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# Milk sheep production systems in Europe: Diversity and main trends

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**Abstract.** The milk sheep sector in Europe is concentrated in the southern countries and, for some regions, can have a significant economic impact. Our study analyses the evolution of the very diverse milk sheep production systems in the main European regions. We start our study with a bibliographical analysis. Then, to validate those bibliographical results and have some ideas of the potential evolutions, we complete these results with interviews of professional or scientific experts in the different milk sheep European regions. The double approach of the sector gives some interesting guidelines on the perspectives of this sector which could have, in some conditions, a nice future among the animal productions in Europe.

**Keywords.** Dairy ewe – Small ruminant – Perspective – Mediterranean country – Cheese.

## ***Les systèmes de production ovins lait en Europe, diversité et principales tendances***

**Résumé.** Le secteur des ovins laitiers en Europe est concentré dans les pays du sud et, pour quelques régions, peut avoir un impact économique significatif. Notre étude analyse l'évolution des systèmes de production ovins lait très diversifiés dans les principales régions européennes. Nous commençons notre étude par une analyse bibliographique. Puis, pour valider ces résultats bibliographiques et avoir quelques idées d'évolutions potentielles, nous complétons ces résultats avec des entretiens d'experts professionnels ou scientifiques des différentes régions ovines laitières européennes. La double approche du secteur donne quelques indications intéressantes sur les perspectives de ce secteur qui pourrait avoir, dans certaines conditions, un bel avenir parmi les productions animales européennes.

**Mots-clés.** Brebis laitière – Petit ruminant – Perspective – Pays méditerranéen – Fromage.

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## **I – Introduction**

The sheep milk production in Europe is a significant sector for the Southern countries. This production is concentrated in a patchwork of regions linked to high quality cheeses. Those regions seem, up to now, to evolve rapidly but rather independently like "niche" markets.

To analyse these milk sheep regions at a European scale, we will briefly describe some of the main regions with their main production systems and we will complete the description by drawing some guidelines of their future thanks to some experts' opinions and our global analysis.

## **II – Europe, among the world leaders for sheep milk production**

### **1. The world milk sheep production in a positive perspective**

According to the FAO data published in 2009, the decrease of the world sheep flock in the recent decades (minus 10% from 1990 to 2007) is mainly due to Europe and Oceania who respectively lost 48% and 42% of their flocks between 1987 and 2007, when Asia and Africa respectively increased their flock of 50% and 53%. From the early 70's and in spite of the decrease of the sheep flock since 1990, the world sheep meat and milk productions both

continued to increase significantly (about 60% of increase up to 2007). This has obviously been possible thanks to an increase of productivity for meat and milk sheep but also a significant conversion from wool to meat in the Southern hemisphere. Anyway, the sheep milk sector seems to be in a rather positive trend at world level.

## 2. Europe, a major actor in the world milk sheep production

Concerning the sheep milk production and according to FAO, Europe was still the leader region in the world in 2007 but, thanks to a higher growth during the previous ten years, the Middle East region may rapidly pass Europe (Table 1). Syria, the second country in the world after China had a 67% growth from 1997 to 2007.

**Table 1. Recent changes for the main milk sheep regions in the world**

	Production in 2007 (.000 t)	2007/1997 (%)
Main European countries	2599	7
Main Middle East countries†	2340	22
Main African countries	1304	17
China	1.072	0

Source: from FAO, 2009; (†) including Turkey.

Northern America has no significant sheep milk production. Mexico, USA and Canada are estimated to have only less than 200 milk sheep farms with 25,000 ewes in total in 2010 (Berger *et al.*, 2010).

The situation is similar in Oceania, but New Zealand seems to have a recent interest for the sheep milk production with a project of one farm with more than 10,000 ewes (Berger, 2010). Australia is mentioned to have some rare milk sheep producers mainly oriented towards yogurt making (Idda *et al.*, 2010).

The sheep cheese market seems to be a European story as the six major exporting countries for sheep cheese are European, Italy clearly leading the list (FAO, 2009) and, behind USA as a clear leader, the nine following countries for importations are also European, led by Germany. Those data show that, apart from the important volume imported by USA mainly from Europe, the sheep cheese is mostly exchanged within European countries.

According to FAO, Europe is on a slight increasing trend from years. When the leader Greece is stable, Romania, the second, has the fastest growth and Italy, the third, has dropped significantly.

More recently, Romania had a yearly sheep flock growth of 5 to 6% in 2008 and 2009, when Greece was estimated to slow in this period and even had a decrease of 5% estimated in 2010 for instance (Institut de l'Elevage, 2010a). Romania could rapidly become the European leader for the sheep milk production.

## III – The main European milk sheep regions: diversity and independence

New EU members in Central Europe like Romania, Bulgaria and Slovakia are important actors in the sheep milk sector. However, missing a part of the data in those countries, we did not integrate them in the comparison table (Table 2).

The Table 2 is showing the important diversity of the main sheep milk regions in EU. Those regions often submitted their cheese label to a quality framework limiting the production

systems to local breeds and a minimum of local forage. Those regions behave rather independently in a protection strategy type close from a "niche" market, each breed and system is well adapted to the natural conditions and traditional systems and each cheese being on a market segment rather independent from the other one.

