CONSERVATION OF GENETIC RESOURCES IN AUTHOCHTHONOUS DOMESTIC ANIMALS OF ANDALUSIA

E. Rodero, E. Camacho, J.V. Delgado and A. Rodero
Departamento de Genètica, Facultad de Veterinaria,
Universidad de Còrdoba, Spain.

SUMMARY

Six cattle, four sheep and three goats of andalusian authochthonous domestic breeds considered to be in extinction danger have been studied.

We have visited the last existent farms of these breeds, retaking the present census of pure animals, several iconographic and zoometrical material, and the views of the farmers about the conservation of these animals. At the same time we have determined the genetical state of these populations using the biochemical polymorphism as genetic markers.

In this paper we present a classification of these breeds as a basis of the conservation actions demanded and the conservation criteria suggested by our results for every case.

INTRODUCTION

Historically Andalusia has been a zone especially rich in domestic animal breeds, but later in the expansion of the intensive farms at the beginning of the century, high productive animals were demanded from foreign countries, which were replacing the authochthonous breeds.

This fact has put most of the andalusian breeds on the border of extinction. In this situation we can consider six cattle breeds: Pajuna, berrenda en negro, berrenda en colorado, cardena, murciana and negra de las campiñas. Four sheep breeds: Churro lebrijano, merino de grazalema, montesino and merino español. And three goat breeds: Negra serrana, blanca andaluza and payoya.

At the beginning of 1987 the Government of Andalusia and the Departments of Genetic and Animal Production of the University of Còrdoba took account of the danger that there was involving these animals. Then a project was established for the study of the present state of these breeds. As a first phase we proposed the knowledge "in situ" of the different populations, visiting the last farms, retaking data about the animals and farmers, that permit the planning of the future criteria of conservation specified in every breed.

In the present paper we give the final conclusions obtained in this phase, that will be followed by other actions using the actual reproductive technology, and the creation of statal conservation farms.

MATERIAL AND METHODS

Fifty farms distributed in thirty municipalities of the eight andalusian provinces were visited during twenty tours from the University of Còrdoba. A total of 12,000 kms were covered.

Four kinds of materials were taken:

a) Iconographic material:

It comprised a general film on video of the farm for recording their environmental and zootechnical characteristics. Photography of one animal type for each sex adjusted to the farmer's individual selection criteria. Photography of the herd and the restocking, and in every one we have followed the standard ethnologic methodology.

b) Zoometrical material:

Several body measurements (length, perimeter and diameter) were taken choosing the most representative for each species:

- Length from nape of neck to hoof.
- Longitudinal diameter.
- Thoracic perimeter.

Also the adult, newborn, weaning, and weights at the moment of sale were recorded using a spring-balance.

c) Farmer inquiry material:

In these inquiries data were registered about the management, the enviroment, long and short date perspectives, farm history, etc.

d) Blood samples:

We have taken blood samples of seventy animals from all the sheep and goat breeds studied with a view to studying their biochemical polymorphism by electrophoresis in starch gel. Therefore we have studied the following factors: Albumins, alkaline phosphatase, transferrins, haemoglobins, carbonic anhydrase and X-protein.

With these data we have determined the gene frequencies and the genetic distances between breeds and populations. All the data recorded were stored in a DBASE III archive and globally analyzed.

RESULTS

In Table 1 we show a classification of the andalusian breeds based on the data recorded in the present study. This table proposes two groups of animals, those demand urgent action, and those only precise study and investigative action.

Table 2 extensively develops both kinds of action, the urgent and the study and investigative suggested by the present state of the different populations.

DISCUSSION

In the classification of these breeds we have considered several criteria and methodology proposed by other authors. Alderson (1989) groups the breeds in function as to their social interest: Functionality, beauty, cultural and historical antecedents and adaptative qualities. Cañon (1985) proposes a classification in base to both sexes active reproducers minimum to ensure the breed perpetuity.

Other authors, like Garcia-Dory (1980) and the Agricultural ministry official census (1980) consider the breeds extinction danger simply based on their total effective number and their geographical distribution. They do not go into depth in the real population structure.

Table 1 Classification of the andalusian breeds in danger of extinction by their current situation.

REASONS	Low census	Crossing with others breeds	Productive interest	Historical & cultural interest
CATTLE	Murciana	Negra de las campiñas	-	Berrendas
SHEEP	Merino de Grazalema Churro lebrijano	Montesina	-	Merino español
GOAT	-	Blanca andaluza	Payoya Negra serrana	-
ACTIONS	Urgent*	Urgent*	Study & investigation (**)	Study & investigation (**)

Table 2 Different actions demanded by the andalusian breed for their conservation, evaluated with the data obtained in this paper.

URGENT ACTIONS (*)	STUDY AND INVESTIGATIVE ACTIONS (**)
1. - Of the State: - Control of effectives. - Grants to farmers. - Sanitary and technical assistance. - Creation of conservation farms. - Fiscal and labour advantages to farmers. 2. - Social: - Creation of farmers associations. - Creations of breed clubs. - Organization of breed competitions. 3. - Scientific: - Purity breeds detection, with genetic and ethnology tests. - Control of the crossing with other breeds. - Reproducer's selection. - Genetic material cryo-conservation (Sperm, ovules and blastocysts).	- Calculation of lactation and growth curve. - Study of milk and meat production. - Productive and reproductive precocity study. - Investigation over the breeds products quality - Investigation on genetic resistance to diseases. - Cytogenetic control of the reproductors.

In our classification we have applied much more interesting material in that we have observed the habitat, the management, the feeding, the farmer's social situation and his continuity perspectives and the evolution of the population structure and the census. We consider all these factors incorporated by us indispensable for the analysis of breeds of which their principal advantages and aptitude are the adaptation to difficult ecological and social environments.

REFERENCES

ALDERSON, L. 1989. The chance to survive. A.H. Jolly Ltd. Warwickshire, pp. 143.

CAÑON, J. 1985. Las razas autoctonas como reserva del futuro genetico. Zootecnia. 34:3-10.

GARCIA-DORY, M.A. 1980. Las razas autoctonas bovinas de España y Europa. Querugs. 23:12-18.

GARCIA-DORY, M.A. 1980. Utilizacion de las razas autoctonas en los ecosistemas regionales, como factor de ahorro energetico en la ganaderia española. Agricultura y Sociedad. 15:30-35.

MINISTERIO DE AGRICULTURA PESCA Y ALIMENTACION. 1980. Catalogo de razas autoctonas españolas. M.A.P.A. Madrid. pp. 170.