EMBRAPA GOATS CONTRIBUTION FOR GOATS AND SHEEP BREEDING IN BRAZIL

Embrapa

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Goats and sheep industry in Brazil has facing a vertiginous increase during these last years. This intensive expansion was due to an increasing demand for the products of these animals, mainly meat and hides and, to some extent to fleece and milk by internal and external markets. Formerly practiced by low income and low education level farmers as a subsistence activity, nowadays small ruminant husbandry is object of interest of more educated and economically powerful producers throughout the country.

In spite of this high demand meat consumption in Brazil is still low, ranging from 1.5 to 2.0 kg/person/year. About 2.55 million goats and 4.46 million sheep were slaughtered in Brazil in 2001, producing a total of 109,900 metric tons of meat. On the other hand, total goat milk production in the country was only 141,000 metric tons during the same year.

Since its onset in 1975, Embrapa Goats has been contributing to the Brazilian small ruminants industry in different areas of knowledge. In relation to animal breeding, the first studies of this Research Unit were focused on characterization of naturalized genetic groups and exotic breeds of goats such as, Moxotó, Canindé, Repartida and Marota, and Anglo-Nubian, Bhuj, Alpine, Mambrina, Saanen and Toggenburg, respectively. Researches on sheep breeds were concentrated in Morada Nova, Santa Inês, Brazilian Somali and in group of undefined-breed animals (UnB). Additionally, important actions were taken to preserve naturalized groups of small ruminants to avoid genetic traits losses.

As a function of a continuous introduction of exogenous breeds to be used in indiscriminated absorbent crossings with indigenous groups of small ruminants, Embrapa Goats is being constantly demanded to give adequate answers about these imported genetic materials. To accomplish that task, some evaluation studies on performance of crossbred resulted from several crossings were undertaken. It should be emphasized several crossings done involving the native Moxotó and the exotics Anglo-Nubian and Alpine, to evaluate from F1 to Tricross to get a type of animal capable of to produce more milk under the prevailing climate conditions of the semi-arid areas of Brazil. Important evaluations were also carried out with sheep comparing crossbred products of Santa Inês x UnB, Morada Nova x UnB, Dorper x UnB and Brazilian Somali x UnB.
Very meritorious were those breeding activities conducted with the Brazilian Somali sheep. Nowadays, Embrapa Goats owns one of the best Brazilian sheep flocks of this breed, which is precocious, resistant and extremely adapted to the harsh environmental conditions of the semi-arid regions of Brazil.

Animals of the Brazilian Somali breed

To reduce risks of genetic erosion Embrapa Goats, in partnership with Embrapa Genetic Resources & Biotechnology, maintains stocks of valuable genes of the indigenous goats Moxotó, Canindé, Marota and Repartida.

So far, Embrapa Goats has contributed significantly to the knowledge of important characteristics of the main goats and sheep breeds raised in the tropical part of Brazil. Assessments were made for estimation of genetic and phenotypic parameters of productive traits, such as fertility and other reproductive ones, as well as survival rates and growth development. Additionally to these, research data on skin parameters of goats, woolless and wool sheep have incontestably proved the excellent quality of goats and hair sheep skins, and consequently the great importance of these animals indigenous to the Northeast Region of Brazil.

In general Embrapa Goats significantly contributed to the state of art of genetic groups of small ruminants raised in the Brazilian tropical area. It can be emphasized the reduction in slaughter age, the increasing in herd fertility, the increasing weight gain, and improved carcass quality. As a result, nowadays it is possible to slaughter animals under 180 days of age; with carcass weight around 15 kg and skin of higher quality according to industry and consumer preference.

Sheep flocks of Santa Inês, Morada Nova and Brazilian Somali, and those of Saanen, Anglo-Nubian, Moxotó, and Canindé goats are kept at the Experimental Station of Embrapa Goats. The last two flocks of goats breed have being kept as
germplasma stocks in ex-situ and in-situ ways. Studies searching for information on pure animals of the Dorper sheep and Boer goats and their crossbred with indigenous types are underway to support competitiveness of the Brazilian small ruminant husbandry.

Aiming to form a delineated population for future studies on molecular markers to gastrointestinal parasitism resistance, Embrapa Goats is developing a project to generate divergent lineages, using Saanen and Anglo-Nubian animals. Other important research in progress refers to characterization, recovery and maintenance of the genetic variability of preserved herds of naturalized goat breeds in Northeast Brazil. It can be mentioned another study in cooperation with The University of Firenze using microsatellite molecular markers trying to find out if there is genetic divergence between red and white varieties of the Morada Nova sheep. Furthermore, it intends to characterize genetic introgression or gene flow among Morada Nova, Santa Inês, Brazilian Somali and Cariri sheep breeds.

To support Brazilian goats and sheep industry, three collaborative works are being developed with small ruminant breeders. One on genetic improvement of the Santa Inês sheep intents: to subsidy breeders to compare the genetic merit of their animals with other breeders animals, helping them to select animals based on defined selection criteria and performance tests; to phenotypically characterize Santa Inês sheep for gastrointestinal parasitism resistance, by counting of eggs per gram of feces (OPG) and determination of sanguineous globular volume (VG); to identify molecular markers associated to gastrointestinal parasitism resistance; to estimate genetic and phenotypic parameters for reproductive and productive traits; to study the growth curve of Santa Inês breed; and to develop an artificial insemination technique. Concerning to dairy goats, the breeding program intents: to evaluate the genetic structure of the milk goat population in Brazil; to create a National Data Bank; to organize progeny tests with the main dairy goats breeds raised in Brazil; to study association of the present gene polymorphism with production traits and milk quality in dairy herds of Northeast, Southeast and South Regions of Brazil; to develop a specific software for goat herds control; to develop lab techniques to identify superior bucks for semen collection, with high conceivability and fertility; and to determine test day models for genetic evaluation and for progeny test. The Breeding Program for Meat Goats and Sheep (GENECOC) was designed to support breeders on utilization of their genetic resources to optimize their production systems. GENECOC accomplishes genetic evaluations for sires, dams and young animals for productive and reproductive traits, regardless of breed type.

In general this program is seeking for improvement in meat and skin production by hectare at low costs. Moreover, the program generates information to select animal with appropriate muscular development, fast weight gains and appropriate maturity, reducing maintenance costs, besides efficient reproductive capability and sexual precocity.
Goats of Saanen breed in cultivated pasture

With a renewed specialist staff, the Research Center presents an excellent perspective for the Brazilian goats and sheep breeding. Enlarging its partnerships this staff looks for increasing its performance capability to attend external demands. Basically, Embrapa Goats' role in the process is linked in organizing the animal population structure, the stimulation of zootecnical bookkeeping and actions towards the organization of the productive chain. The vision of these actions is concentrated in assisting the demands of the market; in the competition with other animal markets; in the reduction of the production costs; in the selection of resistant animals, adapted to the environmental conditions; in the generation of products with alimentary sanity and with functional properties; in the attendance with the global sanitary exigencies; and production philosophy based on sustainability of the ecosystems.