

Prolific dairy sheep breeds in Greece

J. Hatziminaoglou, N. P. Zervas and J.G. Boyazoglu

Department of Animal Production, Faculty of Agriculture, Aristotle University, Thessaloniki (Greece)

Summary

From a genetic variety point of view, the Greek sheep population of 9 million animals represents one of the broadest spectrums in Europe and the Mediterranean region. Prolific dairy breeds in particular have valuable genetic isolates which, with the exception of the Chios breed, are unfortunately in danger of extinction. This paper describes four of the more interesting prolific dairy breeds and summarizes the available data recorded on farms and stations.

Résumé

□ Titre : Races prolifiques de brebis laitières en Grèce

Du point de vue de la diversité génétique, la population ovine grecque, forte de neuf millions d'animaux, représente un des plus larges spectres en Europe et dans la région méditerranéenne. Les races productrices de lait, en particulier, ont des caractéristiques génétiques intéressantes. Elles sont pourtant, à l'exception des chios en danger d'extinction. Cette communication décrit quatre des plus intéressantes races laitières et résume les données disponibles dans les stations et les fermes.

I. - Introduction

Genetic material of various types and origins from different geographic areas has contributed to the foundation of Greek sheep breeds which date back to the very remote past.

The main indigenous sheep breeds must have been influenced genetically by the large Zackel group from the north (thin-tailed, mixed wool type), whereas the smaller populations, mainly in the north-east regions of the country, were influenced by the Tsigai type (thin-tailed but of finer wool quality), and those on the Aegean Islands near the Asian coasts mainly by fat-tailed sheep of eastern provenance. In fact, Greece probably has one of the broadest and most valuable reservoirs of sheep genetic material in the Mediterranean and para-Mediterranean region (**figure 1**).

In addition to the role played by introduced germ plasm in the formation of larger-numbered local breeds (e.g. Karagouniko and mountain breeds), other factors such as geographic isolation (a multitude of islands), local micro-climatic conditions and the prolonged implementation of particular breeding and management systems must have contributed to the stabilization of some small nuclei, distinguished for their exceptional characteristics (milk yield and prolificacy). These are the insular breeds of Chios, Skopelos, Kimi and Zakynthos which have common features such as small population size, high milk yield and excellent prolificacy. These populations are raised with semi-intensive management systems (stall-fed on a family basis), but unfortunately are in serious danger of extinction.

II. - The breeds

The Chios breed originated on the island of Chios, where a population of only about 2,000 now remains. This semi fat-tailed breed has undoubtedly been influenced by fat-tailed animals of eastern provenance. Over the past 15 years, the breed has extended its influence in continental Greece with the creation of a considerable number of intensively-kept herds. The total population is now estimated at 100,000 (purebreds and improved). This breed is also found in some areas on the western Turkish coast (under the name Sakiz), in Cyprus (80,000 purebreds and 115,000 crossbreeds) and in North Africa, the Middle East and other countries.

On Chios it is kept in family units (1-3 animals) compared to the mainland herds of 50-100, where it is exploited under intensive conditions compared to other local breeds.

It is a medium to large sized breed with a female height of 68-77 cm and weight of 45-55 kg. The colouring is off-white with some blackish or dark spots around the eyes, at the tip of the ears and nose, and often around the belly and legs. The blackish colouring may sometimes be spread over the entire head. The males have long spiral horns and the females are hornless. The udder is large with weak attachments and the fleece is more or less uniform. The Chios breed is early maturing and can be bred at 8-9 months of age. The lambing period extends from November to March with a high prolificacy of 1.8-2.2.

Commercialized milk production is 180-200 kg after a suckling period of 40-60 days. With good husbandry, some individuals can yield more than 500 kg of milk per lactation.

Since this breed contains very valuable genetic material, part of the island population is under milk control but this is not, unfortunately, backed up by a specialized breed promotion organization. An additional number of animals is also controlled on the mainland and a major breeding nucleus (500 ewes) is kept at the Agio Mamas experimental station of the Ministry of Agriculture in Halkidiki, where the various phenotypic and genetic parameters of the breed are studied. In Cyprus, they plan a pyramidal scheme with state breeding stations and selection units with production farms as the base.

