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Pig breeding programmes in Spain

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The total pig population in Spain has increased sharply over the last 20 years. This tendency was particularly strong in the early 1970s, when large numbers of selected pigs were imported and when cooperatives and strong integrated breeding and fattening herds were established.

Before 1960, pig production had little economic importance and the most common breeds were the Iberian pig and other local breeds (Porc de Vic, Chato Vitoriano, etc.).

After this period, the increasing demand for animal protein for human consumption resulted in the introduction of foreign selected breeds (Danish Landrace, Yorkshire, etc.). These breeds quickly replaced local populations and now the Iberian pig survives only in extensive production systems.

By 1975, new changes in pig breeding structures could be observed. Specialised meat breeds, such as Belgian and German Landrace, were introduced in breeding units, followed by Piétrain and Duroc-Jersey breeds.

The number of pigs now exceeds 11 million head (all ages), which means that Spain has the largest pig population in the EEC after West Germany and France.

Although pig meat consumption in Spain (about 27kg/pers/year) is low compared with other EEC countries, it has doubled over the last 12 years. At present, 16 million carcasses, representing more than 1.2 million tons of meat

(double the 1975 level) are self consumed (48% of it after processing).

I - Breeding programme

The national breeding programme was started relatively late in Spain and changes in pig production structures preceded the establishment of coordinated breeding plans.

In the early 1970s, a formal definition of different types of pig units was made to clarify the duties and rights of every level in the breeding structures: selectioners (nucleus herds), multipliers, producers (breeders and fatteners).

The national Pig Unit Registration Catalogue was created in 1973 along with the National Association of Pig Breeders (*Asociacion Nacional de Productores de Ganado Porcino Selecto*). The following year, Landrace and Large White Herd Books were introduced and the use of selected animals became the norm in new large production units.

At the end of 1970s, the National Breeding Evaluation Scheme was reinforced, some private on-farm testing units were recognized, and a large number of hybridisation companies were established.

II - Selection

Selection is carried out in 63 units recognized as a Nucleus Herd by the National Association of Pig Breeders. This Association will be structured in the future as a Federation of different autonomous associations.

All of the nucleus herds must be free of communicable diseases and the animals are subjected to periodic veterinary analyses.

Farms possessing nucleus herds are required to regularly send information to the Association about mating, identification procedures of piglets and boar and sow inputs in order to include their progeny in the Herd Books. In addition, there are about 60 breeding units with the status of selection herds, but their genealogical information is not available.

The number of live purebred sows actually registered in the Herd Books (or in special registration catalogues) is 130,520. The breed structure is similar to other southern European countries: Landrace is the largest breed (41%), followed by Belgian Landrace (26%) and Large White (22%). Duroc and Piétrain are in the minority and the Hampshire breed is not represented in the nucleus herd. There are 880 boars.

III - Testing facilities

The ten private approved testing units in Spain have a capacity of 150,821 places (38% with individualized recording of daily gain, food intake and fat depth).

The testing procedures used in these units must be in accordance with the regulations of the National Breeding Evaluation Scheme, and the information obtained sent to the Ministry of Agriculture. The Breeders Association does not directly survey the activities of these units and the results are sometimes very hard to analyse and to compare between farms. In June 1986 a new system of on-farm performance tests will be started in Catalunya: the information from related animals tested in

stations will be incorporated in the results obtained from the private testing units.

IV - Testing stations

They are four testing stations in Spain, but only one located at Monells (Baix Empordà) deals with intensive pig breeding controls.

This station began its activities in 1984 and is part of the Pig Production Control Center of Catalunya. Its main objectives are to obtain, analyse and publish abroad information about different abilities of pig breeds, to advise about the best procedures to improve the genetic quality of nucleus herds, and to promote the optimal use of the best reproducers.

This center collaborates very closely with the Catalan Association of Pig Breeders (for testing coordination), with the Catalan Institute of Meat (for the meat and carcass evaluation of pure and cross-bred breeds) and with some university departments, as well as the Department of Animal Genetics of INIA.

Until now more than 600 purebred boars (Large White Landrace, Belgian Landrace, Duroc, Piétrain), coming from 22 nucleus herds were tested using a performance test methodology similar to that used in French stations. Animals are separated each month from the nucleus herd, located in individual pens and tested for daily gain (ADG), food conversion ratio (FCR) and ultrasonic fat depths (UFD).

Stress susceptibility is detected using the halothane test system (3' at 30%). In 289 males tested, 31% were halothane positive reactors. In a coordinated research programme with the University of Barcelona, blood samples are also extracted to determine haplotypes genetically near the locus determining the halothane reaction.

The testing period starts at 35 kg (after a quarantine) and finishes at 95 kg live weight. Pigs have free access to standard concentrate (*ad libitum* regime) that contains 14.6% digestible protein and 3,150 kcal. of metabolizable energy.

An index combining the relative performances of the different traits measured is used to estimate the quality of the potential boar progeny. Appropriate genetic parameters (heritability, genetic correlations between variables and objectives) and adapted economic weights for every breeding objective are used to elaborate the "b" coefficients needed to class the animals.

The selection index includes production increase of average daily gain, food conversion ratio), carcass (meatiness) and meat quality traits. The boars are ranked on a score with a mean of 100 points and a standard deviation of 20 points.

At the end of testing, the best animals (50%) can return to their original unit, or participate in an auction.

In addition to the productive traits measured with the performance tests, some animals were slaughtered at 95 kg and carcasses analysed for meat content and quality. This initial study, carried out with the Catalan Meat Institute, will enable a Combined Testing System to begin in 1987, using the facilities of a new experimental carcass evaluation center.

All information is immediately computerized and stored in a data bank using specific programmes. This is useful to show the progressive evolution of the parameters measured, to combine information from related animals, and to automatically rank the animals in the same test group and breed. It will be used as the basis to calculate new indexes.

V - Hybridisation

Most of the pigs slaughtered in Spain are

crossbred animals. The breeding companies and nucleus or multiplier herd breeders usually supply males and females to commercial producers. There are also some producers that replace their own sows.

The current sow is a single cross between Large White and Landrace breeds. Recently, the Landrace crossed with Duroc Jersey (from the USA or Hungary) has been introduced. Unfortunately, the abilities of different lines of the Landrace breed are too variable and the crossbred sows are not homogenous.

Recent results from a sample of 10,300 carcasses analysed in four abattoirs indicate that there are potentially about 20% PSE commercial carcasses.

The transfer of piglets between small breeding farms (without any accurate breeding programme) and fattening units, is current in some areas. This situation commonly induces a large variation in the quality of the slaughter generation of pig carcasses.

Since 1978, 20 hybridisation programmes have been formally recognized by the Ministry of Agriculture. To obtain this status, the firms must submit their schemes for approval and send periodical information about their technical activities. The most common breeds used to obtain the female crossed lines are Landrace and Large White (only two hybridisation programmes use Duroc and one the Hampshire breed). The current terminal boar that has been introduced is LW * Piétrain or Belgian Landrace * Duroc.

To date, no commercial pig evaluation system has been created, but in spite of this some experimental information from different crosses is available. The reproductive performances of current breeding sows are computed by the Litter Recording Programme.