

“Raça Preta,” a Portuguese beef breed: economic and environmental objectives in natural resources management.

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Introduction

The focus of economic research on the Preta breed cattle is to examine how adding value to a natural product of high quality might provide a diversification option for farmers in less favoured areas of Southern Portugal.

The basis of this livestock system is the Montado, a typical farming system found mainly in the Alentejo. It is an agro-silvopastoral system characterised by the following aspects (Moreira & Coelho, 1997): presence of cork-oak or holm-oak trees, and in some cases pine, in pure or mixed stands; large or very large production units; based on paid labour, very extensive use of land and production factors. These ecosystems are fragile. Vegetation suffers in summer from water stress, and frequently there is an excess of water in winter. Due to the rainfall regime, soil characteristics and relief, many areas are quite prone to erosion.

The geographic distribution of the Preta cattle once extended further than the area of Montados, as the breed is flexible and adapts well to many varied and distinct feed regimes.

Possibly the most valuable characteristic of this breed is its great hardiness which permits it to survive the climatic constraints, and the great variety of the feeding resources offered by the ecosystem, both in qualitative or quantitative terms of animals getting fat in periods of abundance and thin in times of shortage, like a harmonium.

A total of 50 producers have more than 3700 females registered in the Preta Cattle Breeder's Association, which controls the Herd Book, the certification of the meat and promotes the realisation of sales of females, males and the young.

The meat of Raça Preta has been marketed with the name of “*Carne da Charneca*” (DO).

Methodology

The economic analysis was based on case studies, which are representative of several subsystems identified in previous work. The economic account methodology is based on an adaptation to the agricultural sector of the System of Economic Accounts Integrated in the Community (SEC), which had already been applied before by one of the researchers (Coelho, 1989).

This methodology demands monthly accounting of the farm and the recording of data concerning the balance of cattle and other capital, so that one can make either the traditional cash flow and economic account or also the evaluation of the physical productivity of the land, i.e. of the physical resources, such as, pastures, water, arable cropping,

woodlands and basic infrastructure.

In the first year of the project, besides studying the economic perspectives, work is being carried out to improve the quality of the carcasses, and the performance of the breed in its natural environment.

The Model

Brief History and Breed Description

A note on this cattle breed was first published in an article dating from the mid 1850's. The Raça Preta was then described as a very heterogeneous cattle population, with its natural habitat in a large region south of the Tagus river. Other old words synonymous with “Raça Preta” are “Breed of the Land” and “Black Cattle”, but these are seldom used.

The origin of the Raça Preta is still unclear. However it has been suggested that it resulted from crossbreeding of Black Iberian cattle from Spain with undomesticated cattle from the Ribatejo and with cattle native to the flat hills of Miranda and the flatlands of the Alentejo.

Up to the introduction of farm machinery, Preta cattle were usually chosen to work in the fields in the regions of Ribatejo and Alentejo. The main justification was based on their physical strength and tolerance of the erratic availability of quality feeds and harsh climatic conditions.

Nowadays, two distinctive phenotypes of the Preta breed have been proposed, supposedly resulting from a stronger influence of Spanish breeds in the Alentejo than in the Ribatejo region. Currently a study is being undertaken to determine genetic distances between animals from different herds and geographical areas.

The adult live weight of the Preta varies between 400 and 600 kg for the females and between 700 and 1000 kg for the males. According to the breed standard, the animals should be all black, have a small- to medium-sized head, a long, horizontal dorsal line, and a short but strong neck and very muscular shoulders in the males. Genetic selection aims to increase the proportion of the hindquarters. A calm temperament is also a feature of most of these animals, an important trait facilitating all aspects of husbandry.

It is generally accepted that cows bred in their natural environment can have an average fertility varying from 80 to 85 per cent. Births have a low incidence of dystocia, and the females have good mothering abilities and high longevity. The production cycle of their offspring can be reduced due to their favourable response to an intensive feeding programme. In these systems, the males can reach a carcass weight of 350 kg in less than 24 months. A detailed study is also underway,

aimed at the characterisation of different production aspects of this breed.

As a rule, Raça Preta cattle withstand poor grazing conditions without significantly compromising their general health and production. This attribute partially justifies the growing interest of cattle ranchers in this breed for beef production in areas where other livestock would have difficulties in meeting basic needs. The Raça Preta may have a promising future if adequate range management can be balanced with a favourable environmental impact of a beef-cattle operation.

Preta Cattle Breeder's Association and marketing of the PDO meat

The Preta Cattle Breeder's Association started its activities in 1990, and, since then, there has been a gradual increase in the number of members. At present, forty-seven associates are enthusiastically involved in the expansion of the activities of the breed. Being a new association, there is an emphasis on the development of collaborative projects that will characterise different aspects of beef production. In the near future, enough data will be available to support breeders in the improvement of their farm operations, ensuring the continuation of their competitiveness in the market.

The Breeder's Association is responsible for the herdbook that contains information on the existing 4000 adult cows and their descendants. As an important accessory to the genetic improvement programme, the Breeder's Association has also been conducting performance testing at a centre on about 50 males each year. As a result, frozen semen from the best performing bulls has been made available to be used in AI in different farms.

One of the activities of the Breeder's Association is a programme of product certification, offering the consumer of beef from the Preta breed the guarantee of a quality product. This activity will be a determinant in restoring consumer confidence, and will ensure a market for beef with its origin in the farms of the members of the Preta Cattle Breeder's Association.

In 1997, a few members of the Preta Cattle Breeders Association joined Mertocar, an organisation that represents the commercial interests of beef producers of some Portuguese native breeds. Under the commercial name of "*Carne da Charneca*", Mertocar markets beef products certified from Preta Breed Cattle raised in a restricted area of the country according to requirements that allow the use of "*Designation of Origin*".