The Skopelos breed is mainly raised in two villages on the island of Skopelios (some 1,000 animals) and on the mainland (Magnissia) where it has also been used in crossbreeding. It probably originates from the now almost extinct, uniform-wooled sheep of Halkidiki, and is related to the Kimi breed.

This breed is kept in family units of 2-15 animals, mostly semi-stall fed.

The colouring is white with black or brown-red spots on the face and extremities. The height and weight of females is 60-65 cm and 40-45 kg, respectively. The males have short horns and the females are hornless or have small horns. The wool is of medium to fine quality. The udder is large, with sizeable teats. The Skopelos breed is early maturing and is usually bred at 8-10 months of age. The lambing period extends from November to May and the prolificacy varies from 1.6-1.8.

The marketable milk production is 160-180 kg. Due to the very small breed size and inadequate financial and technical support to sustain a sound breeding programme, the Skopelos population is also menaced by extinction.

The Kimi sheep population is a variant of the Skopelos, mostly raised on the Euboean island on the eastern coast of the Greek mainland. Some 1,500 purebred animals are kept around the village of Kimi in small herds of 20-50 animals.

The phenotype is similar to that of the Skopelos with a better wool type (27.1 diameter and 56 quality).

When raised under intensive, large herd conditions, the animals tend to be larger and heavier than those of the Kimi village (e.g. the Agios Mamas breeding nucleus of some 300 ewes weighs 66-70 kg and measures 65-68 cm.).

The Zakynthos breed is raised on the Ionian island bearing the same name, but small numbers are also found on the north western coast of the Peloponnese, as well as in the region of Messolongi and Preveza, in continental Greece. There are now about 1,500 purebreds which could be related to the Bergamasca breed in Italy.

The animals are kept under stall-fed conditions or in small herds (10-30 animals).

This breed is phenotypically different from all other Greek populations, having a pronounced arched profile (notably the males), high legs and long body. The height and weight of females is 55-75 cm and 45-55 kg, respectively. The colouring is white, with sometimes dark spots on the head. The males have horns, while the females are hornless. The breed belongs to the carpet wool category. It matures very early and can be bred at 7-8 months. Lambing occurs from November to December and prolificacy is about 1.8.

Marketable milk production is 160-180 kg. In spite of its high genetic importance, the breed is not officially recorded and is in danger of extinction.

III. - Problems with selection and improvement

Due to the naturally high potential of these breeds, further increases in productivity through sophisticated selection schemes do not have to be a matter of immediate concern. The most urgent priority is the preservation of the breeds by increasing their population size mainly in their place of origin as well as in other regions with similar mild Mediterranean climates.

Specifically, it is imperative for all breeds to be brought to a level of a «safe nucleus population number» of 4-5,000 animals, the number which existed 15-20 years ago. At the same time, it is believed that the provision of state or private economic and technical support with the progressive transition from the traditional stall-fed family system of 1-3 animals to a system of small units of 20-30 animals of economic interest, will constitute the framework within which the implementation of a certain improvement scheme will be possible in the future.

Urgent measures that should be adopted and which will certainly have a fruitful long term effect are the establishment of herdbooks, the establishment of ram testing stations, the selection and distribution of young breeding rams to promising farmers, as well as the better organization and generalization of milk recording.

