



# LINKAGES BETWEEN ANIMAL AND PLANT GENETIC RESOURCES

## COMMON FEATURES OF ANIMAL AND PLANT GENETIC RESOURCES

Animal and plant genetic resources for food and agriculture share not only common features, they are the results of human intervention and continue to co-evolve with economies, cultures, knowledge systems and societies, but also many of the same threats and risks of erosion.

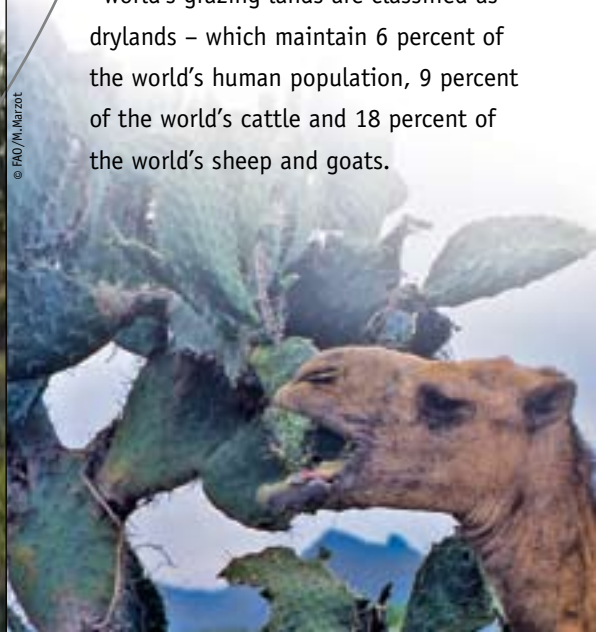
This erosion has many causes, including:

- changes in production systems;
- mechanization;
- the loss of rangeland grazing resources;
- natural calamities;
- disease and pests outbreaks;
- inappropriate breeding policies and practices;

- inappropriate introduction of exotic breeds or species/varieties;
  - loss of farmers' and livestock keepers' security of tenure on land and access to other natural resources;
  - changing cultural practices, the erosion of customary institutions and social relations;
  - the influence of population growth and urbanization; and
  - the failure to assess the impact of practices in terms of sustainability, and to develop adequate policies and economic measures.
- Climate change has recently been recognized as an additional factor driving the erosion of genetic resources.

## LIVESTOCK, RANGELANDS AND GRASSLAND A SPECIFIC INTERACTION

Although plant and animal genetic resources interact in many ways, their most direct interaction is in grasslands and rangelands, ecosystems which can only be productively used by ruminants. Rangelands often co-evolved with animal grazing and depend on it. Grasslands cover more than 25 percent of emerged lands and are utilized at a wide range of production intensities. They are home to important wildlife populations, as well as animal and plant genetic resources whose products contribute to rural income and development. Pastoralism, the use of extensive grazing on rangelands for livestock production, is an important – and often the only – ecological and economic adaptation that exploits the diverse, constantly changing, yet inherently resilient arid and semi-arid rangeland ecosystems. Thirty percent of the world's grazing lands are classified as drylands – which maintain 6 percent of the world's human population, 9 percent of the world's cattle and 18 percent of the world's sheep and goats.

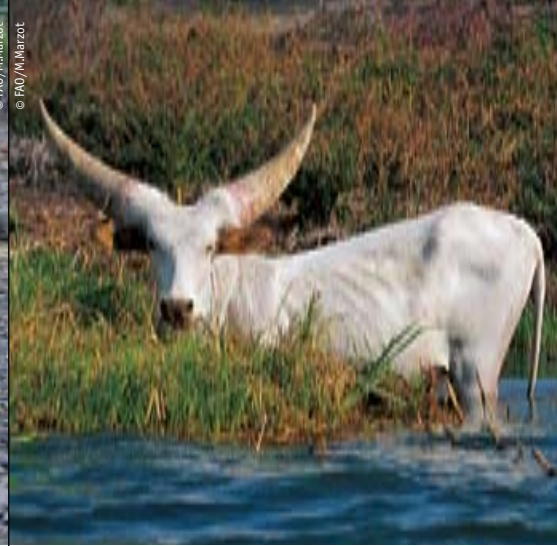


© FAO/J. Holmes

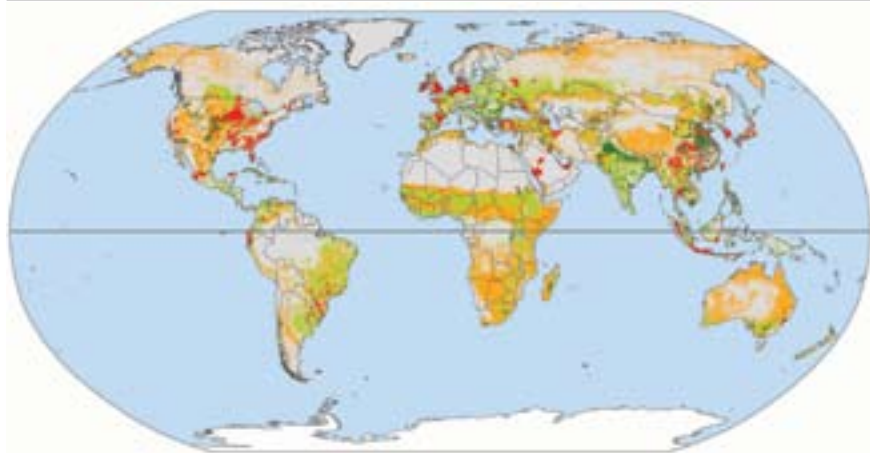
© FAO/M. Marzot

© FAO/M. Marzot

© N. Schareika



## Livestock production systems



- Mixed, irrigated
- Mixed, rainfed
- Grazing
- Other type
- Areas dominated by landless production
- Boreal and arctic climates
- National boundaries

Source: Steinfeld, H., Wassenaar, T. & Jutzi, S. 2006. *Livestock production systems in developing countries: status, drivers, trends*. Rev. Sci. Rech. Off. Int. Epiz., 25(2): 505-516

## NEEDS AND CHALLENGES

Driven by poverty, population growth and other factors, humans are increasingly expanding into the marginal land frontier. Currently, at least 20 percent of rangeland is estimated to be degraded through overgrazing, over-collection of timber, fuelwood, food, medicinal plants, or abandon and overgrowth. This leads to a decline of

rangeland productivity, and subsequently also a decline of livestock productivity, with major economic and livelihood implications. In addition, many rangeland livestock breeds and plant species have not been characterized, because of the marginal nature and location. Better understanding of the diversity of plants and livestock and their values, and improved insight into

the relationship between both types of genetic resources, particularly in rangeland environments need to be achieved. Only then will governments and other stakeholders be able to fully appreciate this biodiversity and make strategic decision for its conservation and use. Because of the complex linkages among the different components of agricultural biodiversity, the ecosystems approach should be applied and cross-sectoral linkages addressed. In particular, the role of local and indigenous communities, farmers, pastoralists and breeders as custodians of much of the world's agricultural biodiversity should be strengthened.



**Learn more:**  
[www.fao.org/dad-is](http://www.fao.org/dad-is)  
 e-mail: [DAD-IS@fao.org](mailto:DAD-IS@fao.org)



Further information about the work of  
 FAO on biodiversity is available at:  
[www.fao.org/biodiversity](http://www.fao.org/biodiversity)