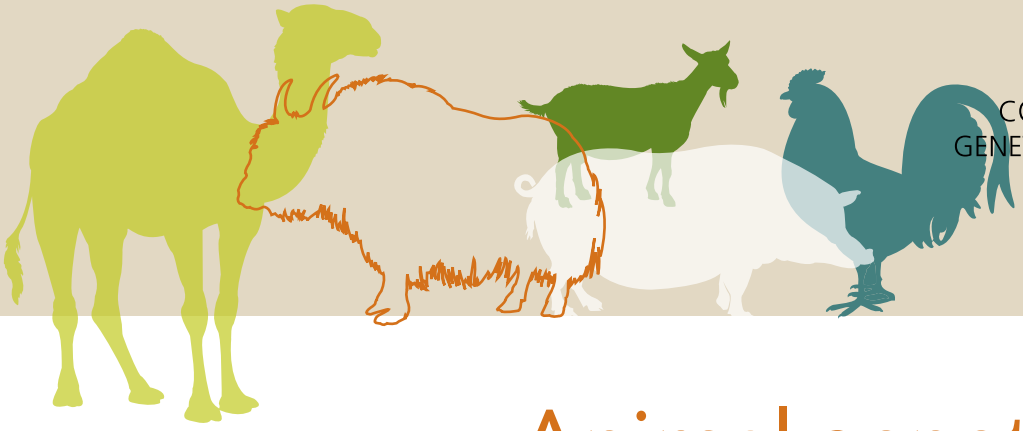


COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Animal genetic resources

A SAFETY NET FOR THE FUTURE

Livestock biodiversity is essential to food and livelihood security, particularly in the developing world. Livestock provide meat, milk, eggs, fibres, skins, manure for fertilizer and fuel, draught power for cultivation and transport, and a range of other products and services. Many of the world's rural poor – an estimated 70 percent – keep livestock and rely on them as important components of their livelihoods. Domesticated animals also contribute to the ecosystems in which they exist, providing services such as seed dispersal and nutrient cycling.

Genetic diversity underpins the many roles that livestock fulfil and allows people to keep livestock under a wide variety of environmental conditions. As a result, domestic animals survive in some of the most inhospitable areas on Earth – from Arctic tundras and high mountains to hot dry deserts – where crop production is difficult or impossible.

Livestock exposed to extreme climatic conditions develop adaptive characteristics that help them survive and produce where other animals would succumb. They adapt to local feed resources and develop resistance to diseases and parasites. Natural selection plays a role, but today's breeds with their unique combinations of genes would not have emerged without continuous active management and selection by farmers and pastoralists over the 12 000 years since the first livestock species were domesticated.

MAINTAINING THE LIVESTOCK GENE POOL

A challenging task

The cost of establishing and maintaining animal gene banks is high compared to those for crops. Preserving animal genetic material entails costly materials, equipment, trained staff and a constant power supply.

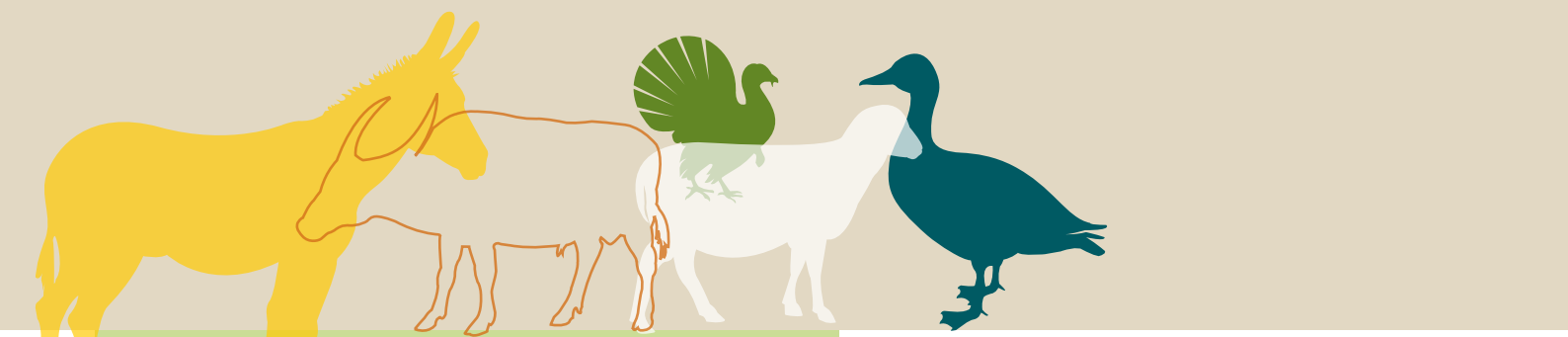
In reality, however, gene banks should primarily serve as a backup to maintaining the breeds in the production systems in which they were developed. The overall goal would be to foster the long-term sustainable use and development of livestock breeds – meeting the economic and social needs of livestock keepers and minimizing pressures on the environment and natural resources while retaining genetic options for the future. However, many constraints must be dealt with:

- knowledge is still lacking regarding the characteristics of many of the world's breeds, including their geographical distribution and population size;
- few countries have conservation programmes for their threatened breeds or even structured breeding programmes that could improve productivity and quality and keep breeds in use; and
- policies and laws affecting the livestock sector rarely pay attention to, let alone adequately support, the sustainable management of genetic resources; in fact, they sometimes discourage maintaining genetic diversity.

