Organic Agriculture and Biodiversity: Making the Links

Until recently, efforts to conserve biodiversity have focused almost exclusively on natural ecosystems. Initiatives have relied upon the establishment of protected areas, which in total represent less than ten percent of the earth's land surface. In contrast, approximately 37 percent of the land is currently being utilized for agricultural production. Given the magnitude of agricultural land use patterns, there is increasing recognition that many species interact with agricultural systems, even if their primary habitats occur in natural areas. Moreover, large proportions of the total species in a region are likely to be found in agriculture systems. The management of these systems can, thus, dramatically affect overall levels of biodiversity, as well as the success of particular species. Unfortunately, in the last century much of agricultural land management has been detrimental to biodiversity, with farming now the cause of more losses to biodiversity than gains.

Through its holistic nature, organic farming integrates wild biodiversity, agro-biodiversity and soil conservation, and takes low-intensity, extensive farming one step further by eliminating the use of chemical fertilizers and pesticides.

This is not only an improvement for human health, but also for the fauna and flora associated with the farm and farm environment.

Organic agriculture has a tremendous potential for enhancing biodiversity both above and below the ground. It is important that action is taken now to ensure that biodiversity conservation objectives are imbedded in the standards for organic certification, which will require the involvement of governments and intergovernmental agencies, changes in the way agricultural industries operate and greater cooperation between environmental organizations and those involved in organic agriculture.

To raise the profile of organic farming within the conservation movement, the International Federation of Organic Agriculture Movements (IFOAM) has been working with IUCN The World Conservation Union since 1996 (since 1999 also with BfN), through resolutions to IUCN's World Conservation Congress, workshops and publications (see www.ifoam.org for details). Such cooperation is crucial for promoting the role of organic farming for biological and landscape diversity to a wider audience.

"Deserted" 800 hectare field in Russia

Organic farm in southern Brazil

What is Organic Agriculture?

Organic agriculture, as defined by IFOAM, includes all agricultural systems that promote environmentally, socially and economically sound production of food and fibers. Recycling nutrients and strengthening natural processes helps to maintain soil fertility and ensure successful production. By respecting the natural capacity of plants, animals and the landscape, it aims to optimize quality in all aspects of agriculture and the environment. Organic agriculture dramatically reduces external inputs by refraining from the use of synthetic fertilizers and pesticides, genetically modified organisms and pharmaceuticals. Pests and diseases are controlled with naturally occurring means and substances according to both traditional as well as modern scientific knowledge, increasing both agricultural yields and disease resistance. Organic agriculture adheres to globally accepted principles, which are implemented within local socio-economic, climatic and cultural settings. As a logical consequence, IFOAM stresses and supports the development of self-supporting systems on local and regional levels.

More than 24 million hectares of land is certified for organic production worldwide, generally producing for a premium price market. The number of farms using organic techniques but are not certified is unknown, but is likely to be much greater than the amount of land under certified production. Generally, these farms are in developing countries producing primarily for home consumption or for local markets, where organic claims may be verified using alternative or less formal mechanisms.

How can Organic Farming contribute to Biodiversity Conservation?

Organic agriculture should always be committed to the conservation of biodiversity within agricultural systems, both from a philosophical perspective and from the practical viewpoint of maintaining productivity. To this end, the importance of biodiversity as part of a well-balanced organic system is enshrined within the operating standards that have been developed worldwide for organic farming (see next page). The influence of organic farming over the conservation of biodiversity can be considered in four main areas:

1. *Before establishing production*, through restrictions on the clearing of primary forests, wet lands or mangroves (aquaculture)

2. *In the production system*, through the consideration of:
   - genetic diversity – varieties and breeds
   - species diversity – the number of on-farm organisms and farm habitats for non-productive species
   - time or place – rotation, intercropping or companion grazing

3. *At the interface between the production system and the surrounding area*, with respect to:
   - environment protection
   - prevention of leaching amd erosion
   - border and buffer zones
   - feed or habitat for wild biodiversity

4. *In non-farming areas*, through the application of appropriate standards (such as those developed by the Marine and Forest Stewardship Councils) in areas that are not clearly related to the farming, i.e. area of forest or water habitats

Because organic farming is a system of agriculture that relies largely on locally available resources and is dependent upon maintaining ecological balances and developing biological processes to their optimum, in general, organic farms are likely to have higher biodiversity with greater crop rotation diversity, integration of livestock and number of cultivated crops. Higher levels of biodiversity can strengthen farming systems and practices; for instance, wild species can perform a variety of ecological services within organic systems, such as polli-nators and natural enemies of pests.

