

Challenges on milk recording and sampling in the Latxa dairy sheep breeding program

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Abstract

Latxa is a local dairy sheep breed located in the south of the Pyrenean Mountains, mainly in the Basque Autonomous Community and the Foral Community of Navarra and it has a strong genetic link with the sheep population called Manech on the French side of the Pyrenees.

The improvement program of the breed began in 1981 and in these 40 years it has been adapted to the needs of the moment, with the general objective of improving its productivity to increase the economic profitability of the breeders, maintaining the traditional production system, rusticity and adaptation to the environment that characterizes this breed.

Nowadays, the breeding goal of the Breeding Program is more balanced and focuses on the improvement of the milk yield, fat and protein percentage and udder morphology. At the research level, functional longevity and adaptation to climate change are being studied.

This paper is a review the methods and equipment used for milk recording operations in the Latxa breed, with an emphasis on the main challenges face regarding the specificity of the dairy sheep milking routine and on the main prospects for the future. It will as well give the general lessons and experiences drawn from the other Spanish dairy sheep breeds involved in a breeding program with milk recording.

Keywords: Latxa, dairy sheep, milk recording, breed association, Spain.

Latxa is a local dairy sheep breed of the Basque Autonomous Community and the Foral Community of Navarra, in the north of Spain and on the border with France. The census in 2022 was of 135.143 sheep in 5.530 flocks in the Basque Community and 125.970 sheep in 1.444 flocks in Navarra.

In the last 15 years there has been a big decrease in the number of sheep but not in number of flocks and nowadays 400 flocks are milking flocks and the rest have Latxa sheep as a complement to another activity, mainly the industry.

Introduction

Table 1. Evolution of number of Latxa sheep and flocks.

Year	2005	2010	2015	2021
Ewes	409.730	364.169	301.038	261.113
Flocks	6.934	7.747	7.149	6.974

Breeding program

The breeding program is managed by CONFELAC, a Confederation of the four member breeders' associations: ASLANA in Navarra, AGORALA in Araba, ELE in Gipuzkoa and ACOL in Bizkaia.

The selection program is aimed at milking flocks and although it is considered a single breed, there are three recognized varieties, being the distribution of number of animals and breeders in the Herdbook in 2022 as follow:

- Latxa Blond Face: 41.181 sheep and 95 breeders in 2022.
- Euskadi Latxa Back Face: 22.580 sheep and 70 breeders.
- Navarra Latxa Black Face: 16.584 sheep and 42 breeders.

The milk recording started in 1981 and in 1999 the sampling was introduced to improve the milk composition (fat and protein percentage) and since 2001 the udder morphology is the third improvement character.

Regarding to the genetic evaluation, in 2022 the genomic evaluation was introduced to evaluate all the characters.

Milk recording and sampling

In 2022 the milk recording was made in 169 flocks that had 63.288 sheep and 39.692 lactations were calculated, but the evolution in the number of animals has been different for each variety:

- There is a stability in Blond Face variety.
- Stable but small population in Navarra Black Face.
- Decrease in Euskadi Black Face population.

The milk recording methodology used is AC4 in 60% of the flocks and AT4 in the 40% and the meters are volumetric in all of them except in 5 flocks where farmer's individual electronic meters are used.

All the sheep are identified with ear tag and electronically by ruminal bolus and the microchip reader device used in the milk recording is the "Gesreader" of Datamars.

Regarding to the sampling for the milk composition analysis, in 2022 58.134 samples were taken in 111 flocks, being the 65% of them. Due to the high cost of the sample collection and analytics, it cannot be done in all animals and in 2022:

- In 47 flocks all the milking sheep were sampled up to the day 130 of lactation.
- In 32 flocks the sheep on first and second lactation were sampled up to the day 130 of lactation
- In 32 flocks sheep in first lactation were sampled up to the day 130 of lactation.

The samples are identified at the time of collection with a sequential number and they are analysed in ALVO laboratory, in Navarra.

