A point of differentiation: lberian pork

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he European pig industry has, and still is, facing many challenges over a short period of time: a profound crisis derived from high feed costs in 2007 and 2008 that depleted economic reserves of pig producers; a global financial crisis that decreased pork consumption and prevented producers returning to profits and obtaining financial loans.

This scenario gets apparently worse when we look at the requirements that EU regulations impose on producers: traceability, animal welfare, antibiotic growth promoter ban, environmental concerns, etc.

These legal restrictions place the European pig industry at a disadvantage in front of other world producers who are thus able to produce pork meat at a lower cost than any EU producer. This will certainly impede the industry when competing for export markets.

Alternatively, the EU consumer demands



meat that is totally traceable, derived from animals raised under high welfare standards, and following environmentally sustainable procedures.

Hams as usually found in specialised restaurants. The small buckets are used to prevent fat droplets falling from the hams due to the low melting point of the their unsaturated fatty acids.



This creates a big problem for an industry that is already producing more than its inner market is able to consume.

A combination of genetics, nutrition and management practices have permitted the industry to be competitive and capable of exporting, but this advantage is narrowing to a level where most EU producers are no longer able to make any profit.

Iberian pork

New opportunities need to be explored if the European pig industry wants to survive. Looking into exporting high value added products is one such opportunity and Iberic pork is an example of a differentiated pork product that will have no competitors around the world.

This unique pork, either fresh or cured as ham, loins or sausages, and healthy and tasty at the same time, offers a valuable development opportunity to the Spanish pig industry.

Iberian pork has been traditionally produced in Spain over many centuries. This type of production evolved as a way to take advantage of natural resources in the southwest of Spain.

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This area (Dehesa) has very specific climatic conditions with very hot summers and mild springs and autumns. The landscape in this area is the result of the interaction between man and nature. It is basically a low density wood, predominantly of holm oak trees, and soil vegetation which reseeds itself annually.

The presence of animal herbivores is necessary for this annual cycle to be completed.

The holm oak tree produces a significant amount of acorns (Bellota) during autumn and winter.

These fruits are very dense energetically and contain a high level of unsaturated fatty acids. Together with the grass, they are the main constituents of the diet of pure lberic pigs.

The lberic pig belongs to a specific breed with some sub-breeds within it. As a common characteristic, these animals are very rustic and well adapted to their environment.

Externally they have a thin bone structure, relatively long legs, and dark hair (black or reddish depending on the subtype). The weight of adult sows of average body condition is usually not more than 150kg.

Internally, these pigs have a strong tendency to accumulate fat within their bodies, both subcutaneous and intramuscular.

This genetic characteristic, together with the particular growing and finishing condi-

tions provide the very special taste and texture to the meat of these animals, which makes it so appreciated by the consumer.

Production process

The most traditional type of Iberic pork production is mostly extensive. Sows are usually kept and managed following a camping like management system. Productivity is very low and the aim is to produce two litters per year with a total of 10-12 piglets weaned per sow per year.

Weaning of the piglets is usually done at about eight weeks of age, with some creep feed given to the piglets from three weeks of age onwards. After weaning, piglets are kept outdoors with some shelters provided. At this time, the animals start grazing the little grass and acorns available and some feed supplement is provided at a rate of I-2kg/head daily.

Since age and time of the year at slaughter have a strong impact on the quality of the end product, ADG is voluntarily limited. During this phase, the goal for ADG is only 250g. The growing period (weaning to finishing) is very long and may last for up to 10 months.

The aim is to obtain an animal of 100kg live weight that is ready to start the finishing period in early autumn. Exercise is important throughout the entire growing and finishing phases to promote muscle mitochondrial development as well as intramuscular fat deposition.

The finishing period

The finishing period is from October to March. During this season, grass and acorns are the sole sources of feed for the animals. Weight gain during this season is much higher, reaching levels from 0.8 to 1 kg per day. Most of this gain is in the form of fat.

From November onwards, animals that reach approximately 160kg LW, are slaughtered. Animals which do not reach this slaughtering weight at the end of the season may be supplemented with grains, although its quality grade is lower, and hence their economic value. Average slaughter age is about 18 months.