The Preta Cattle Breed Association is responsible for the certification process, guaranteeing that the animals are raised in their natural habitat and fed a specific diet containing only natural products. To accomplish this objective a detailed database of standards relating to all beef production operations is kept by the breeders' association and updated regularly. To further validate the certification process, the breed association periodically collects samples from foodstuffs and from the animals, either on the farm, or at the end point of the commercial chain to check for unauthorised substances.

Between April 1997 and March 1998, 157 head of Raça Preta cattle were slaughtered and marketed by Mertocar, representing in all fifteen per cent of all animals of this breed available for marketing. As a rule, the males are ready for slaughter at twenty-four months of age, corresponding to an

average carcass weight of 340 kg. Accordingly, 53 tonnes of certified meat entered the market during a 12-month period, with a nine per cent higher price than non-certified beef (665 PTE per kg carcass vs. 605 PTE per kg carcass). The increase in net income for the producers that have their animals sold through Mertocar is the main incentive to keep investing in the certification system. Up to now, the cost of certification is partially supported by the producers and a Portuguese governmental agency, through a programme that promotes the commercial viability of quality products.

At present "*Carne da Charneca*" is being sold only in a supermarket in Oporto, the second largest city, in the north of the country.

The case studies

We considered three different subsystems according to the intensity of land use in order to obtain a better understanding of the Portuguese mediterranean traditional farming systems, the montados (Moreira and Coelho, 1997):

- (1) one mainly agro-silvopastoralism with only cropping,
- (2) mainly agro-silvopastoralism without cropping, and
- (3) essentially forestry activities.

Subsystem (1) Agro-silvopastoralism with only cropping

Case III - Barley- and oat-growing in open areas. The main resources of feed supply come from stubble fields, rough grazing, straw, hay and browsing. Livestock structure: cattle - 99 per cent, sheep - 1 per cent. Raça Preta females and males of Raça Preta and Charolais.

Case IV - Oats- and sunflower-growing in open areas. The main resources of feed supply come from stubble fields, rough grazing, straw, hay and browsing. Livestock structure: cattle - 100 per cent, Raça Preta females - 62 per cent, cross-bred females - 38 per cent. Males of Raça Preta and Charolais.

Case V - Wheat- and oat-growing in open areas. The main resources of feed supply come from stubble fields, straw, hay, cereal and concentrate are used as supplements. Livestock structure: cattle - 99.6 per cent, sheep - 0.4 per cent. Raça Preta 100 per cent of cattle.

Subsystem (2) Agro-silvopastoralism without cropping

Case II - Agrosilvopastoral without cropping.

"Montado" of cork oak and stone pine. The main resources of feed supply come from rehabilitated grazing lands and cultivated pasture under trees. Straw, hay and concentrate are used as supplements. Livestock structure: cattle - 100 per cent, Raça Preta - 100 per cent.

Case VI - "Montado" of cork oak. The main resources of feed supply come from rehabilitated grazing lands and cultivated pasture under trees, hay and browsing. Livestock structure: cattle - 100 per cent, females of Raça Preta, males of Raça Preta and Charolais.

Subsystem (3) Forestry

Case I - "Montado" of cork-oak, stone pine and maritime pine. Very extensive grazing. The main resources of feed supply come from rough grazing and shrubland, but complemented

by stubble fields of rice and cultivated pasture, hay and straw. Livestock structure: cattle - 100 per cent, females of Raça Preta, males of Raça Preta and Charolais.

Results and discussion

Some results of the case study are presented in Table 1. Initially we conclude that the many resources of feed supply for these livestock systems are provided by nature: rough grazing, rehabilitated grazing lands (based on clover and lupins), scrubland, stubble fields and cultivated pasture. Straw, hay and cereal are frequently used as supplements. We note that use of concentrate is not very common (except in case V).

We also stress that the most intensive livestock system is the agro-silvopastoralism with only cropping and the most extensive is the forestry.

A final conclusion is that the farmers prefer to keep pure Raça Preta females Preta breed and to keep Charolais and Raça Preta males. In only one case did pure and cross-bred females coexist.

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References

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Table 1. Indicators of the case studies.

Case studies	I	II	III	IV	V	VI
Subsystem	(3)	(2)	(1)	(1)	(1)	(2)
Vegetation	Sb, Pb, Pm	Pm, Sb	Arv, Az	Sb, Euc	Arv.	Sb
Total area (hectares)	2050	200	440	640	110	520
Cultivated pasture rehabilitated grazing lands (% of total area)	10	60	-	-	-	36.5
Rough grazing, stubble fields (% of total area)	75.5	40	80	82.5	50	61.5
Fence (Km)	x	10	x	115	x	31
Cattle pond (Numbers)	6	-	2	7	-	6
Power (hectares)	0.1	0.35	1.27	0.35	1.53	0.26
Labour	410	150	150	210	55	170
Cow P (Number)	160	49	105	130	70	115
Cow PxO (Number)	-	-	-	80	-	-
Charge	12.8	4.7	4.2	3.1	1.6	4.5
Sheep (Number)	-	-	20	-	20	-
Market goods	Cattle, cork cone resin	cattle, cone resin cork	cattle, sheep, crops	cattle, turnsole crops, cork	cattle, sheep, crops	cattle, cork

Legend:

Sb - cork - oak, Pm - stone pine, Pb - maritime pine, Arv. - herbaceous, Az - holm oak, Euc - eucalyptus.

Cow P - Preta breed females, Cow Pxo - cross-bred females. Fence x - not available. Charge - ha/No. of cow. Labour - ha/No. UTA.