

**LONG HORNED CATTLE IN THE IBERIAN PENINSULA****L. Monserrat, I. Sanchez, A. Iglesias***Introduction*

The Barrosã and Cachena are small Iberian cattle breeds with very long horns. On the basis of this characteristic, together with the lyre-shaped horns, Sánchez Belda (1984) believes they have originated from *Bos taurus desertorum*. Vallejo et al (1990), however, considered the Cachena breed to be influenced by *Bos brachycerus africanus*, contradicting the influence attributed by ethnologists to the *Bos taurus desertorum* until now. Jordana et al. (1991), in accordance with qualitative and quantitative analyses of the morphological characteristics of this breed, included it in the Cantabrian group originating from *Bos taurus primigenius* (long horned cattle).

Both breeds are found in the borderlands between the north of Portugal and the south of Galicia in Spain (Figure 1), occupying a geographical area which includes Serra do Barroso (Northwest Trás os Montes) and the „Peneda Gerês" national park (North of Portugal), Entrimo (South of Ourense, Spain) in the case of the Cachena breed and the north west of Portugal for the Barrosã cattle.

Both are breeds with an aptitude for meat and draught, perfectly fitted to the marginal and cold mountainous environments in a Mediterranean climate.

*Morphological characteristics and phylogenetic relationships with other Iberian cattle breeds*

The Barrosã and Cachena cattle have similar morphological characteristics with few differences. According to Vieira Leite and Vieira Danta (2000) these differences are: the Cachena has a smaller head with a straighter profile than the Barrosã. Its snout is blacker and longer than that of the Barrosã breed. Finally, the cross-section of the horns is circular in the Cachena and elliptical in the Barrosã breed.

Rad je priopćen na "The origin of Hungarian grey cattle", Workshop in Bugacpuszta, Hungary, 23-24 November 2000.

L. Monserrat, Centro de Investigacións Agrarias de Mabegondo, Apartado 10, 15080 A Coruña, Spain; I. Sanchez, A. Iglesias, Facultad Veterinaria Lugo, Spain.

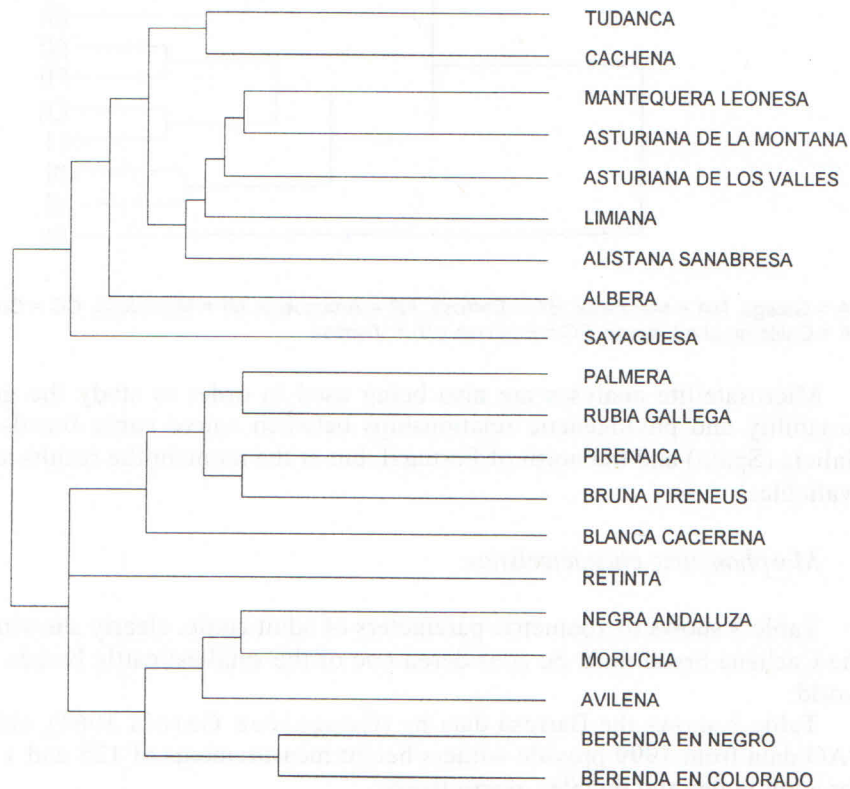
Figure 1. - GEOGRAPHICAL LOCATION OF THE TEN NATIVE CATTLE BREEDS. (LOCALIZACION GEOGRAFICA DE LAS DIEZ RAZAS BOVINAS AUTOCTONAS)



