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## Index

1. Access and benefit sharing of genetic resources
2. Developments in animal production and breeding
3. Exchange of animal genetic resources
4. Ownership
5. Next steps

## Recent titles in this series

2003-1: Review of UN System Common Country Assessment and World Bank Poverty Reduction Strategy Papers

2003-2: Framework for the introduction of plant Variety Protection in developing countries

2003-3: Breeding crops to reduce micronutrient malnutrition

2003-4: Assessing the benefits & potential of genetically modified *non-food* crops in developing countries: the case of Bt-cotton

## Relevance of Access and Benefit Sharing for Farm Animal Genetic Resources

### Key issues

The Convention on Biological Diversity (CBD, 1992) provides the international framework for regulating Access and Benefit Sharing (ABS) for genetic resources. A first analysis of the relevance of ABS for conservation and sustainable use Animal Genetic Resources resulted in the following key-issues:

- Exchange of genetic material between owners has been and will remain of great importance for the development of livestock breeds and the livestock sector in various parts of the world. Legal protection of animal genetic resources, resulting in restriction of access to these resources, will certainly not benefit the development of livestock production in general.
- Genetic variation within lines or breeds of livestock is the main, continuous source for genetic improvement. Although (new) breeds or lines are being developed continuously in commercial breeding programmes, the introduction of 'foreign' genetic material or 'wild relatives' is much less relevant than in plant breeding.
- Gene flow between countries and continents is expected to grow. However, current and expected amounts and types of exchange of animal genetic resources have not been studied intensively yet. The impact of (future) international ABS arrangements is therefore hard to predict.
- The animal breeding and livestock sectors are poorly informed about and not aware of the relevance of the CBD and, in general, feel that the impact of CBD on their business will be limited in the future.
- In general, Animal Genetic Resources are protected by 'physical ownership'. The owner determines to what extent and under which conditions genetic material is available to third parties. The need for legislative/institutional capacity and regulatory systems that balance rights over genetic resources should be studied further, involving stakeholders in both industrialised and developing countries.



## 1. Access and Benefit Sharing of genetic resources

The Convention on Biological Diversity (CBD, 1992) is an international framework for the conservation and sustainable use of all biological diversity for both developing and industrialised countries and for a variety of stakeholders. It provides a legal framework for access and benefit sharing (ABS) of genetic resources.

Several (legally binding and non-legally binding) international instruments that regulate elements of ABS have been developed over the past years. Some of these are relevant for plant genetic resources only, since until now international and policy discussion mainly focused on plant genetic resources. The contribution of farmers' varieties and wild relatives is indispensable to develop new commercial plant varieties. A multi-lateral system for plant genetic resources has been agreed that allows the use of plant genetic resources for research and breeding, and regulates the benefit sharing from such use.

Figure 1. International instruments regarding access and benefit sharing of plant genetic resources.

Instruments working towards conservation and sustainable use	Instruments aiming to protect intellectual property
<ul style="list-style-type: none"> <li>• Convention on Biological Diversity</li> <li>• FAO Global Plan of action on Plant Genetic Resources</li> <li>• International Treaty on Plant Genetic Resources</li> </ul>	<ul style="list-style-type: none"> <li>• Plant patents</li> <li>• Utility patents</li> <li>• Breeder's rights under the International Convention for the protection of new varieties of plants (UPOV-Convention)</li> </ul>

For AnGR the CBD is the only international (legally binding) instrument. In 2002, the Conference of the Parties adopted the voluntary Bonn Guidelines on Access to Genetic Resources and the fair and equitable Sharing of Benefits arising out of their utilisation. These Guidelines are expected to assist Parties, Governments and other stakeholders in developing overall access and benefit-sharing strategies, and in identifying the steps involved in the process of obtaining access to genetic resources and benefit-sharing.

The CBD covers all types of genetic resources, but the relevance of agreements to regulate ABS for animal genetic resources has not been studied yet. Exchange, property issues and breeding structure involving farm animal genetic resources are substantially different from those involving plant genetic resources. The aim of this study is to investigate the relevance of ABS for farm animal genetic resources (AnGR) and to relate it to the current situation of animal breeding and animal production. This is a first inventory to identify the key issues for Dutch and international stakeholders.

