

BIODIVERSITY AND ORGANIC AGRICULTURE

AN EXAMPLE OF SUSTAINABLE USE OF BIODIVERSITY

Organic agriculture is a holistic production management system that promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems.

(Codex Alimentarius Commission, 1999)

BIODIVERSITY FROM ORGANIC AGRICULTURE

Organic farmers are both custodians and users of biodiversity at all levels:

GENE level: endemic and locally adapted seeds and breeds are preferred for their greater resistance to diseases and resilience to climatic stress;

SPECIES level: diverse combinations of plants and animals optimize nutrient and energy cycling for agricultural production;

ECOSYSTEM level: the maintenance of natural areas within and around organic fields and the absence of chemical inputs create habitats suitable for wildlife. Reliance on natural pest control methods maintains species diversity and avoids the emergence of pests resistant to chemical controls.

BIODIVERSITY FOR ORGANIC AGRICULTURE

Organic agriculture manages locally available resources to optimize competition for food and space between different plant and animal species. The manipulation of the temporal and spatial distribution of biodiversity is the main productive “input” of organic farmers. By refraining from using mineral fertilizers, synthetic pesticides, pharmaceuticals and genetically-modified seeds and breeds, biodiversity is relied upon to maintain soil fertility and to prevent pests and diseases.



© FAO/17387/K.Dunn



© B.Gaier

© FAO/19542/A.Brack



© N.Scalabba



© N.Scalabba



© N.Scalabba



© FAO/19364/R.Jones

ORGANIC AGRICULTURE AND SOIL ECOSYSTEMS

Organic practices such as crop rotations and associations, cover crops, organic fertilizers and minimum tillage increase the density and richness of indigenous invertebrates, specialized endangered soil species, beneficial arthropods, earthworms, symbionts and microbes.¹ Such soil biodiversity enhances soil forming and conditioning, recycles nutrients, stabilizes soils against erosion and floods, detoxifies ecosystems and contributes to the carbon sequestration potential of soils.



ORGANIC AGRICULTURE AND AGRO-ECOSYSTEMS

Rotation of crops in organic systems functions as a tool for pest management and soil fertility. This, together with inter-cropping, integrated crop-tree-animal systems, the use of traditional and underutilized food and fodder species and the creation of habitats attracts pest enemies and pollinators and decreases the risk of crop failure across the agro-ecosystem. Agricultural biodiversity is conserved and developed through the regeneration of locally adapted landraces and the improvement of genotypes of many plant varieties and animal races near extinction.²



ORGANIC AGRICULTURE AND NATURE CONSERVATION

The maintenance of vegetation adjacent to crops and plant corridors are common in organic systems, providing alternative food and refuge for many insect predators, wild flora, birds and other wildlife. The absence of pesticide drifts and herbicides and on-farm integration of natural habitats (e.g. productive perennial plants, hedgerows) and other structures (e.g. stepping stones and corridors for migrating species) attract new or re-colonizing species to the area. Ultimately, the diversity of landscape and wildlife attracts people in the form of ecotourism, providing an important source of off-farm income.³

FOOD PRODUCTION, INCOME GENERATION AND BIODIVERSITY IN HARMONY

IUCN recognizes the potential of organic agriculture in several protected areas categories. In several national and regional protected areas and their buffer zones (e.g. Meso-American Biological Corridor), organic agriculture is encouraged in support of the objectives of the Convention on Biological Diversity. Organic standards and certification schemes of some European countries incorporate plans for the management of biodiversity on organic farms (e.g. Sweden, UK) or reward biodiversity growth on farms (e.g. Germany, Italy).

¹ FiBL. 2000. Organic farming enhances soil fertility and biodiversity. Results from a 21-year-old field trial. Research Institute of Organic Farming (FiBL), Frick, Switzerland, Dossier no. 1, August 2000.

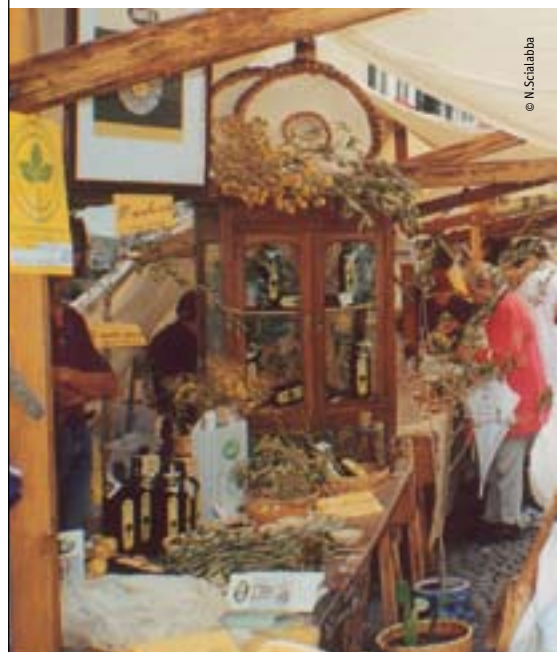
² IFOAM. 2000. The Relationship between Nature Conservation, Biodiversity and Organic Agriculture. Proceedings of an international workshop held in Vignola, Italy, by IUCN, IFOAM, WWF and AIAB. S. Stolton, B. Geier and J.A. McNeely (eds).

³ McNeely, J.A., & Scherr, S.J. 2001. Common Ground, Common Future. How Eco-agriculture can help feed the world and save wild biodiversity. IUCN and Future Harvest, May 2001.



WORK IN PROGRESS

Organic farmers are pioneering practical solutions for the sustainable use of biodiversity. However, extensive research is needed to understand better – and acknowledge – the complex relationships between biodiversity and agriculture. Public policies and investments can unlock this potential.



Learn more:
www.fao.org/organicag

Further information about the work of
FAO on biodiversity is available at:
www.fao.org/biodiversity



A G R I C U L T U R E
F O R B I O D I V E R S I T Y F O R
A G R I C U L T U R E