Concerning their general conformation, Cachena cattle have a body with a dished profile, small framed with very harmonious proportions. They have a small head, with a white border on the snout, and with large high lyre-shaped horns. The coat is bright brown, darker in the neck area. The mucous membranes, the hoofs and the distal part of the horns are black. Cachena have a fringe on the nape of the neck, while the outer side of their ear and tail are bushy. The cows have good maternal attributes: easy calving, partly because of the light weight of the calf at birth, good milk production which allows the calves to be fed until six months of age. The maternal instinct is well developed: Cachena dams protect their progeny from possible wolf attacks, by leading the calves to the centre of a defensive wall formed by the heads and horns of other individuals in the herd (Sánchez García et al. 1997).

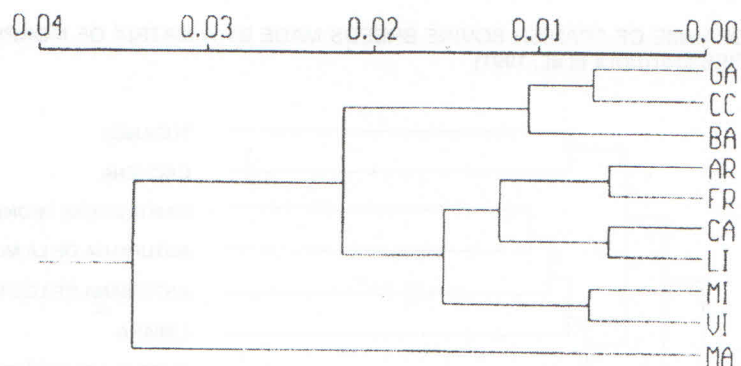
Jordana et al. (1991) carried out qualitative and quantitative analyses of data on 29 morphological characteristics with respect to phylogenetic relationships between Iberian cattle breeds. The results show the formation of two big clusters on the basis of these characteristics, one formed by breeds with a „Cantabrian" strain, while the other includes members of the „Turdetanus" and „Iberian" strains. This is suggestive of the existence of an hypothetical common ancestor. The Cachena breed falls within the „Cantabrian" strain, which is said to have originated from *Bos taurus primigenius*, together with eight other breeds (Table 1). The Cachena, on the other hand, is also the only Spanish cattle breed with long horned morphological character. This affirmation is also valid for Portugal because the Spanish and Portuguese cattle breeds are very similar to each other.

DENDROGRAMME OF SPANISH BOVINE BREEDS MADE BY A MATRIX OF MORPHOLOGIC SIMILARITIES (Jordana et al., 1991)



The genetic variability and phylogenetic relationships between ten native cattle breeds from Galicia (Spain) and the north of Portugal were studied by Fernández et al. (1998). Through eleven blood proteins that show polymorphism, they calculated allelic frequencies for each system and breed. The results reveal three different clusters (Table 2): Cluster I (the Barrosã, Cachena and Galega breeds, related to the prehistoric form *Bos taurus desertorum*), Cluster II (connected to the mutant form, *Bos primigenius estrepsicerus*) and Cluster III (the Maronesa breed which seems to be related to the prehistoric form, *Bos brachycerus*).

