procedures were commonly followed by the research scientists.

The participatory procedures involved learning farmer practices and their underpinning knowledge by close collaborative work between the multidisciplinary teams of scientists and the farmers through:

- group discussions
- farm visits
- joint on-farm experiments and other forms of cooperative ventures within the selected project focal sites (Map B).

These activities were facilitated by collaboration with governmental and non-governmental agencies, and by farmer associations in which, as discussed in Chapter 5, expert farmers played a central role, especially as sources of local knowledge and as mediators with other farmers. Overall, the farmer associations were composed of a mix of males and females numbering more than 1,300 people.

In the work with the farmers (PLEC members as well as non-PLEC members), special emphasis was placed upon understanding how, on the basis of traditional knowledge, farmers manage agrodiversity. Because traditional knowledge reflects local conditions including popular values, it can be assumed to offer a sounder basis for developing more locally adaptive resource management models in line with the grassroots, bottom-up development paradigm. Seen in this vein, traditional or indigenous knowledge may be said to be “complementary to conventional science” (Brokensha, Warren, and Werner, 1980: 8; see also Richards, 1985; Chambers, Pacey, and Thrupp, 1989; Benedict and Christofferson, 1996; Chambers, 1998; Mammo, 1999; Van den Breemer, Drijver, and Venema, 1995; Haverkort, van’t Hooft, and Hiemstra, 2003).

All the three principal teams of PLEC research scientists based, respectively at the University of Ghana, Kwame Nkrumah University of Science and Technology, and the University for Development Studies equally followed the multidisciplinary

approach. It involved discussions with farmers, biodiversity assessment (Zarin, Huijun, and Enu-Kwesi, 1999), computer programming of information generated, and the discharge of other work aspects on a joint basis by the teams of scientists and other experts drawn from a diversity of specializations – botany, soils science, crop science, other biophysical sciences, agricultural economics, geography, and other social sciences. But the team approach was pursued without sacrificing individual disciplinary perspectives, particularly with regard to the interpretation of the information generated through the multidisciplinary teamwork.

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Drawing on findings of nearly ten years of United Nations University Project on *People, Land Management and Environmental Change* (UNU/PLEC) multidisciplinary, participatory research work in West Africa (mainly Ghana), this book shows how, traditionally, farmers cultivate and conserve biodiversity while, at the same time, using the land for food production. It highlights PLEC interventions for sustaining agrodiversity for rural livelihoods, as it does lessons for teaching, policy and development planning.

The book would appeal to policy makers and practitioners, and to university students and teachers, including those of agriculture, social science, biological science and others relating to environmental or natural resources management and sustainable development.

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