This calendar is followed with very little variation due to two facts:

11t permits an optimum use of natural resources for the growth of the animals. 1Since most of the meat from these animals is being commercially cured, the animals need to be slaughtered at a time when the ambient temperature is low enough to enable the curing process to take place.

Since this type of traditional production is very limited (only two pigs per hectare may be produced this way), in an attempt to increase production to supply a growing demand at a more affordable price, there are some mixed systems where the sows are crossbred with Duroc boars to increase prolificacy of the sows and performance parameters of the progeny. These sows are usually managed similarly to sows produced under intensive production systems.

Their piglets will usually go into the growing and finishing phase in an adaptation of the conventional system where the animals are kept in confinement (usually indoors) and fed commercial feeds formulated to provide the same fatty acid profile as the animals produced traditionally.

Sometimes a mixed system may be adopted where the animals, even though fed commercial feeds, are finished outdoors in very large pens in order to promote exercise. Slaughter weight is also close to 150kg live weight.

Within this more intensive type of production, and due to the high feed intake of the animals, the supplements chosen to be included in the feeds are critical, both to improve productivity of the animals and to maintain the high quality status of the end product.

Table I shows the results of a commercial trial conducted in Spain with Iberian piglets weaned at 21 days of age. Results show a significant increase in piglets' weight 24 days after weaning and a numerical improvement in feed conversion rate when they were supplemented with a unique yeast carbohydrate product (Actigen, Alltech Inc).

Commercial value

Most of the meat from the Iberian pig is sold as cured products. Hams and front legs are the most valuable cuts, followed by the loins. Other meat cuts are used to produce



Parameter	Day	Control	Actigen	Р
Weight	0	6.59	6.59	0.44
0	7	7.03	7.05	0.33
	24	12.00	12.41	< 0.01
Average daily				
gain (g/d)	0-7	62	66	0.32
	7-24	293	315	0.02
	0-24	225	242	0.02
FCR	0-7	1.81	1.94	0.31
	7-24	1.29	1.23	0.02
	0-24	1.33	1.28	0.1

Table 1. Effects of Actigen on weight gain and feed conversion during the first 24 days after weaning in piglets weaned at 21 days of age (Sinual, 2010; non published data).

different types of salami-like products. Some specific cuts are consumed fresh, although it represents a very small percentage of the total lberian pork consumption.

Even though the fat content of Iberian pork products is usually high, the fatty acid profile is such that within Spain it is considered a very healthy food, and moderate consumption is recommended even to patients suffering from coronary heart disease.

The curing process itself also has a huge impact on the quality of the final product. For example, some of the highest quality hams may require to be cured for up to four years in order to reach the top quality grades. This process certainly has a large cost, but since production is very limited, the selling price is also high: a very good quality ham may be worth around $\in 1000$, with very few top ones reaching record prices of up to $\in 3000$.

Facts and figures

Total sow herd included within the Iberic group is 180,000 sows of which only 60,000 are purebred. In terms of animals slaughtered in 2010, 2.5 million animals were slaughtered under the Iberian pork brand; of those, 600,000 animals had been produced under extensive conditions and 1.9 million under intensive rearing conditions. Most of the animals from this last group were crossbred animals. Total Iberian pork represents over 6% of the total pig production in Spain.

Conclusions

Iberian pork production produces 10-12 piglets weaned per sow per year, with average daily gain of less than 0.5kg a day. Pigs are slaughtered at approximately 160kg liveweight at 1.5-2.0 years of age with a very high fat content in the carcase (both intramuscular and subcutaneous fat). Even with these extremely poor performance indicators, this is one of the most profitable types of pig production in Spain.

These animals are raised and managed most of the time outdoors, with almost no investment in facilities, and also take advantage of natural resources which have very little value for other purposes.

Commercial feed is only supplemented at specific times in the pig's life and the animals are finished out in the pasture where they graze fresh grass and acorns. This combination of genetics (high marbling), exercise and diet results in a unique meat, that is healthy, tasty and full of flavour which can be consumed either fresh or cured.

Since there is a limit to the amount of pigs that can be produced within this system, the price is usually high enough to make it profitable even for small producers.