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Martins de Carvalho M.A.

in

Almeida J.A. (ed.), Tirapicos Nunes J. (ed.).
Tradition and innovation in Mediterranean pig production

Zaragoza : CIHEAM
Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 41

2000
pages 123-128

Nutrition and production systems of the "Bísaro" pig in the north-east region of Portugal

M.A. Martins de Carvalho
Department of Animal Production, Escola Agrária, Instituto Politécnico de Bragança, Apartado 172, 5300 Bragança, Portugal

SUMMARY - The main objective of this paper is to add to the store of knowledge on the alimentation and production systems of the "Bísaro" race of pig in the North-east Transmontano region of Portugal. The statistical sample taken covered 30% of the pig breeders of the Bísaro race: a total of 169 animals, divided up into the following categories: 22 boars, 41 pregnant sows, one sow in lactation, 19 pigs for fattening, 44 weaned piglets and 42 suckling piglets. This study was undertaken during the months from January to May of 1997. After the conclusion of this study it was discovered that the average number of breeding sows per pig breeder is 2.7 and the average number of boars is 1.4, giving a perspective of growth in effective reproduction in 67% of the pig breeders. I was found that 40% of the pig production is for the purpose of consumption by the breeder, 20% is sold as live animals, 5% is for sale as whole carcass and the other 35% of the production goes into the making of the typical smoked sausage of the region, for later sale. With regard to the reproductive aspects, the age with which the boar begins its breeding function is located between 7 and 8 months old for 74% of the pig breeders and that the boar is slaughtered from 1 year old up to 1.5 years old for 48% of the breeders, at 2 years old for 30% of the breeders and for the other 22% at 2.5 years old. The females are covered for the first time between 6 and 8 months of age in 95% of cases and are slaughtered either with the age of 1 to 1.5 years old (in 47% of the cases studied) or between 2 and 2.5 years old (the other cases). 28% of the breeders get one litter per year, 64% two litters per year and 8% three litters in two years. The average number of piglets born per litter was as follows: less than 10 for 30% of the population, 10 for 26% of the population and more than 10 for 44% of the population. The weaning age varied between 30 and 75 days, the majority being weaned at 60 days (52% of the population). As far as the housing of the pigs is concerned, all the animals are kept in a system of permanent stabling. There are two kinds of habitation: the traditional "stalls" found under the house of the farmer (13%) or "stalls" built as an annex to the house (60%) and secondly, modern pigsties which comply with current legislation (27%). The first two have poor ventilation, little light and beds of straw or vegetation. The more recent pigsties are to be found far from the villages, have cement floors, good lighting, good ventilation and allow for good hygiene in the installations for the animals. The alimentation of the pigs is very varied, depending on the season of the year. Their diet may contain the following: grain and flour of corn, wheat, rye and oats, potatoes, chestnuts, pumpkin, cabbages, beetroot, turnips, leftovers from meals and by-products of the kitchen such as potato, fruit and vegetable peels.

Key words: Pigs, Bísaro Race, animal production systems, alimentation, animal management, reproduction.

RESUME - *"Nutrition et systèmes de production des porcins Bísaro dans la région du Nord-Est du Portugal". Cette étude a pour but principal de contribuer à la connaissance de l'alimentation et du système de production du cochon "Bísaro" au nord-est de Trás-os-Montes. L'échantillon statistique a porté sur 30% des éleveurs ayant des reproducteurs inscrits sur le Livre Généalogique des porcs "Bísaros", sur un total de 169 animaux, distribués de la façon suivante : 22 reproducteurs, 41 femelles gestantes, 1 femelle en lactation, 19 cochons pour viande, 44 gorets et 42 cochons de lait. Cette étude a eu lieu pendant l'année 1997. Après la conclusion de l'étude trouvé que le chiffre moyen de femelles reproductrices par éleveur était de 2,7 et que le nombre moyen de verrats était de 1,4, ce qui donne une perspective de croissance de l'effectif reproducteur chez 67% des éleveurs. Nous avons trouvé que 40% de la production de porc est destinée à l'autoconsommation, que 20% est destinée à la vente d'animaux vivants, 5% pour la vente de viande et que les 35% restants sont destinés à la fabrication de saucissons régionaux pour vente. Quant aux aspects reproductifs nous trouvons que l'âge auquel le reproducteur commence son activité se situe entre 7 et 8 mois pour 74% des éleveurs et il est abattu entre l'an et 18 mois pour 48% des éleveurs, à deux ans pour 30% des éleveurs et jusqu'à deux ans et demi pour les autres 22%. Les femelles deviennent gestantes pour la premières fois entre 6 et 8 mois dans 95% des exploitations et sont abattues entre l'âge de 1 an et 1 an et demi sur 47% des exploitations étudiées, les restantes l'étant de deux ans à deux ans et demi. Nous avons trouvé que 28% des éleveurs obtenaient une mise bas par an, 64% deux mises bas par an et 8% trois mises bas chaque deux années. La moyenne de cochons de lait nés par mise bas fut de moins de 10 pour 30% de la population, de 10 pour 26% et de plus de 10 pour 44% de la population. L'âge de cessation de l'allaitement varie entre 30 et 75 jours, la plus grande partie ayant lieu à 60 jours (52% de la population). En ce qui concerne l'hébergement, nous avons trouvé que tous sont exploités en régime de confinement total, sont : 13% intégrés à la maison d'habitation, 60% hors de la maison d'habitation mais dans des conditions précaires et les 27% restants en porcherie, 60% présentant des lits de paille et les*

