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Gene Flow in Animal Genetic Resources — A Study on Status, Impacts, Trends from Exchange of Breeding Animals

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Abstract

Data on exchange of livestock genetic resources are compiled to create an information basis for future national, regional and global negotiations on trade agreements for breeding stock. The study is commissioned by BMZ/GTZ. FAO is implementing partner. International statistical data on movement of breeding stock are poor and difficult to obtain. Descriptive analyses are based on qualitative and quantitative data in publications, project reports, national and international statistics. Complementary information was collected from experts that supplemented, crosschecked and validated results. The report comprises of a global study and case studies for cattle, sheep, goats and pigs.

Human migration led to breed diversity through domestication and breed formation. Exchange of stock was an important tool in breed formation and development. Advanced mobility, reproduction biotechnology and modern breeding methods enhanced gene flows since the 20th century. Concentration on a few successful breeds led to their worldwide expansion at the expense of local breeds. This trend results in loss of biodiversity. However, transfer of breeds that are suitable for respective production systems benefits farmers economically. Veterinary regulations increasingly restrict transfer of breeding stock. While in more sophisticated breeding systems after sales benefit sharing is increasingly practised, a single and final payment is still the rule in most circumstances. In most developing countries influence of breeding organisations and governments on animal trade is limited.

Movements of breeding animals are best documented in cattle due to early establishment of breeding organisations. Main directions of cattle transfers were initially east-west and north-south but more recently west-east as well as south-south movements gained importance.

Sheep and goat gene flows are relatively small in number and extent. Transfers are mainly conducted by private initiatives of single breeders, but breeding organisations with data on movements are rare. As an example, the history of gene flow of Awassi sheep from Israel is followed in detail.

Data on recent transfer of breeding pigs are difficult to obtain because of the structure of modern pig breeding with main emphasis on hybrids and the leading role of few breeding companies in worldwide distribution of pigs.

Keywords: Animal genetic resources, biodiversity, breeding animals, gene flow, live animal trade, poverty reduction, semen trade