Without concerted action, the goal of achieving the conservation, sustainable use and development of animal genetic resources is unlikely to be met.

Genetic erosion: counting the loss

Despite their enormous potential contribution to sustainable development and to reducing hunger and poverty, animal genetic resources for food and agriculture are underutilized and underconserved. Of the 7 600 breeds reported to FAO by its Member Countries, more than 1 500 are at risk of extinction or are already extinct. During the first six years of this century, more than 60 breeds – almost one a month – disappeared forever, taking with them their unique genetic make-up. Losing these breeds is like losing a global insurance policy against future threats to food security. It undermines capacity to adapt livestock populations to environmental changes, emerging diseases or changing consumer demands.



Climate change, domestic animals, and emerging diseases

Scientists predict climate change scenarios that will have dramatic effects on livestock production:

- Heat stress caused by rising temperatures will impair reproduction.
- Water, feed and fodder availability will be affected by climate change as well as by increased demand for fuel crops, which will reduce the amount of land and water available for feed crops.
- Vectors that carry animal diseases will be able to expand their ranges to higher elevations and latitudes as temperatures rise, threatening many traditional breeds and leading to further genetic erosion.

Climate change pressures might favour the use of traditional breeds, which are generally more resistant or tolerant to diseases, and more resilient to temperature changes. New programmes for breeding and exchange of animal genetic resources with important traits will be required.

RECOGNIZING THE ROLES OF LIVESTOCK KEEPERS

At present, much of the world's animal genetic diversity is maintained by the farmers and herders of developing countries. The role of these livestock keepers in maintaining genetic diversity has been acknowledged by the international community, but much remains to be done to ensure that this acknowledgement is backed by concrete action. Animal breeding research rarely focuses on low external input production systems often found in the developing world. *In situ* conservation projects take place mostly in developed countries. Moreover, small-scale livestock keepers – pastoralists and smallholder farmers – are often marginalized from decision-making processes that affect their production systems, resulting in decisions and policies that pose a threat to their capacity to continue as custodians of livestock biodiversity.

Traditionally, livestock keepers willingly shared their animal genetic resources with their neighbours, and eventually among countries and regions, which contributed greatly to the breadth of breed diversity that exists today. However, as the livestock sector became more industrial, the stakes changed. Important issues, such as recognition of the work and rights of livestock keepers, protection of commercial investments in animal genetics and breeding, and intellectual property rights pose new challenges to sharing genetic resources.

THE COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

A Time for action

In 2007, FAO unveiled *The State of the World's Animal Genetic Resources for Food and Agriculture,* a first-ever, global assessment of the status and trends of animal genetic resources. This work serves as an authoritative reference from which to plan management projects.

The State of the World's Animal Genetic Resources for Food and Agriculture was initiated in the late-1990s, when the Commission on Genetic Resources for Food and Agriculture requested that FAO coordinate a country-driven assessment of animal genetic resources. At that time, the Commission also established its subsidiary Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture. By 2005, 169 countries had submitted reports that, combined with reports from international organizations and input from highly recognized scientists and experts, formed the basis of the *State of the World*. The final report was presented to the International Technical Conference on Animal Genetic Resources for Food and Agriculture, held in September 2007 in Interlaken, Switzerland. The FAO Conference, the supreme governing body of FAO, welcomed the report as the first comprehensive worldwide assessment of the state of animal genetic resources.

The Interlaken Conference also adopted a *Global Plan of Action for Animal Genetic Resources*, a landmark international framework for the improved management of breed diversity. The *Global Plan of Action* contains strategic priorities for the sustainable use, development and conservation of animal genetic resources, as well as provisions for financing its implementation and follow-up.

- At the national level, governments shall assess the capability of existing institutions to manage necessary breeding and conservation programmes, and adapt policies as necessary to increase their capacities.
- At global level, the Commission has been charged with overseeing and assessing the implementation of the *Global Plan of Action* and developing the funding strategy for its implementation. A new era of collaborative involvement will require mobilization of financial resources, strengthening international networking particularly at the regional level, promoting the development and transfer of relevant technologies, and giving renewed impetus to training and capacity-building activities throughout the world. Guidelines for national action plans and for the management of animal genetic resources have been completed and are available to countries, with additional technical guidelines under development.

These are some of the many challenges that the Commission will tackle in the next decade through its Multi-Year Programme of Work.

FOR MORE INFORMATION:

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