autres 40% un sol en ciment. L'alimentation des cochons est assez variée, dépendant de la saison de l'année. De leur régime font partie : du grain et de la farine de maïs, du blé, du seigle et de l'avoine, des pommes de terre, des châtaignes, des choux, des betteraves, des navets et des excédents de cuisine.

Mots-clés : *Porcins, Race Bísara, systèmes de production animale, alimentation, reproduction, élevage.*

Introduction

Agricultural structure is a combination of physical, biological and human elements, in profound interaction, encapsulating the whole of agricultural life. Any system of animal raising is the result of a complex reciprocal action between many mutually dependent components. In the centre of the process is found the farmer. As well as this, the production of farm produce and the decisions of the family group are intimately connected, for which reason they should be analysed in the investigation of animal raising systems (Norman, 1980).

Indigenous races have been preferred to improved exotic breeds, which are, as such, supposedly more productive and profitable. However, the choice of this model by the majority of regions is not based on serious experimental findings. In most cases the production potential and profitability which are advertised are overvalued (for commercial reasons) in the case of exotic breeds and deliberately omitted in the case of indigenous races.

Even apart from their economic usefulness, these indigenous races justify their importance for both scientific and cultural motives. The possibilities that these pigs offer for the investigation of the proteins and enzymes in their blood, milk and other tissues, in modern biochemical studies, are evident. Their applications are highly diverse: the study of Historical Evolution of Natural Selection, the origin of and relationships between races of pigs, the correlation of productive characteristics, etc. Once a race is extinguished, an irreplaceable element of the diversity of life is lost.

The raising of pigs has evolved from a minor source of pork meat in the farm for the consumption of the family of the farmer, into a business organized for profit, with intensive production, capitalized, highly mechanized.

The popularity of pork varies greatly from one area of the world to another: around 60% of the meat consumed in the Scandinavian countries comes from the pig, while in the European Community as a whole it is supposed to be 50%, in Japan 45%, in North America 35% and in Argentina only 5% (Whittemore, 1996).

In Portugal an analysis of the global meat production by specie reveals that pork is the leader, representing around 40% of the total (INE, 1995). At the time of publishing it is thought that this percentage has risen to 45%. The consumption per inhabitant grew from 30 kg per year in 1990 to 34.5 kg in 1994 (IACA, 1997).

This work has as its principal objective the making of a contribution to the knowledge about the production system of the Bísaro race of pig in the Northeast Transmontano region of Portugal under traditional farming conditions.

Material and methods

This study is intended to be applied to the entire population of breeders of the Bísaro pig in the Northeast Transmontano region. The statistical sample taken covered 30% of the breeders of this race of pig, in a total of 169 animals, distributed in the following manner: 22 boars, 41 pregnant sows, 1 sow in lactation, 19 pigs for fattening, 44 weaned piglets and 42 suckling piglets.

The field research was done between January and May of 1997 and covered the following aspects: the composition and dimension of the pig population, reproduction, alimentation and management of the breeding animals, piglets and fattening pigs.

The working tool used was the questionnaire. This was a specific questionnaire about the farm and the family which enabled us to characterize the farming methods used to raise Bísaro pigs in the Northeast Transmontano. Informal interviews were also conducted as well as observation of the events in the region under study.

Results and discussion

Composition and dimension of the pig population

The average number of breeding sows per breeder is 2.7; the average number of boars is 1.4, giving a perspective of growth in effective reproduction in 67% of the breeders. We found that 40% of the pig population is for consumption by the family, 20% is intended for sale as live animals, 5% is for sale as whole carcass and the remaining 35% of the production is intended to be used in the making of the typical smoked sausage of the region, for later sale.

At this time there are various programmes in existence intended to give incentive to the production of the Bísaro pig which could have the effect of increasing the numbers of pigs per breeder. Table 1 shows how the number of candidates for these programmes has increased since 1995. Of these candidatures, 95% correspond to family projects in a home-based regime with 3 sows and 1 boar. The others have numbers of around 10 breeding sows and 1 boar (Alves, 1998).

