



BIODIVERSITY AND AGRO BIODIVERSITY

Protecting, utilising and preserving

Abstract

Biodiversity and agro biodiversity are of fundamental importance to sustainable food security. The multitudes of life in fields, meadows, forests, rivers and lakes, on the coasts and in the oceans are essential to human survival, whether directly utilised or not. Biodiversity and agro biodiversity are the basis of the ecosystem services which nature provides. The wide range of natural income sources, the contribution of ecosystems to the purification of air and water and the reservoir of medical substances are all examples of these services.

The destruction of natural habitats and the related loss of species of plants, animals and microorganisms is a cause for great concern. The variety of human food is reduced to a few species of plants and animals and the loss of diversity within the different species of crops and domestic animals limits our possibilities of reacting to food security challenges.

The preservation of the diversity of species and varieties must be integral to development policy agendas. Participative breeding and development of seeds which are appropriate for (small-scale) farmers play an important part in this task. The farmers' rights (to reproduce his/her own seeds from patented varieties), the breeder's right and the freedom of research (to use a patented variety to breed a new variety) must be reflected in the national seed laws in developing countries and in the relevant international agreements.

The production of food crops in developing countries rose between 1961 and 2001 from 800 million tonnes to 2.2 billion tonnes (FAO 2011). The green revolution in the 1960s, which brought the development of high-yielding crop varieties, investment in irrigation, increased use of agrochemicals and the promotion of mechanisation, made a significant contribution to this increase. However, these achievements came at a high price. Intensive agriculture has resulted in the degradation of

fertile areas in many places as well as overuse of ground water, increasing pest infestations, pollution of air, water and soil and not least to a reduction in (agro) biodiversity. Only two crop species (rice, wheat) provide 50 percent of human nutrition requirements worldwide. At the same time the genetic variety within each species is continually declining.

The genetic variety of species and varieties is particularly important in regions with a wide range of weather events. A large agricultural gene pool is vital in order to be able to adapt to the increasing environmental changes (e.g. more rainy seasons, irregular rainy seasons, periods of droughts and extreme precipitation or infestations of pests and disease). The diversity of species and varieties cultivated and robust domestic animals reduce the risk of losing an entire food base in bad years. Preserving agro biodiversity – including related knowledge on cultivation needs of species – is part of risk prevention and constitutes a decisive element in food security (cf. Section 14 on climate change). Commercial breeders concentrate their efforts on a few crop species and on a few high yielding genotypes within that spectrum. To use its potentials fully, these breeds need standardised cultivation conditions and the plants must receive optimum care, particularly in relation to water, fertiliser and pesticides. Additionally, economic constraints require the cultivation of large areas. This results in the expansion of an inappropriate type of industrialised agriculture which contributes to the impoverishment of the natural environment.

Linking commercial crop breeding to the (ex-situ) preservation of genetic resources through a state-financed gene bank is not an adequate solution for farmers in developing countries. Required is in-situ preservation and ongoing breeding of crops to enable continuous, location specific adaptation to changing environmental conditions. This refers not only to the main food crops but to traditional local crop species, medicinal plants and domestic animal breeds as well.

More than a billion small-scale farmers, fishermen and livestock owners can make a significant contribution to the conservation of biodiversity. They have already done this in two ways. On the

one hand, they have created a huge pool of genetic diversity over a period of 12,000 years which is an essential source for breeding new crops and animals. On the other hand they have decisively shaped their local environments and enriched the natural environment through a multitude of farming systems (e.g. various agricultural systems and crop sequences, terracing, selective use, cultivation of marginal lands, wetlands and forests).

So it seems obvious that those rural communities which actually use the genetic diversity of crops and locations should be the ones in charge of safeguarding, caring for and developing it in the future. Traditionally, women play an important part in the breeding of seed, maintenance of seed variety and experimentation with new varieties. Participative plant breeding, i.e. the direct cooperation of breeders and farmers, explicitly focuses on keeping a wide gene pool of seeds or seed mixtures used for cultivation. The cooperation of farmers with international research institutions and private seed companies would ensure sustainable access to adapted, high-quality seeds while the breeding results would remain in the farmers' hands and the necessary knowledge could be preserved and developed. Experience has shown that farmers often have extensive knowledge of ways to reduce cultivation risks efficiently (selection of species, varieties and cultivation methods). For this reason, farmers' rights to breed and cultivate their own seeds must be ensured, as well as free access for scientists to patented seed varieties for research.

Site-specific agriculture is usually environmentally friendly, but it must also provide social and economic security for well over one billion people. Yield losses resulting from public services to protect nature and safeguard biodiversity must therefore be compensated. Where this cannot be achieved through higher market prices for their produce, the costs for the protection of plants and animals must be borne by transfer payments from public funds.

Welthungerhilfe's involvement in preserving biodiversity:

Supporting projects for the sustainable management of areas on the periphery of wildlife parks and nature reserves. This includes measures to reduce poaching and illegal land use within the natural reserves. The aim is to create alternative income sources (e.g. tourism) to increase the local population's acceptance of preserving biological resources.

Supporting awareness-raising in relation to the importance of biodiversity and conservation of natural resources.

Supporting farmers' organisations and social movements which are involved in safeguarding agro biodiversity (plants and animals).

Promoting farming systems which are directed towards diversified production (e.g. local varieties, diverse livestock breeds and crop species, medicinal plants, perennial crops).

Promoting farmers' networks to exchange seeds and knowledge about breeding methods.

Supporting seed banks and seed production for safeguarding agro biodiversity as well as breeding of local livestock races and crop species.

Welthungerhilfe's demands in relation to the preserving of biodiversity in developing countries:

Preserving the diversity of species and varieties is a task for the whole of society. Nature reserves and public gene banks must be set up where necessary.

In order to preserve agro biodiversity, freedom of research, the farmers' rights and breeder's right must be ensured: These rights must be recognised in international agreements and in the laws in developing countries.

The protection and increase of the diversity of species and varieties should be on the agenda of development policy. Farmers' own breeding efforts play a significant role. The in-situ preservation of agro biodiversity must be recognised as breeders' service.

The development of farming skills such as livestock breeding, seed breeding, production, testing and marketing of seeds must be given greater prominence in projects.

The partnership between farmers and breeders and exchange of knowledge between farmers in different countries to develop successful adaptation and preservation strategies should be promoted.

Farmers must be compensated for their achievements in preserving biodiversity if this results in reduced yields.

Plant species, medicinal plants and livestock breeds which have been neglected must be promoted to increase their economic value.

This section is an excerpt of the WHH Position Paper Rural Development. Please also consult all other sections at www.welthungerhilfe.org/position-paper-rural-development

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Contacts:

Policy & External Relations
policy@welthungerhilfe.de

Sector Strategy, Knowledge & Learning Unit
sectorsupport@welthungerhilfe.de