

LIVESTOCK DIVERSITY AND CLIMATE CHANGE

Maintaining the diversity of animal genetic resources is essential to enable farmers, pastoralists and animal breeders to meet current and future production challenges resulting from changes in the environment, including climate change; to enhance resistance to diseases and parasites; and to respond to changes in consumer demand for animal products. Livestock contribute, to and will be affected by, climate change. Livestock producers will have to cope with both slow climatic changes and more frequent extreme climatic events. It is expected that climate change will affect livestock production and productivity both directly and indirectly.



© FAO/R.Faidutti

DIRECT IMPACT OF CLIMATE CHANGE ON LIVESTOCK PRODUCTION AND DIVERSITY

Loss of animals through droughts and floods, or disease epidemics related to climate change may increase. This is one reason why it is important to characterize animal genetic resources,



© M. Islam

and build inventories, including spatial information on breeds and valuable breeding stocks. Additionally, temperature is predicted to increase globally, with reduced precipitation in many regions. Heat stress reduces reproduction and production in livestock. The high-output breeds, originating from temperate regions, that provide the bulk of market production today, will be required to continue to express their genetic potential in the future. The question is how such production levels can be maintained in view of expected higher feed, energy and water prices, and how fast the breeds can genetically adapt to changing environments, including higher disease pressure? More study of adaptation differences between breeds is needed. If the available breeds cannot be selected fast enough to adapt to climate change, an increased need for movement of breeds carrying the desired traits will arise. This would require that livestock keepers continue to have access to a wide portfolio of genetics.



© FAO/M. Marzot
© FAO/M. Marzot



INDIRECT IMPACT OF CLIMATE CHANGE ON LIVESTOCK PRODUCTION AND DIVERSITY

Developments in the livestock sector are crucial for adaptation and mitigation of climate change – because the livestock sector is a large producer of greenhouse gases. Therefore, the various policies and technologies introduced to mitigate climate change are expected to influence the livestock sector. In addition, the non-food sector's demand for feed inputs, especially for biofuel and other industrial use, is expected to increase,



© FAO/A. K. Kimoto

thereby potentially exacerbating the impact of climate change for the livestock sector.

If the present increase in feed prices continues, the comparative advantage of monogastrics, with their better feed-conversion ratio as compared to ruminants, will increase, and commercial breeds may out-compete local breeds. Optimization of feed rations, and feed additives or other technologies, may be used to reduce greenhouse gas emissions from the livestock sector. Further research on mitigation technologies is needed. The predicted temperature increase will further the expansion of vector-borne infectious diseases (e.g. Rift Valley fever, bluetongue and West Nile virus) to high elevations and higher latitudes. Such disease pressure will favour genotypes that are resistant or tolerant to the diseases and may change breeding goals.



© FAO/G. Bizzari



© FAO/O. Huittier



© D. Cratty

Learn more:
www.fao.org/dad-is
e-mail: DAD-IS@fao.org



Further information about the work of
FAO on biodiversity is available at:
www.fao.org/biodiversity

A G R I C U L T U R E
F O R B I O D I V E R S I T Y
A G R I C U L T U R E