Conservation programme of the Spanish pig genetic resources

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SUMMARY - The aim of this paper is to describe a project for the conservation of native Spanish pigs genetic resources developed in five objective 1 Spanish regions. The following breeds are involved in this project: Chato Murciano, Celta, Negro Canario and several varieties of the Iberian Branch. Only the Negro Mallorquin could not be taken into account because it is located in objective 2 regions. The topics of this program were focussed on three different subjects: collection and updating of information about the present status of these breeds; morphologic, productive and genetics characterization and, finally, the creation of a duplicated frozen semen bank. This paper describes the organization of the project and its present situation.

Key words: Pig, preservation, biodiversity.

RESUME - *"Programme de conservation des ressources génétiques des porcins espagnols". Dans ce travail on décrit une initiative développée dans cinq régions espagnoles objectif 1 pour la conservation des ressources génétiques des porcins autochtones, constituées par les races Murciana, Celta, Negra Canaria et les différentes variétés du tronc ibérique. La seule race non directement considérée a été la Negra Mallorquina parce qu'elle se trouve dans une région objectif 2. Le programme comprend trois aspects fondamentaux : collecte et mise à jour de l'information sur la situation actuelle de ces races, leur caractérisation morphologique, de production et génétique, et, finalement, la création d'une banque de semence en double. Ici on présente l'organisation du programme et sa situation actuelle.*

***Mots-clés :** Porc, préservation, biodiversité.*

Introduction

Most of the European pig production is centred on a few number of breeds, basically in the utilization of high profitable cross-breeded animals in intensive systems. Large White constituted 30% of the European pigs stocks.

Lately, a big change in the concept of animal production has occurred, with the introduction and rapid assimilation of new criteria taking into account the environmental repercussion of the production. This phenomenon together with the change in consumer opinion and doubts about the perspectives of intensive pig production economic profitability. All this has put on the table the sustentability of the production, the obtention of ecological and quality products, the rural development of poor areas using extensive systems specialized in the use of nature development (Rodero *et al.,* 1994).

These new ideas has obliged all the European countries to maintain their neglected native breeds, which have shown a capacity to be used in the sustainable rural development of poor areas of high ecological interest with a view to offer quality products to the market (official quality mark). Sometimes ecological, permitting profits from alternative views to the present systems.

These facts have stimulated six Spanish teams to establish a common initiative for the conservation of the Spanish pig genetic resources, presently formed by the Chato Murciano breed, the Celta pig breed, the Negro Canario breed, the Negro Mallorquín and several varieties of the Iberian pig.

Organization of the programme

In 1996 we participated in a European Project (GENRES012), along with France, Germany, Italy and Spain. In our country this fact stimulated the co-ordination of several activities in development later integrated in to the present program. In this way, we established contacts for exchanging of experiences and knowledge among all the groups. In December 1997 coinciding with the celebration of the First Congress of the Spanish Society for the Conservation of Animal Genetic Resources (SERGA), there we had the first co-ordination meeting of this program in which the characteristics, the material, human and methodological resources and the relationship with other institutions (breeders associations, factories, etc.) was put on the table by each team (Table 1).

Table 1.   Summary of the situation shown in the meeting

Team	Breed (situation)	Financing	Specialty	Relations
Dep. Prod. Animal Univ. Santiago. Lugo. Galicia	Celta Gallego (extremely endangered)	Local resources National project	Morphologic and productive characterization. Marketing	Breeders association Factories Comunidad Autónoma
Unid. Prod. Animal CIDA. Murcia	Chato Murciano (extremely endangered)	Local resources	Morphologic characterization Production Reproduction	Breeders association Factories Comunidad Autónoma
Unid. Prod. Animal ICIA. Tenerife Canarias	Negro Canario (extremely endangered)	Local resources	Morphologic characterization Production	Breeders association Comunidad Autónoma
Dep. Genética Univ. Córdoba Andalucía	Iberian varieties (some endangered, others protected)	Local resources 2 National projects 3 MAPA projects	Morphologic and genetic characterization. Production Reproduction	Breeders association Ministry of Agriculture Comunidad Autónoma
CENSYRA. Badajoz Extremadura	Iberian varieties (some endangered, others protected)	Local resources	Morphologic characterization. Production Reproduction	Breeders association Comunidad Autónoma

After this meeting we planned the redaction of a co-ordinated project, in which each team gave their experiences and disposibilities to act on common problems affecting the native Spanish breeds. For this we planned second meeting where the definitive program would be prepared.