Figure 2. - DENDROGRAM CONSTRUCTED BY THE UPGMA METHOD AND BASED ON DATA OF TEN NATIVE CATTLE BREEDS FROM GALICIA AND NORTH OF PORTUGAL



GA = Galega, MA = Maronesa, BA = Barrosã, AR = Arouquesa, MI = Mirandesa, CC = Cachena, CA = Caldena, LI = Limiana, FG = Frieriesa y VI = Vianesa

Microsatellite analyses are also being used in order to study the genetic variability and phylogenetic relationships between native cattle breeds from Galicia (Spain) and the north of Portugal, but at the moment the results are not available.

#### *Morphometric characteristics*

Table 3 shows of zoometric parameters of adult cattle, clearly showing that the Cachena breed must be considered one of the smallest cattle breeds in the world.

Table 3 shows the Barrosa data by (Goncalvez García 1964), although FAO data from 1999 provide withers height measurements of 125 and 115 cm for adult males and females, respectively.

Table 3. - ZOOMETRIC PARAMETERS OF ADULT CACHENA AND BARROSÀ CATTLE

Body measurement, cm	Cachena		Barrosà	
	Males	Females	Males	Females
Withers height	122	117	133	125
Back height	118	114	131	121
Rump height	122	118	137	125
Chest depth	72	65	76	68
Chest width	48	44	50	46
Hip width	48	45	51	50
Stifle joint width	42	37	-	-
Body length	167	148	167	150
Pelvis length	50	48	57	50
Chest circumference	196	176	205	180
Shank circumference at the cannon bone	19	16	21	17

#### *Production characteristics*

Ontogenetic growth characteristics have been obtained from measurements of live weight at different ages: at birth, in order to determine the average size of the calves a very important trait determining delivery; at 6 months, when calves are weaned; at 12 and 24 months, around the onset of puberty and; at three years of age, which is considered an intermediate age leading to adulthood. The phenotypic values obtained are shown in Table 4 and correspond to those of late maturing breeds.

Table 4. - ONTOGENETIC GROWTH CHARACTERISTICS EXPRESSED AS MEAN WEIGHT

Live weight, kg	Cachena		Barrosà	
	Male	Female	Males	Females
Newborn	20.2	19.3	25.0	23.0
6 Months	158	147	-	-
12 Months	187	170	-	-
24 Months	322	250	-	-
Adult	586	390	800	450

#### *The situation of Iberian long horned cattle*

At the moment, the Barrosà breed is not at risk and the population trends are stable. Its meat represents a quality product with Protected Denomination

of Origin. On the other hand, this breed could benefit from Agenda 2000-2006 of the EEC with respect to environmental conservation and sustainable agriculture.

As far as the Cachena breed is concerned, in past years its populations had declined to critical levels (less than 100 breeding females in 1986, Table 5). Currently its „risk status" is maintained, following official efforts for the development of programs serving the in situ and ex situ conservation through the Resource Genetic Centre in Fontefiz (Ourense). Within the framework of this program, the Xunta de Galicia (Autonomous Government) maintains a Cachena herd as well as its germ plasma bank. In 1990 herdbook was established as well as a Breeders' Association in 1999. Members of this association have been acknowledged by The General Direction of „AgroCattle" Production of the Galicia Government, as official collaborators in breed maintenance and development. With respect to the breed's future, beef from Cachena cattle is a quality product, so that it is possible to commercialise it with Protected Geographical Indication. The growth performance of the breed, however, seems inadequate for obtaining a sufficiently economical end product. The population size should be increased beyond the level of „risk status". This could be achieved through the good adaptation of this breed to marginal and cold mountainous environments. This solution would benefit both the conservation of environment and sustainable agriculture.

On the other hand, the geographical areas for both breeds, have a low density of human population, who have emigrated to more favourable areas. For this reason, the increase in the number of cows could be justified by ecological benefit. This, in turn, would decrease the current rate of depopulation and become an aid in maintaining the environment.

