

BIODIVERSITY AND AGRICULTURE

The CBD Programme of Work on Agricultural Biodiversity

Biodiversity and agriculture are interrelated. In recognition of this, the Conference of the Parties of the Convention on Biological Diversity established a Programme of Work (PoW) on Agricultural Biodiversity. The PoW recognizes the contributions of farmers and indigenous and local communities to the conservation and sustainable use of agricultural biodiversity as well as the importance of it to their livelihoods.

AGRICULTURAL BIODIVERSITY is a broad term that includes all components of biological diversity of relevance to food and agriculture. It also includes all components of biological diversity that support the ecosystems of which agriculture is a part (agro-ecosystems): the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agro-ecosystem, its structure and processes.

The PoW is structured to address the different dimensions of agricultural biodiversity and aims to promote:

- ▶ the positive effects and mitigate the negative impacts of agricultural practices on biodiversity in agro-ecosystems and their interface with other ecosystems;
- ▶ the conservation and sustainable use of genetic resources of value for food and agriculture; and
- ▶ the fair and equitable sharing of benefits arising out of the utilization of genetic resources.

The programme is based on four elements:

- ▶ assessing the status and trends of the world's agricultural biodiversity, their underlying causes, and knowledge of management practices;
- ▶ identifying adaptive management techniques, practices and policies;
- ▶ building capacity, increasing awareness and promoting responsible action; and
- ▶ mainstreaming national plans and strategies for the conservation and sustainable use of agricultural biodiversity.

These elements are intended to be mutually reinforcing—outputs of certain elements should feed into others. The linkages between and among elements are a reflection of the Ecosystem Approach—the primary framework for action under the Convention.

The 2008 review of the PoW on Agricultural Biodiversity concluded that the programme is relevant for achieving the objectives of the CBD, and to address emerging issues such as climate change. Furthermore, major progress has been achieved in consolidating intergovernmental agendas on agricultural biodiversity.

THE ECOSYSTEM APPROACH is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems. The ecosystem approach to agricultural biodiversity implies the need for an in-depth understanding of the interactions between social, economic and environmental factors.

However, agricultural practices continue to threaten biodiversity, through the conversion of natural habitats into agricultural areas, the focus on a limited number of ecosystem services (particularly the production of food, feed and fiber) at the expense of others, and through agricultural practices that negatively impact associated landscapes and the environment (mainly water and soil). This highlights the importance of strengthening the application of the ecosystem approach in the growing demand for food.



INTERNATIONAL INITIATIVES

Three international initiatives, centering on ecosystem services in decline or overused relevant to agriculture, have been adopted as cross-cutting initiatives within the PoW on Agricultural Biodiversity. They have gained momentum as key international players have begun implementing activities.

Mounting evidence from around the world reports serious declines in pollinators. As such the establishment of the International Initiative for the Conservation and Sustainable Use of Pollinators aims to:

- ▶ Monitor pollinator decline, its causes and its impact on pollination services;
- ▶ Address the lack of taxonomic information on pollinators;
- ▶ Assess the economic value of pollination and the economic impact of the decline of pollination services; and
- ▶ Promote the conservation, restoration and sustainable use of pollinator diversity in agriculture and related ecosystems.

The multiple roles of soil biodiversity for agriculture, such as soil moisture retention and nutrient recycling, reinforces its significance for food production; but detailed knowledge on the extent and functions of soil biodiversity is limited. The International Initiative for the Conservation and Sustainable Use of Soil Biodiversity encompasses several goals:

- ▶ Increase understanding of the role of soil biodiversity;
- ▶ Promote awareness-raising, knowledge and understanding of key roles;
- ▶ Promote the understanding of the impacts, ownership, and adaptation of all land use and soil management practices; and
- ▶ Promote the mainstreaming of soil biodiversity conservation into land and soil management practices.

It is essential for everyone that the foods they eat meet their nutritional needs. As such, the Cross-cutting Initiative on Biodiversity for Food and Nutrition, led by FAO and Bioversity International, aims to:

- ▶ Develop and document knowledge on the composition and consumption of food genetic resources as well as the relationship between biodiversity and nutrition;
- ▶ Integrate biodiversity, food and nutrition issues into research and policy instruments;
- ▶ Conserve and promote wider use of biodiversity for food and nutrition; and
- ▶ Increase public awareness.

Insecticides and Pollinators in North America

In Northeastern North America outbreaks of spruce budworm occur periodically as part of the natural maturation cycle of balsam fir. To reduce the threats of these outbreaks to forestry, insecticides were used. In New Brunswick, Canada, fenitrothion—a toxic compound for bees—was used, which significantly decreased yields of low bush blueberry despite good blooming. Once the agrochemical was banned, bee diversity and abundance began to increase.

Source: Eardley, C., D. Roth, J. Clarke, S. Buchmann and B. Gemmill, 2006. *Pollinators and pollination: A resource book for policy and practice*. African Pollinators Initiative (API).

Biodiversity for Nutrition

There is a lack of nutrient information for many food species. In five case studies by FAO and collaborators of indigenous peoples in rural areas of Asia, it was found that of 716 species of traditional food reported by the communities 93 still required original scientific identification and for approximately 147 species there was not even the most basic nutrient data on file.

Source: Kuhnlein, H. V., 2003, "Micronutrient nutrition and traditional food systems of indigenous peoples." In FAO, 2003. *Food, Nutrition and Agriculture*. FAO, Rome. <<http://www.fao.org/docrep/005/y8346m/y8346m05.htm>> (27 November 2007)