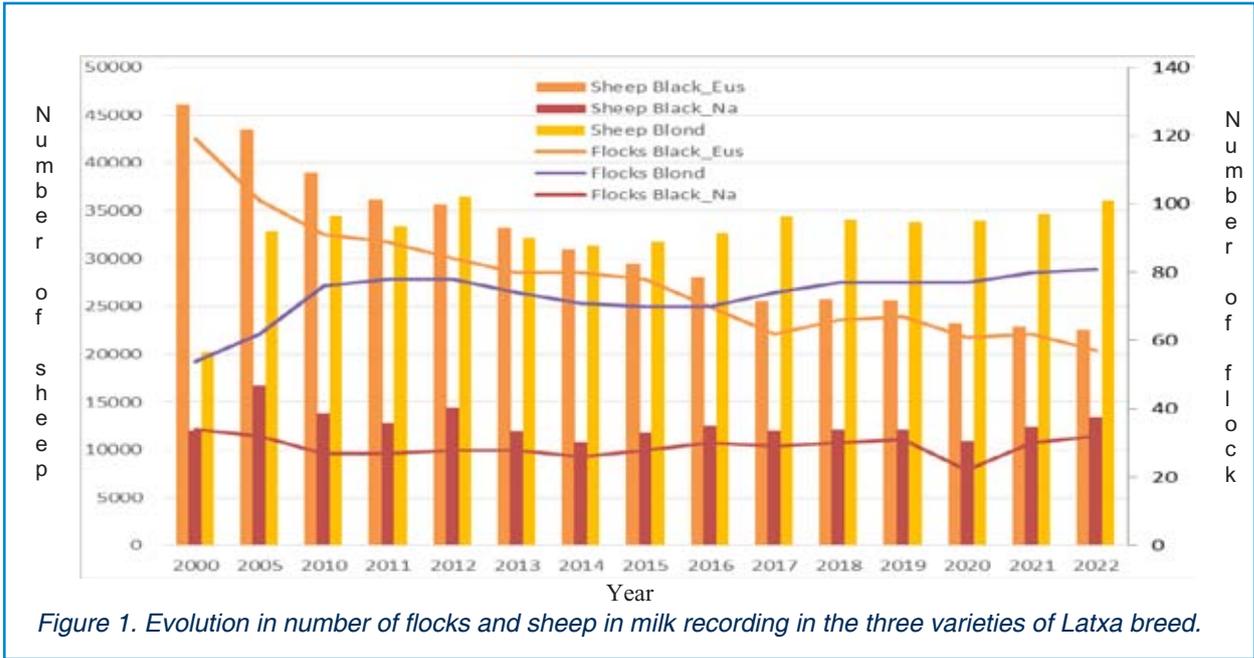


Figure 1. Evolution in number of flocks and sheep in milk recording in the three varieties of Latxa breed.



Figure 2. Pictures of the milk recording devices. Top left: Volumetric milk meter; In the middle: Microchip reader; Top right: Ear tag and ruminal bolus.

Breeders collect birth data in the birth book or through the SIRA electronic device. 25% do so using the SIRA reader, which generates a file that is automatically loaded into the central database of the breeders association.

Data flow

The technicians make the milk recording using the Gesreader and then all the information is unloaded in a specific program in a laptop and then dumped into the central database of the breeders association.



Figure 3. Sampling in electronic meter milking machine.

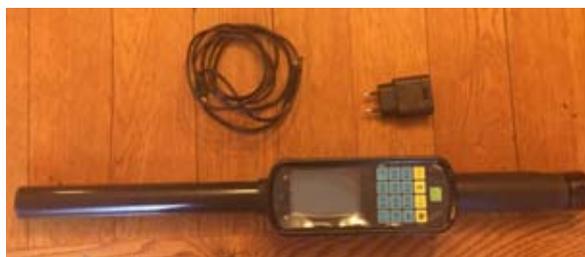


Figure 4. SIRA microchip reader used by breeders.

Difficulties in milk recording and sampling

The most significant difficulties identified are due to the great variability of milking machines:

- 30% of the milking machines are high-line (most of them new machines) but the meters for milk recording in use today are designed for low-line milking machines and due to the high cost of each meter it is not possible to have both types for each technician.
- Some flocks have individual identification of animals in the milking machine and sheep must be identified with electronic ear tag. But the microchip reader used for milk recording can't read several animals first and then enter the milk yield and it is difficult to read the ear tag from the milking pit.
- Several problems with electronic meters: most of them are not approved by the ICAR, some of them don't measure with good accuracy and the sampling is very difficult and not representative.

Table 2. Other Spanish breeds significant data.

	Manchega	Churra	Assaf
Ewes	900.000 (600.000 milking)	300.000 (100.000 milking)	800.000
Flocks	1.000	400	1.100
Ewes in HerdBook	171.028	93.000 21.980 milk recording	140.000
Breeders in HerdBook	130	131 38 milk recording	125
Calculated lactations	119.546		74.101
Samples	51.311 in 18 breeders	51.064 all breeders	53.000 all breeders first lact.
Breeders Electronic meters	51	2 but not using	36
Udder morphology	58.046 in 123 breeders	5.202 in 15 breeders	

In addition to the Latxa, there are other dairy sheep breeds in Spain and the most important are the local breed Manchega in Castilla-La Mancha and Churra in Castilla y León. The non-autochthonous breed with the largest census is the Assaf.

Other Spanish breeds

As a summary, the main challenges on milk recording and sampling in the Latxa breed are the following:

- Specific meters for milk recording and sampling in high-line milking machines.
- New readers for milk recording with electronic Ear Tags or bolus indifferently.
- Milking machines and electronic meters adapted and approved for milk recording and sampling.
- Individual sample identification with animal number.
- Improve information flow having more electronic readers for breeders and a web database accessible for breeders.

Conclusions