



THE STATE
OF THE WORLD'S
**ANIMAL GENETIC RESOURCES FOR
FOOD AND AGRICULTURE**

COMMISSION ON
GENETIC RESOURCES
FOR FOOD AND
AGRICULTURE



PART 4

Box 86

A llama breeding programme in Ayopaya, Bolivia

In the high Andes of Bolivia, llama keeping is an important and integral part of the mixed farming practised by rural households. Llamas provide smallholders with dung, meat and fibre; they are used as pack animals and also play an important social role. Llamas, as an autochthonous species, contribute to maintaining the ecological balance of the fragile local ecosystem. There are two main types of llama – the “Kh’ara” type, and the wool type known as “Th’ampulli”.

The region of Ayopaya (department of Cochabamba) where the breeding programme takes place is situated at 4 000 to 5 000 metres above sea level in the eastern Cordillera of the Andes. Because of the geographical conditions and very basic infrastructure, the region is difficult to access.

In 1998, a breeding programme for llamas was jointly initiated by the 120-member local producers association ORPACA (Organización de Productores Agropecuarios de Calientes), the NGO ASAR (Asociación de Servicios Rurales y Artesanales) and two universities (University Mayor de San Simon, Cochabamba, and University of Hohenheim, Germany). Initial funding was assured by the above-mentioned institutions. Continuation of the programme critically depends on securing external funding.

Llamas in Ayopaya region



Photo credit: Michaela Nürnberg

Restraining llamas for transport



Photo credit: Michaela Nürnberg

As a first step, the production system was studied by participative observation and the use of questionnaires. The phenotype of 2 183 llamas of the Th’ampulli type was also characterized. The process revealed that the llamas possess fibre of extraordinarily high quality – 91.7 percent fine fibres and a fibre diameter averaging 21.08 μm . This fibre quality is unmatched by other llama populations in Bolivia. The animals, therefore, constitute a unique genetic resource. Interviews with representatives of the textile industry and traders provided information on the economic potential of the fleece. The performance of identified llamas was recorded and breeding parameters estimated. A mating centre run by ASAR to which members of ORPACA bring their females for service was established in Calientes in 1999. Selected males are kept at the centre during the mating season. The phenotypic evaluation of the males aims to identify animals with uniform fleece colour; a straight back, legs and neck; testicles that are of equal size and not too small; and no congenital defects. Six communities within a radius of about 15 km are served by the mating centre. Performance data for the offspring are recorded by trained farmers.

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Box 86 *cont.*

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Functions of llamas and breeding objectives are being recorded, ranked and valued jointly with the llama keepers. In a stepwise procedure, the breeding programme is being adapted to meet the breeders' preferences, the market conditions, and the biological constraints. Genetic progress has not yet been evaluated because of the llama's long generation interval.

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Further information can be obtained from the following sources: Alandia (2003); Delgado Santivañez (2003); Markemann (forthcoming); Nürnberg (2005); Wurzinger (2005), or from: Prof. Dr Anne Valle Zárate, Institute of Animal Production in the Tropics and Subtropics, University of Hohenheim, 70593 Stuttgart, Germany.
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Linear measurements on llamas



Photo credit: Javier Delgado

Llama herd (of Emeterio Campos) in Ayopaya region



Photo credit: André Markemann

Deworming during sire selection at Milluni



Photo credit: André Markemann