Integrated organic rice and duck farming in Japan

Growing Diversity

In Latin America, growing organic coffee and cacao under shade can have a major impact on biodiversity, as the cultivation technique resembles the natural structure of the forest. Research carried out by the Smithsonian Migratory Bird Centre in Colombia and Mexico identified over 90 per cent fewer bird species in sun-grown coffee plantations as opposed to shade-grown coffee. Shade-grown cultivation is recommended by organic standards as it fulfils requirements to enhance soil fertility, pest and disease control and expands crop production option. Shade-grown organic coffee and cacao are increasingly being promoted as conservation strategies in buffer zones of protected areas as part of wider landscape-scale conservation planning.

Alley cropping (mixed cultivation) in Rwanda

A review of the conservation status of European birds carried out by BirdLife International linked population declines of over a third of species to changes in land-use, with agricultural intensification being the most frequent threat. The decline of the skylark, a ground-breeding bird whose breeding success depends on the management of legume-grass crops, is a case in point. Several studies, including a comparative study of organic and conventional farms by British Trust for Ornithology, found significantly higher breeding densities of skylark on organic farms.

The greater abundance and frequency of invertebrate species on organic farms has a direct relation with the number and diversity of bird species – as does the availability of plant food sources. The reasons for higher arthropod diversity and abundance in the organic fields are mainly related to organic plant protection management, low input organic fertilisation, diversified crop rotations and more semi-natural habitats and field margins.

Agro-forestry systems can sustain high levels of biodiversity and generate multiple benefits. Examples of agro-forestry systems that embrace organic production include oranges produced in traditional Mayan tree gardens in Mexico and organic bananas in Costa Rica. In Paraguay and Brazil organic cultivation in and around biological reserves is helping save the Atlantic Forest, one of the world's most endangered forest systems. In India, shade trees are cultivated in organic tea plantations, creating habitat for endangered animals and in Europe, one third of chestnut woods in the Greek Parnon Mountains, an area of extraordinary biodiversity that has over 80 endemic plants and many rare species, are certified as organic.

International Policy

In the last twenty years, there has been a gradual move towards the creation of policies and mechanisms aimed at encouraging and exploiting the links between organic agriculture and biodiversity conservation, both at a governmental and non-governmental level. However, in general these initiatives still lack substance and detail.

Much of the impetus for these initiatives comes from the 1992 Convention on Biological Diversity (CBD). Originally, there was to be no discussion of agro-biodiversity within the Convention, however there was a call, in particular from developing countries, to incorporate agricultural issues into the Convention. As a result agro-biodiversity is to be addressed in the National Reports and National Biodiversity Strategies and Action Plans required by the CBD to ensure the integration of biodiversity issues into national legislation. However, agro-biodiversity remains a poorly understood concept by many of those countries committed to the CBD. In general, the focus of in-situ biodiversity conservation has not adequately addressed issues such as soil and wild biodiversity in the farming landscape.

European Policy

Since the mid-1980s, environmental concerns have become more prominent within European policy. The most notable is the implementation of targeted agri-environment measures at a national policy level. Within the EU, positive agri-environmental measures currently cover 20 per cent of the agricultural land. Organic agriculture has played a central role in the national agri-environment policy of many countries due to its positive environmental effects.

As access to a growing market opens up, organic agriculture across Europe is increasingly considered as an approach to ensure livelihoods of the rural community, particularly in EU Accession states where traditional low intensity systems may come under threat from increased competition and lower standards in the EU. In countries where organic agriculture is not yet recognised by national policy, governments are expressing an interest in developing organic production as a way of meeting world trade regulations whilst maintaining environmental and social objectives.

However, at this stage, organic agriculture and nature management tend to form alternative aspects of agri-environment schemes and government incentives for organic farming are not necessarily based on a multifunctional system. Organic agriculture and sustainable development should be linked within the policy arena so that organic farming guarantees an added value for conservation.

Organic grape vines with biodiverse groundcover

Biodiversity in Organic Standards

The IFOAM Basic Standards (translated into 21 languages!) are international standards set by the private sector to provide a framework within which regional, national, and international public and private certification and standard setting bodies develop their own standards. The Basic Standards are not used directly for certification. Instead, they act as guidelines to bring continuity to organic certification standards. Concepts for setting biodiversity standards for organic agriculture verifiable measures to increase the beneficial impact of organic agriculture on biodiversity are currently being evaluated.

In some countries such developments have already been made. In the UK, the Soil Association pioneered the development of specific conservation and environmental protection standards in the 1980's. In Sweden, organic farmers, nature conservationists, government agencies and universities have been working together since 1997 to strengthen the links between organic agriculture and biodiversity conservation, by:

- helping organic agriculture to enhance biodiversity;
- starting co-operation and dialogue between the nature conservation and organic agriculture movements; and
- spreading knowledge about biodiversity in organic agriculture.

The discussions led to changes to the country's main organic standard (run by KRAV), to require all organic farmers to have a plan for the management of biodiversity on their farms since 2001.

