

## DATA BANKS AND THE CONSERVATION POLICY

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The base of conservation activities is knowledge on breeds and information on genetic varieties, which are endangered or could be so in the near future. This information has to be reliable and it has to be updated in meaningful intervals in order to keep track of changes in criteria relevant for the survival of the breed.

Accumulation of information in a data bank means data collection and storage in a systematic order which allows quick and easy access, to perform comparisons and retrievals for any combination of criteria.

### Objectives

For a Data Bank on Animal Genetic Resources we see the following objectives:  
To know

- which population/breed/line/variety/resource does exist and where,
- whether the number of breeding animals of the breed is changing,
- whether the same breed exists in different places or regions,
- the specific genetic characteristics of a breed and its similarity to other breeds,
- its importance for people living in the same area,
- the specific potential of the breed for production, reproduction and survival in a given environment,
- whether conservation programs have been initiated
- and persons or institutions that can be addressed, if more information on the breed is needed.

In order to pursue these objectives quite an amount of information is required and it becomes evident, that there is a conflict between the objectives of a data bank and the practicability of data collection for it.

### The EAAP/FAO Global Animal Genetic Data Bank in Hannover

The data bank at the Institute of Animal Breeding in Hannover was initiated by the Working Party on Animal Genetic Resources of the European Association of Animal Production EAAP. The working party was formed 1980 by the EAAP Commission on Animal Genetics following the recommendations of the FAO/UNEP Technical Consultation on Animal Genetic Resources in Rome, 1980, (MAIJALA et al., 1984).

The set up of the data bank in Hannover was supported in 1987 by the German Research Foundation, since 1988 it can be regarded as a joint venture of EAAP and FAO (SIMON, 1989). Following the agreement of the two organizations, the questionnaire was modified to cover also specific conditions in developing countries.

The data bank covers livestock breeds of the six species buffalos, cattle, sheep, goats, pigs and horses. Other species will follow, if channels for data collection and a kind of communication network with country representatives has been established. Presently the data bank holds information on 553 breeds mostly from European countries; from the national data banks in India and China the transfer of information on 285 breeds is in preparation. Information from the so called Regional Gene Banks in South America, Africa, India and China, i.e. centers for cryoconservation of semen, embryos and oocytes, which were initiated by FAO, will follow.

The basis of the data bank is the questionnaire to obtain information on a given breed, line or variety. The working party devoted much time and thoughts to decide on the present form, which is a compromise of having complete information and of keeping people willing to supply it. (Table 1)

What is asked for by the Global Animal Genetic Data Bank is regarded as a core information which should be obtainable in many countries and under none optimal conditions. This should not interfere with initiatives of local or regional centers to collect more information and to cover additional species. The value of such local initiatives is fully recognized.

#### Use of the data bank

The purpose is to give answers to specific questions both for proper use of a genetic resource and for its preservation.

#### Utilization of a breed:

- Based on the information on breed potential and adaption the breed may be used in a new location with similar environmental conditions.
- Based on the information on breed history, immigration, and genetic distance, the chance for heterosis in crosses with other breed can be estimated.
- Knowledge of the specific genetic potential of breeds in quantitative traits can be used to develop a synthetic breed which combines the advantages of several breeds.
- Knowledge of the genetic potential of a breed in relation to others can be used in experiments to detect linkage of quantitative trait loci with genetic markers as a basis to improve estimation of breeding values (PATERSON et al., 1988).

#### Preservation on animal genetic resources:

- Based on the information on declining number of breeding animals a World Watch List will be issued on breeds which are or will be endangered in the near future. Thus the attention of people can be drawn to the genetic potential of a breed and to the danger of loosing it.
- Based on the information on same or similar genetic material the resources from different locations and regions can be combined.
- Based on the information on conservation activities cryoconservation of genetic material and other conservation programs can be encouraged.
- The information on breed history, immigration and genetic peculiarities can be used to decide whether a given breed deserves preservation as a unique resource or whether it could be combined with similar stock.

Table 1. Main items asked in the questionnaire forms

- A. General information (page 1)
  - Country and species (buffalos, cattle, goats, sheep, horses, or pigs)
  - Breed or population (local and international name)
  - Main organization concerned with the breed
  - Preparation of replies (name, organization, time)
- B. Origin and development of breed (page 2)
  - Origin (from which breeds, from which country, herdbook since when), immigration to the breed (breed, country, time, percent matings)
  - Breeding population numbers 1986 ( $\delta, \varphi$  ;  $\sigma$  in A.I.; herd size, changes in numbers)
  - Average age of mature animals used for breeding ( $\delta, \varphi$ )
- C. Breed description (page 3)
  - Colour (unicoloured, colour combinations; special signs)
  - Horns (number, shape)
  - Appearance (adult weight; withers height)
  - Genetic peculiarities (chromosome aberrations, marker genes)
- D. Qualification of breed (page 4)
  - Present main use (ranking of eight alternatives)
  - Other important uses
  - Special qualifications (with references)
- E. Management conditions (page 5)
  - Type; housing period; feeding
  - Specific natural environment
- F. Performance records (page 5 and 6)
  - Name of standard breed for comparisons within country
  - Approximate production level of standard breed in main traits
  - relative comparisons with standard breed in specific traits
  - Validity of comparisons (production conditions)
- G. Additional informations (page 7)
  - Estimate of genetic distance to other breeds
  - Storage of DNA in a gene-library
  - Programs to conserve live animals of the breed
  - Additional information can be obtained where

### Conclusions

The Global Animal Genetic Data Bank in itself does not preserve animal genetic resources. However it can supply information on what genetic material is where available, on breeds which are or will be endangered, on the specific potential and the similarities of breeds. The data bank can supply the information necessary for meaningful decisions and actions to preserve genetic variety in domestic animals. In this context we feel that the concept of an Animal Genetic Data Bank deserves the support of animal breeders, breed organizations and animal scientist.

### References:

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