Table 1. Candidates to Aid Programmes for the "Bísaro" Race (Alves, 1998)

Year	Number of candidatures	Construction of installations	Acquisition of reproducers	Approval
1995	28	14	14	28
1996	42	17	25	42
1997	51	25	26	51
Total	121	56	65	121

Reproduction

With regard to the reproductive aspects we found:

(i) The age at which the boar initiates its breeding function is located between 7 and 8 months for 74% of the breeders and it is slaughtered between 1 and 1.5 years old for 48% of the breeders, at 2 years old for 30% of the breeders and for the remaining 22% before 2.5 years old. The reasons that lead to this early slaughter of the animals is due to the facts that as the pigs grow older, the amount of fat increases (worsening the quality of the carcass), the boars are more difficult to manage due to their weight and they become more aggressive towards the breeder. The insemination is carried out through natural mounting, the boar coming from the farm itself (in the majority of cases) or from the neighbour. In this region there are no breeding centres.

(ii) The sows are covered for the first time between 6 and 8 months of age in 95% of cases and are slaughtered at between 1 to 1.5 years old in 47% of the farms studied. The others are slaughtered at between 2 to 2.5 years old. The motive for the early slaughter has to do with the depreciation in value of the pigs with time in terms of the quality of the carcass, essentially due to the augmentation of the quantity of fat.

(iii) The number of litters per year is 1 for 28% of the breeders, 2 litters for 64% and 3 litters in 2 years for 8% of the breeders studied.

(iv) The average number of piglets born per litter was: less than 10 for 30% of the population, 10 for 26% of the population and more than 10 for 44% of the population, in a range from 8 to 18 piglets. These variations perhaps are due to the oscillations in the abundance and shortage of food over the year and to the genetic variability of the population.

(V) The age of weaning varies between 30 and 75 days, with the majority being weaned at 60 days (52% of the population). The animals which are intended only for meat production, whether males or females, are slaughtered at the following ages: from 1 to 1.5 years old for 70% of the population; approximately at 1 year old for 22% and the remaining 8% at less than 1 year old.

Housing

With regard to housing, we found that all the animals are kept in a regime of permanent stabling. There are two types of habitation: the traditional "stalls" found under the farmer's house (13%) or "stalls" built as an annex to the house (60%) and secondly, modern pigsties which comply with current legislation (27%). The first two have poor ventilation, little light and beds of straw or vegetation. The more recent kinds are to be found far from the villages so as not to cause harm to the public health, have cement floors, good lighting, good ventilation and allow for good hygiene in the installations for the animals.

ANCSUB (the National Association of Breeders of the Bísaro Race) in collaboration with the Town Council of Vinhais and the Natural Park of Montesinho have created a typical design for small pigsties for family use. This design is furnished free to all the associates of the ANCSUB.

Alimentation

The alimentation of the pigs is highly variable, depending on the season of the year. Their diet may contain the following items: grain and flour of corn, wheat, rye and oats, potatoes, chestnuts, pumpkins, cabbages, beetroots, turnips, leftovers from meals and by-products of the kitchen such as peelings from potatoes, fruit and vegetables. It is worth pointing out that the potatoes and chestnuts which are used only include those which have no commercial value or which for some other reason were not sold nor needed for human consumption (Figs 1,2 and 3).

Conclusions and suggestions

After the study was carried out we arrived at the following conclusions:

(i) The average number of breeding sows per breeder is 2.7; the average number of boars is 1.4, giving a perspective of growth in effective reproduction in 67% of the pig breeders.

(ii) Of the pig production, 40% was for consumption by the breeder, 20% was destined to be sold as live animals, 5% was for sale as carcass and the remaining 35% of the production was used as the raw material for the manufacture of the smoked sausage of the region, for later sale.

(iii) The age at which the boar initiates its breeding function is located between 7 and 8 months of age for 74% of the breeders and they are slaughtered at from 1 to 1.5 years old for 48% of the breeders, at 2 years old for 30% of the breeders and the remaining 22% up to 2.5 years old.

(iv) The sows are covered for the first time at between 6 and 8 months of age in 95% of the cases and are slaughtered from the age of 1 to 1.5 years old in 47% of the cases studied, while the rest are slaughtered at between 2 and 2.5 years old.

(v) The number of litters born per year is 1 for 28%, 2 litters per year for 64% and 3 litters in 2 years for 8% of the cases studied.

(vi) The average number of piglets born per litter was: fewer than 10 for 30% of the population, 10 for 26% of the population and more than 10 for 44% of the population. The range was from 8 to 18 piglets in a litter.

(vii) The weaning age varied between 30 and 75 days, the majority being weaned at 60 days (52% of the population).