There are also several international and national standards relating to organic agriculture and biodiversity, including the USDA National Standards, EU Regulation and the WHO/FAO *Codex Alimentarius* Guidelines on organically produced foods. Although all these include reference to organic agriculture's role in biodiversity conservation in either their definition of organic agriculture or, in the case of the EU Regulation, in the preamble to the regulation, there are no specific biodiversity regulations in any of these standards.

The rapid growth of market demand for organic products also brings a challenge for organic farming. Large organic monocropping systems and fields could be a consequence, which has to be avoided. Biodiversity and conservation efforts should not be sacrificed for organic market expansion.

The new Common Agricultural Policy should be used to increase the support to organic farming and agri-environment programmes, using also modulation funds. At a national level new EU member state and accession country governments should bring sustainable agriculture systems within the scope of EU agri-environment regulations, whilst aiming to maintain higher restrictions where they are already in place. Across Europe, countries should further examine the possibilities for expanding or developing organic production systems as a method for safeguarding rural populations and traditional production systems and providing access to markets.

Action Plan For Supporting Organic Farming And Biodiversity Conservation

Conversion to organic production can be seen as a first step towards a modern system of agriculture that not only produces commodities but also increases biodiversity. Ensuring that the joint aims of organic agriculture and biodiversity conservation are met and expanded will require changes at many levels, from policy to education and training. Actions to help bring about this change include:

- Increased research into organic management regimes that influence biodiversity.
- Increased monitoring of biodiversity to develop understanding about the interactions between biodiversity and organic farming and subsequent development of policies that maximise benefits to biodiversity.
- Provision of compensatory mechanisms for loss of production caused by changes in farming practice to optimise biodiversity.
- Increased provision and funding for information dissemination, agricultural education, training and advisory services that help develop organic farming systems to meet biodiversity conservation goals.
- Development of the IFOAM Basic Standards to emphasise biodiversity conservation and landscape preservation practices, and promotion of these to standard setting bodies.

Opportunities for ensuring organic agriculture makes these changes include:

- Targeted policies developed to encourage the adoption of organic agriculture in areas of high conservation priority through integrated landscape planning (i.e. in areas with species-rich meadows, areas associated with high numbers of threatened species, wetlands, protected areas and buffer zones). This can help organic production to be incorporated into environmental processes such as the CBD, Ramsar Convention on Wetlands and the Convention to Combat Desertification.
- Using indigenous knowledge systems, which have often been excluded from data collection and policy analysis, but which offer experience of linking farming and conservation practices.
- Full cost accounting, that shows the real costs (including costs of environmental damage, social loss, etc) of all farming practices and thus highlight the hidden costs in intensive farming.
- The creation of a supportive policy environment for promoting agriculture methods that contribute to biodiversity conservation, including eliminating incentives for uniform varieties, GMOs and pesticides, and implementing policies for secure tenure and local rights to plant genetic resources.
- Continued and intensified dialogue between nature conservation organisations, and institutions and the organic movement, to enhance understanding of the goals of biodiversity conservation and organic agricultural systems.

Organic Growth

Globally, there are currently more than 24 million hectares of certified organic land. The countries with the largest areas of organic farm land are: Australia, Argentina, Italy, Canada and USA. Some countries have reached a substantial proportion (close or more than 10 per cent) of organic land such as Sweden, Austria, Switzerland, Finland and Italy. The value of the organic market is more than US$25 billion. Market shares for certified organic products are between 0.5-4 per cent in industrial countries with the highest market shares in Denmark, Austria, Switzerland, Germany and Sweden.

- The International Federation of Organic Agriculture Movements – IFOAM, is an international, grassroots-based federation, comprised of 730 organisations in 103 countries. IFOAM actively participates in international agricultural and environmental negotiations with the United Nations and multilateral institutions to further the interests of the organic agricultural movement worldwide. IFOAM is uniquely recognized for taking on this important role.
- IUCN – The World Conservation Union, founded in 1948, brings together States, government agencies and a diverse range of non-governmental organisations. IUCN has over 980 members in all, spread across some 140 countries. IUCN seeks to influence, encourage and assists societies throughout the world to conserve the integrity and diversity of nature to ensure that any use of natural resources is equitable and ecologically sustainable.
- The German Federal Agency for Nature Conservation - BfN is the central scientific agency for national and international nature conservation and landscape management in Germany. BfN advises the Federal Environmental Ministry and the Federal Government in these issues especially with regard to the Biodiversity Convention. BfN promotes models of cooperation between nature conservation and sustainable land use, supports research, programmes and major projects in nature conservation.

Further reading:

Organic Agriculture and Biodiversity, IFOAM Dossier #1 — www.ifoam.org/dossier/biodiversity.pdf

Biodiversity and Organic Agriculture, FAO — www.fao.org/organicag/doc/biodiv_OA.htm

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