## 2. Developments in animal production and breeding

Before 1955 the breeding of poultry, pigs and cattle was a local and on-farm activity. The breeding population was more or less the same as the production population. However, exchange of genetic material between farmers and breeders (or organisations) during the last century has been of great importance for development of livestock in various parts of the world. The introduction of new reproduction technologies in animal breeding (AI, ET) after 1955 facilitated exchange and a rapid dissemination of genetic material. The various livestock sectors greatly differ in terms of development of such exchange.

For farm animals, genetic variation within lines or within breeds is the main, continuous source for genetic improvement. From this perspective, less access to (foreign) genetic resources is needed compared to crops. It also means that breeding populations have to be sufficiently large and genetic variation within these lines needs to be conserved for the future.

In plant breeding, access to genetic resources of various sources is essential for genetic improvement. The genetic variation within varieties is generally small. New varieties are created by adding new characteristics, making use of modern technologies. This contrasts with animal breeding, where continuous genetic improvement within populations on many traits/characteristics is the main strategy.



### 3. Exchange of Animal Genetic Resources

Animal breeding is mainly based on the exchange of material within a company and with connected farmers, and exchange is regulated by private law agreements and a common understanding among breeders of the rights on the material. Access to animal genetic resources has for many years been agreed between parties in bilateral transfer agreements. Most of these agreements exist between parties in industrialised countries. On a global level, different flows of animal genetic resources exist: North-North, North-South, South-North, South-South. In what manner the access and benefit sharing of these flows of animal genetic resources is agreed upon, is highly dependent on the users and providers. There is a distinction between parties without substantial capital and the commercial market players.

Although a clear picture of current and future international exchange of animal genetic material is lacking, it is expected that the flow of animal genetic resources from the Northern to the Southern hemisphere and vice versa will increase in the future. Further analysis of this gene flow and the (potential) impact of ABS arrangements is recommended.

In The Netherlands and most European countries the most influential stakeholders regarding access and benefit sharing of animal genetic resources are the commercial breeding companies and breeding societies. These are the largest suppliers of animal genetic resources and they decide to which resources other parties have access and on what terms (contracts). This (international) breeding industry seems to be poorly informed about CBD and expected consequences with respect to future ABS of farm animal genetic resources.

### 4. Ownership

In general, the owner of farm animals decides whether breeding animals or their germplasm will be sold. Thus, the owner determines to what extent genetic material is available to third parties and to what extent he protects his breeding populations. Selling and purchasing material regulates access to genetic resources.

On the one hand, the breeding structure of pigs and poultry is highly self-supporting (within breeding companies). Base selection lines are protected by selling hybrids only. On the other hand, the breeding

structure for dairy cattle is more open, in terms of within-breed exchange of genetic material. Large amounts of top quality genetic material of dairy cattle is distributed all over the world.

Since the owner determines to what extent genetic material is available to third parties and for what prices, the price of animals actually includes a benefit sharing arrangement.

The commercial livestock breeding sector has shifted from a national/regional to an international level.

Patents have been granted in Europe with respect to plants and animals, but animal races and plant varieties as such are not patentable. As in many countries, plant varieties can be protected by "breeder's rights". The relationship between Intellectual Property Rights (IPR) as provided for in the TRIPS Agreement) and the general objectives of the CBD is highly controversial. IPR is a tool to protect and thereby trigger investments, but on the other hand it may reduce the access to animal genetic resources. The future development of IPRs on animal genetic resources is not clear. Patenting of genes in farm animals may be expected. In reaction, developing countries may take the initiative to balance the rights on genetic resources and the patent system through a

"*sui generis*" system. However, the need, desirability and feasibility of IPRs on livestock should be analysed further in order to avoid negative side-effects for livestock breeding and production.

## 5. Next steps

Political motives to stimulate the discussion about access and benefit sharing of animal genetic resources are discussed in this study. Globalisation and internationalisation will change the future flow of animal genetic resources. Moreover, countries are developing legal, administrative and policy measures to implement the CBD rules. Highly relevant is the current and expected (amount and characteristics) international gene flow. The need and feasibility for protective measures should be analysed further, both from the perspective of biodiversity-rich countries and from the perspective of the animal breeding sectors.

Further investigations should contain an analysis of potential impact of recent international agreements on access and benefit sharing of genetic resources for developing countries and private enterprise.