(viii) The animals are kept in a regime of permanent stabling. There are two types of installations: the traditional "stalls" found under the house of the farmer (13%) or "stalls" built as an annex to the house (60%) and the modern pigsties which comply with current legislation (27%).

(ix) The alimentation of the pigs is highly variable, depending on the season of the year. Their diet includes: flour and grain of corn, wheat, rye and oats, potatoes, chestnuts, pumpkins, cabbages, beetroots, turnips, leftovers from meals and by-products of the kitchen such as peelings of potatoes, fruit and vegetables.

(x) The National Association of Breeders of the Bísaro Race, the Town Council of Vinhais and the Natural park of Montesinho are in harmony with the breeders in their efforts to defend and recuperate the Bísaro pig.

After an analysis of the work carried out it was concluded that a great deal will still have to be done in order to achieve the complete recuperation and improvement of the "Bísaro" race of pig. In order to do this, the opinion is held that it is necessary to see a joint intervention of: (i) adequate policies (in the pricing of the meat, in its commercialization, etc); (ii) institutions of teaching and research (definition of objectives in the selection and improvement of the race and ways in which to do this); (iii) the associations of pig breeders (a greater capacity to intervene); (iv) the pig breeders themselves (increasing the numbers of pigs and improving their productive indexes); and (v) the population in general (namely the consumers).

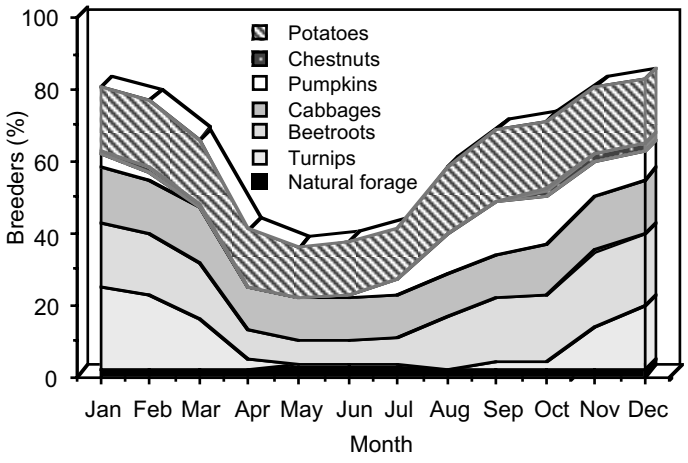

Fig. 1. Alimentation of the pigs over the year.

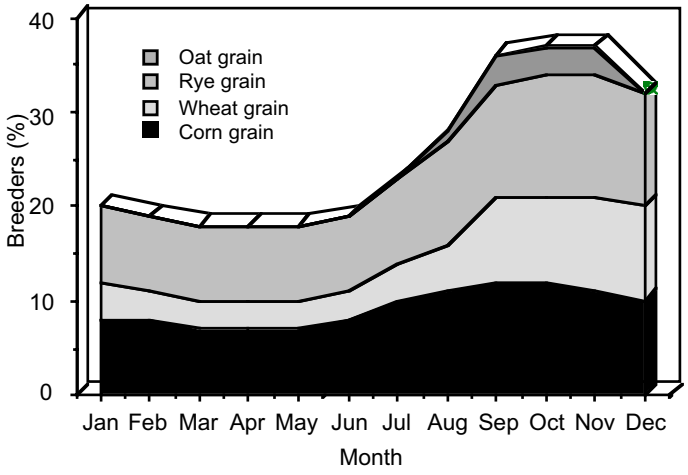

Fig. 2. Alimentation of the pigs with grain throughout the year.

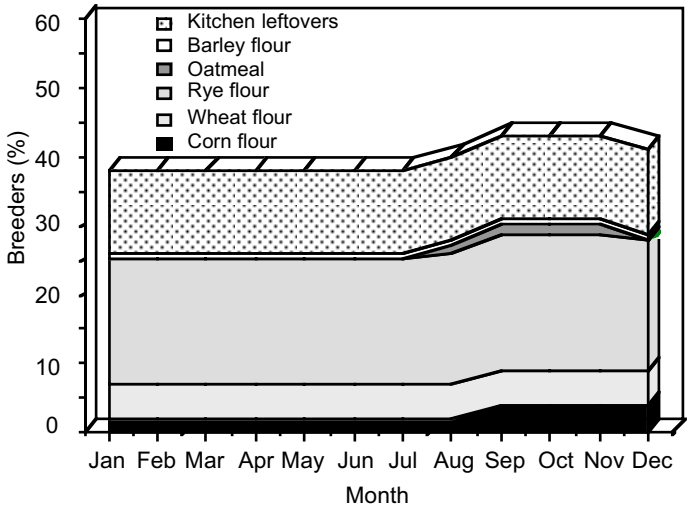

Fig. 3. Alimentation of the pigs with flours and kitchen leftovers over the year.

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