### *Census*

The Barrosã census of 1994 estimated the total number of breeding females as 7,000 and males as 176 with a decreasing population trend. In 1999, the total adult population of this breed was between 1.000 and 10.000 animals, and thus appears to show a stable trend.

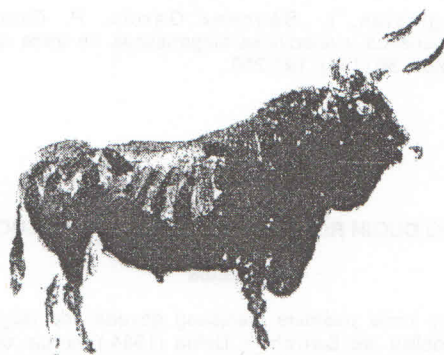
The last official census of Cachena cattle was carried out by the Ministry of Agriculture, Fisheries and Food in 1986. The results were published in 1989. Only females older than two years have been recorded (N=30). In 1991, Vallejo (1992) made a census based on the inventory carried out by the Spanish Society for Animal Genetic Resources. The results were sent to an EU Programme aimed at establishing the European Inventory of Animal Resources. On this occasion, 220 females and 40 males were counted. By the

last official census (1999), the number of breeding females has risen to 453. That is, there seems to have been an increase in the number of breeding females from 30 in 1994 to 453 in 1999 (Table 5).

Table 5. - OFFICIAL CENSUS DATA FOR THE CACHENA BREED

Year	1986 <sup>(1)</sup>	1994	1997	1999
Total population size	-	>140	373	562
Total number of breeding females	30	115	260	453
Total number of males used for breeding	-	25	113	109
Number of females in herdbook/register	-	115	220	287
Number of herds	-	13	19	-

<sup>(1)</sup> Ministry of Agriculture, Fisheries and Food



BARROSO

### *Protection and conservation program*

The two commonly used protection conservation methods for cattle under threat of extinction have been introduced for the Cachena breed: the in situ method, based on the maintenance of live cattle in their natural environment, and the ex situ method (gene bank) including the cryogenic conservation both of semen, ova and embryos, in order to preserve the widest genetic variety in such breeds.

By 1997, the in situ conservation of the Cachena breed included 19 herds and the ex situ cryoconservation comprised 63.134 doses of semen from 58 sires, and 67 embryos derived from 8 sires and 12 dams.

In the case of the Barrosã breed, both in situ conservation and ex situ cryoconservation began in 1999. To date, semen doses have been collected from 5 sires.

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## GOVEDO DUGIH ROGOVA NA IBERIJSKOM POLUOTUKU

### Sažetak

Barrosa i Cachena su male pasmine iberijskog goveda vrlo dugih rogova. Na osnovi te karakteristike i rogova u obliku lire Sanches Belda (1984.) vjeruje da potječu od *Bos taurus desertorum*. Vallejo i sur. (1990.), međutim, su smatrali da je na pasminu Cachena utjecala *Bos brachycerus africana*, osporavajući utjecaj koji su etnolozi do tada pripisivali *Bos taurus desertorum*. Jordana i sur. (1991.) su u skladu s kvalitativnim i kvantitativnim analizama morfoloških karakteristika ove pasmine uključili ju u Kantabrijsku skupinu podrijetlom od *Bos taurus primigenius* (dugorogo govedo). Obje se pasmine nalaze u graničnom predjelu između sjevernog Portugala i južne Galicije u Španiji (Sl. 1) obuhvaćajući geografsko područje koje uključuje Serra do Barroso (sjeverozapad Tras os Montes) i nacionalni park "Peneda Geres" (Sjeverni Portugal), Entrimo (Jug Ourense, Španija) u slučaju pasmine Cachena i sjevero-zapadni Portugal za govedo Barrosa.

Obje su pasmine prikladne za meso i vuču, savršeno prilagođene planinskom okolišu u mediteranskoj klimi.

Primljeno: 20. 1. 2001.