The second meeting was also a held in Córdoba in May 1998. In this second meeting we defined the definitive specific objectives and the plan of actions (Delgado, 1998).

Objectives

Three specific objectives were approved: information, characterization and creation of a germplasm bank. The content of these objectives is the following points:

(i) Collection and updating of information about the implied breeds. Population information (census, sex ratio, size of herd, localization, etc.), productive information (productive and reproductive data, products and determinations, etc.) and ethnological information (origin and history, etc.). This permitted, on one hand the permanent updating in the international data bases (DAD-IS and EAAP date bank), and, on the other hand, the creation of a National data base in the web-site of SERGA.

(ii) Characterization of the breed according to morphological, genetic and productive criteria.

- Morphological characterization: using a common protocol formed by 17 quantitative morphometric traits and 7 qualitative ones. A discriminate analysis will be developed to establish distance among breeds according to morphologic analysis criteria. Moreover we will develop a cluster analysis to establish the relationship among breeds from this point of view.

- Genetic characterization: Applying a battery of 30 DNA microsatellites proposed by FAO and ISAG as the most indicated in the studies of Phylogenetic and Characterization. With the results obtained here we will characterize the populations according to genic frequencies. We also evaluate the levels of inbreeding based on the levels of heterocygocity, finally establishing the Nei genetic distances among breeds and varieties, conforming the definitive Philogenetic three of the Spanish pig breeds.
- Zootenchnic characterization: Using a common protocol of 20 "antemorten" productive and reproductive traits and 6 *post-mortem* ones. We will develop a similar study of the described in the morphological characterization.

(iii) Creation, development and projection of a pig germplasm bank. At this point we will follow the European recommendations, based on the freezing of pig semen in a proportion of 25 boars for each breed. This bank will be located in two places, the first in a regional location and the second will be national (CENSYRA of Colmenar Viejo. Madrid) following the recommendation of the Spanish Ministry of Agriculture. The techniques of training, collection, evaluation and freezing (Tilmant, 1997) will be common, according to the recommendations of the European Project.

Present situation

We are in a optimum status of development. We have started the designing of the Spanish national data bank. Presently, the pig section of the SERGA's web is in construction. We also are developing a yearly updating of the information in the international data banks.

We have as well advanced in the morphological characterization, highlighted by some papers recently developed on the varieties of the Iberian pig (Delgado *et al.,* 1998) and Chato Murciano (Martínez *et al.,* 1998) where the work is practically finished.

The genetic characterization has been centred on the Andalusian team, where we have analysed more than 200 animals belonging to several varieties of the Iberian pig (Martínez *et al.,* 1998). The biological samples of other breeds have been collected and they are a waiting for analysis.

The productive characterization is very advanced in the Celta and Chato Murciano, where we are collaborating with factories studding the quality of derivative products. In the Iberian pig we are presently developing the statistical analysis, but we count with some preliminary reports (SERGA Mallorca).

Finally the conservation of germplasm is very advanced in Chato Murciano. In the Iberian pig we are training young animals of several varieties in CENSYRA of Badajoz and experimental regional centres in Cordoba. Also five future boars of Negro Canario are being sent from the Canary Islands to CIDA of Murcia for training and collection.

As a final conclusion for the development of the present program we must point out the success reached in the co-ordination of several teams on common problems in a country like Spain, where the federalization is producing important problems in the development of global actions. The model applied here to create this common program could be followed in similar situations in other species, because the capacity of spontaneous co-ordination shown by teams located in distinct autonomous Spanish regions have been clearly demonstrated.

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