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LIVESTOCK KEEPERS

Guardians of biodiversity

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Acknowledgements

At its Thirty-fourth Session, the FAO Conference recognized the important role of small-scale livestock keepers, particularly in developing countries, as custodians of most of the world's animal genetic resources for food and agriculture, in the use, development and conservation of livestock resources. The FAO Conference, therefore, requested the Commission on Genetic Resources for Food and Agriculture to address the issue.

This paper is based on a number of papers made available to the Commission on Genetic Resources for Food and Agriculture and its Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture and other published literature, as well as field observations. It was prepared by Ilse Köhler-Rollefson with contributions from Evelyn Mathias and Irene Hoffmann, with support from other officers of the FAO Animal Genetic Resources Group: Paul Boettcher, Beate Scherf and Dafydd Pilling.

Summary

The world's livestock diversity comprises more than 7600 documented mammalian and avian breeds as well as an unknown number of not yet documented breeds. These breeds are largely the result of breeding activities by livestock keepers who have developed them without use of herd books or formal breeding societies. By maintaining their animals under exposure to natural selection, pastoralists and smallholder farmers play a crucial role in the sustainable use of adaptation and fitness traits. Breed diversity is especially high in peripheral and remote areas, notably drylands. Many breeds in Africa and Asia are named after ethnic groups; among these, pastoralist societies play an especially prominent role as creators and guardians of breeds, although farming societies have also produced specific breeds.

ECONOMIC ROLE OF THE LIVESTOCK SECTOR AND SIGNIFICANCE OF LIVESTOCK FOR LIVELIHOODS

Globally, the livestock sector accounts for over 40 percent of agricultural gross domestic product and livestock products provide almost one-third of humanity's protein intake. The demand for livestock products is expanding due to growing populations and incomes, along with changing food preferences.

About 70 percent of the world's more than 1 billion rural poor people that live on less than US$1.25 per day are at least partially dependent on livestock for their livelihoods. In smallholder and pastoral systems, livestock fulfil many functions in addition to producing meat, milk and eggs, including the provision of fertilizer, fuel, draught power and transport, a means of saving and investment, a buffer against crop failure, and diverse cultural and religious roles.

SUSTAINABLE USE OF MARGINAL AREAS

Large, and possibly expanding, parts of the globe can be used for food production only by livestock that are adapted to local conditions. This includes the 41 percent of the earth's surface that consists of tropical and subtropical drylands, as well as mountainous and high-altitude zones and some very cold areas. Grazing animals convert the local vegetation in these ecozones into food that can sustain people. Pastoralists and smallholder farmers have developed an array of strategies for the sustainable use of these areas, including sophisticated herd movements and grazing strategies. Their livestock represent a means of extracting value from land that is not suitable for cropping, and generating food without competing for cereals. This not only contributes to food security in marginal areas but also provides products and services to wider society.

AGRO-ECOSYSTEM SERVICES

Traditional livestock production systems have endowed many landscapes with their typical characteristics. Examples of such landscapes include much of the Near East region, where sheep and goats were first domesticated about 10 000 years ago, and heathlands, calcareous grasslands, Mediterranean *maquis* and *garigue*, and sub-alpine dwarf shrubland in Europe.

Agro-ecosystem services provided by livestock keepers and their breeds include the creation of mosaic landscapes and mini-habitats that sustain biodiversity, connecting ecosystems by transporting seeds, improving the water-holding capacity of grassland, reducing the risk of forest fires, restoring and maintaining soil fertility through manure and nutrient cycling and mimicking the grazing activities of large wild herbivores.

CREATORS AND GUARDIANS OF BREEDS

Social and cultural factors, together with deliberate breeding decisions and management by livestock keeping communities, have been crucial to the creation of breeds. Livestock keepers structure animal genetic resources into breeds through social breeding mechanisms that create more or less closed gene pools. Indigenous knowledge about animal breeding and breeds includes the ability to identify individual animals within large herds, keeping mental records of animal pedigrees, traditional classification systems, and the maintenance of traditional breeding institutions, such as village breeding bulls. Breeding goals and objectives are culture- and location-specific and selection is conducted through the use of (temporary) mating control, castration and the removal of unwanted animals. Many livestock keepers also undertake breeding experiments on their own initiative.

MAINTAINING OPTION VALUES

One important role played by livestock keepers, especially pastoralists, is the preservation of option values: they keep animals that have traits that may currently be of no commercial interest but which may be of huge value in the future if environmental and economic conditions change. Such traits include "survival" characteristics, such as the ability to fend for themselves and the ability to cope with diseases. The traits can be maintained by keeping the animals in their natural environments where they are exposed to natural selection. Continuous exposure to the local conditions allows the breeds to retain the adaptive characteristics that enable them to cope with the local feed, the local climate and other features of the local environment such as stony or swampy ground or high altitudes. If removed from their areas of origin, breeds may over time lose the characteristics that have enabled them to survive in these environments. Livestock keepers also undertake conscious efforts to adapt their animals to new environments and changing conditions. When introducing preferred breeds into new ecological zones, pastoralists may cross-breed their animals with males from breeds local to these environments in order to enhance their offspring's adaptation to local conditions.

REASONS WHY LIVESTOCK KEEPERS ABANDON THEIR BREEDS

A variety of factors can cause livestock keepers to stop keeping their traditional breeds or to abandon livestock keeping. These include changing market demands (for instance lack of demand for wool), one-sided information and pressure to adopt improved breeds and standardized production and breeding systems, loss of grazing grounds and access to water, animal health regulations and changing lifestyles.

MOTIVATION AND INCENTIVES TO CONTINUE KEEPING BREEDS

Pastoralists and smallholder farmers continue to keep their breeds wherever traditional production systems survive and where they have secure access to grazing and water. Among some livestock-keeping cultures, there is also a sense of custodianship that motivates people to hang on to their animals despite the lack of economic returns. Access to appropriate animal health and extension services, as well as to markets, payment for agro-ecosystem services and favourable policies are further means to encourage and enable livestock keepers to continue raising their breeds. As the owners and keepers of valuable breeds, smallholder farmers and pastoralists should be included in decision-making about research, development and conservation measures affecting their breeds and production environments.