**Table 2. Diversity of the main milk sheep regions in the world**

	Spain (1)	Spain (1)	Spain (2)	France (3)	France (4)	France (3)	Italy (5)	Greece (6)
	Castile the Mancha	Castile & Leon	Basque	Basque	Roquefort	Corsica	Sardinia	Greece
No. of ewes per farm	900-1000	-	360	235	400	225	-	210
Production (l/ewe)	180	-	-	115	150-250	110	180-200	100-140
Dominant breeds	Manchega	Assaf, Churra	Latxa	Manech, Basco béarnaise	Lacaune	Corsican	Sardinian	Chios, Karagouniko
% mechanized milking	100	-	-	50	100	50	-	10
Main cheese	Manchego	Zamorano	Idiazabal	Ossau Iraty	Roquefort	Brocciu	Pecorino	Feta
Price of the milk	1.08-1.20 in PDO, 0.8 non PDO	-	0.96	1	1.13 in PDO 0.73 non PDO	1.15	0.65	-

Sources: in 2010, (1) & (2) Caja *et al.*, (2) Arranz, (3) & (4) Morin, (4) Frégeat, (5) Carta, (6) Vallerand and Arsenos.

## IV – Perspectives for the European milk sheep sector

To try to get a prospective view of the sector, we interviewed experts in the different regions in a semi-directive questionnaire, with open questions.

Milking mechanisation is developing everywhere when the level is not yet at 100%. However, and this is significant of the very hard economic time to see, like in Sardinia, some farmers who cannot afford to maintain their milking parlour go back to hand milking (Carta and Pazzona, 2010). In all the regions, the automatic removal systems seem to rapidly develop.

Feeding systems are mainly based on grass in wet areas, like the Basque regions and mountain region in Central Europe (Slovakia), on concentrates in Italy, the Castile regions and Roquefort or on bought forages in Greece, where the recent reduction of the hay transportation price had a significant impact (Vallerand, 2010). At European level and according to the cereals or hay market price, the grazed forage has a global trend to decrease in the diet.

In many regions, Assaf, Lacaune and East Frisian breeds develop rapidly as "productive breeds" like: in Spain, where Assaf has now passed the Churra in the National Census (MARM, 2010) and Lacaune is supposed to have more than 200,000 ewes (Caja *et al.*, 2010); in Greece, for the Lacaune (Vallerand, 2010) and in Slovakia, where Lacaune and East Friesian are the major developing breeds (Kuchtik, 2010) (Tancin *et al.*, 2010).

Depending on the maturity and efficiency of the genetic scheme, the recent selected traits are: parasite resistance, udder conformation, longevity and fatty acid composition. The Lacaune genetic scheme is the most advanced one thanks to the artificial insemination covering nearly 100% of the flocks in Roquefort. This breed has launched an ambitious genomic program: "Roquefort'in". The other main breeds have projects in genomic which could also raise a new interest for more traditional hardy breeds which have often kept very high fat and protein contents, good disease resistance and good adaptation to low quality forage for instance.

Labour is mentioned in all the regions as a major issue, either as a problem for the familial

farms the size of which does not allow employing a worker to substitute the farmer when necessary, or for the bigger farms who often have harder time to find employees, like in Slovakia (Tancin and Margetin, 2010) or in Greece where Albanian workers sometime milk three times a day (Vallerand, 2010). For the milking time, Roquefort is targeting one hour per milking (Baily, 2010), and most of the regions are working at the ways to use the "one daily milking" systems which could soon develop in Europe.

Concerning the market and according to the majority of the contacted experts, the sheep cheese demand is increasing. It is interesting to note that the familial cheese farms selling their cheese out of the main labelled chains seem to resist better to the crises as they have more flexibility to adapt their prices, like in France in 2008 (Institut de l'Élevage, 2010b) where this sector is developing faster than the other ones, representing now more than two times the Corsican region with 21 million litres (Barillet and Marnet, 2010). On another hand, the non-labelled industrial sheep milk sector seems to develop with larger farms, more intensive systems (indoors and concentrates feed) and productive breeds (Lacaune, Assaf, Friesian, etc.) like we see in Castile and Leon, within the Manchega region as well, in the surrounding of the French and Spanish Basque areas (the largest dairy farms in the Spanish side (Arranz *et al.* 2010), in the Central European regions and, much further, in Oceania which could be the emerging milk sheep exporting region? Recently, a few farmers have started to leave the Roquefort industry, which is really new (Panis, 2010). This raising non-label sector is not often considered in regional or label cheese statistics, but starts to have a significant impact on the market. We can also notice that more and more sheep milk is travelling within regions like from Bulgaria to Greece (Vallerand, 2010) or from Roquefort to Corsica and French Basque regions through Spain or even Sardinia (Barillet, 2010). An interesting indicator of an "emerging European sheep milk market" is that the sheep milk price in Slovakia has rapidly raised from 0,5 euros in 2005 to 0,8 euros per litre in 2009 (Tancin *et al.*, 2010). Meanwhile, Greece suffers from its deep public financial crisis and Italy is stroked by its high dependence from the exportations to the depressed USA market and non-favourable dollar/euro currency rate. Castille the Manche, facing as well the drop of the USA market, developed very rapidly its export to UK (Arias *et al.*, 2010).

## V – Conclusion

The European milk sheep regions should work more collectively to rapidly improve their farm systems profitability and face the economic crisis to go to a more optimistic future (de Rancourt, 2009). To face the new challenges of the urgent switch to a modern labour management, the rising non-labelled sector, the developing international exchanges and the economic crisis, this sector has nice strengths like the very high quality of its products linked to a consumption rather well oriented, and a very good environmental impact compared to lots of other animal productions. In addition to this, the sheep farms, being most often located in remote, nice and natural regions, could draw profit from the raising attraction of urban people for cheap ecological holidays and, why not, for discovering the exciting sheep farmer's life and culture!

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