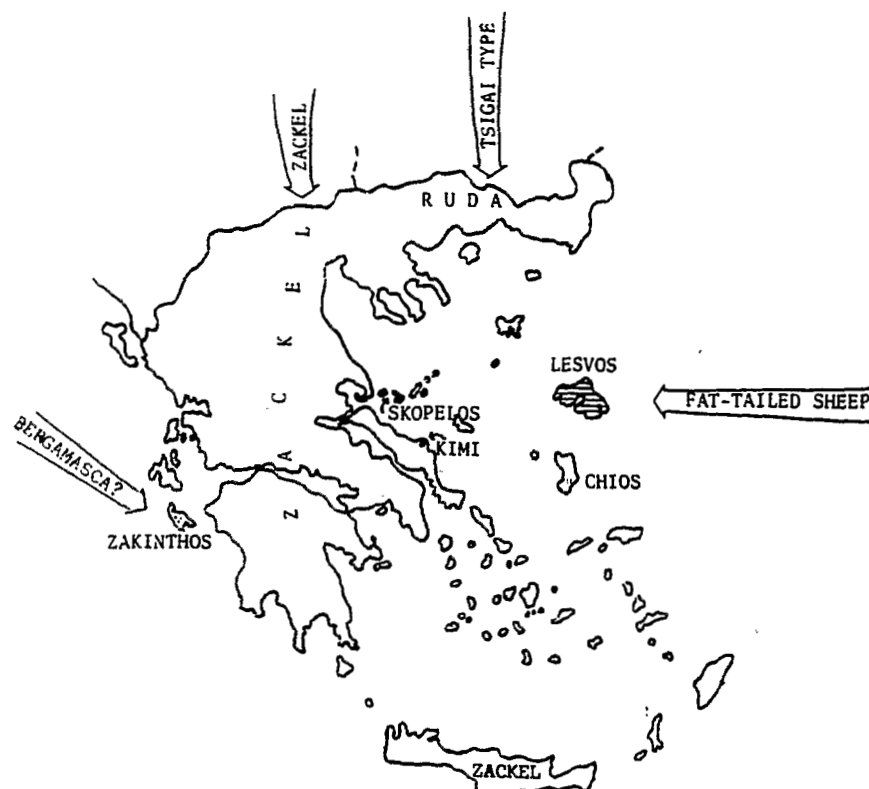
Figures 1 and 2 summarize recent information on prolificacy and commercialized milk yield of Chios (farm and station data), Kimi (farm and station data), and Skopelos (farm data only) populations.

With reference to the Chios breed, it can be said that these measures are already applied in close relation to the importance of the breed's genetic value in the larger Mediterranean context and of its place of origin (Chios). Complementary measures should also be applied here aiming at the consolidation of techniques for a more complete and up-to-date milk recording of the intensive sheep units in continental Greece and the organization of an efficient system of collecting, controlling and marketing young males with promising breeding values.

References

- GABRILIDIS (G.H.), ZERVAS (N.P.), HATZIMINOAGLOU (J.), GEORGIOUDIS (A.), BOYAZOGLU (J.G.), 1988. The Chios sheep. Special information bulletin of the Agricultural Research Station of Halkidiki (Agios Mamas), 25 p.
- Ministry of Agriculture, 1980-1988. Data of the official milk control.
- HATZIMINOAGLOU (J.), ZERVAS (N.), BOYAZOGLU (J.G.), 1985. *Sheep and goats in Greece* (in Greek and English). Special publication of the University of Thessaloniki, 29 p.
- ZERVAS (N.), BOYAZOGLU (J.C.), 1977. L'élevage en Grèce, présent et avenir. In : *Ethnozootecnie*, 18, 73 p.
- ZERVAS (N.P.) HATZIMINOAGLOU (J.), GEORGIOUDIS (A.), BOYAZOGLU (J.G.), 1988. Characteristics and experiences of Chios breed. In : *Journal of Agriculture Science in Finland*. Vol. 60, pp. 576-584.
- ZERVAS (N.), HATZIMINOAGLOU (J.), BOYAZOGLU (J.G.), 1989. The potential of dairy and prolific sheep populations in the Mediterranean basin. Proceedings of the International Symposium on the Constraints and Possibilities of Ruminants. Production in the dry subtropics. *E.A.A.P. Publication*, n° 38, pp. 114-120.

Figure 1 : The origin of sheep breeds in Greece



ZACKEL group : thin-tailed mixed wool type RUDA group : thin-tailed, finer wool quality LESVOS - CHIOS breeds : semi fat-tailed

Table 1 : Prolificacy ratios

1A. Chios

Island and Mainland units
(lambs born alive)

Lactation	Island (1980-86)	Mainland (1984-85)
1st	1.55	1.54
2nd	1.73	1.83
3rd plus	1.76	1.83
Average	1.75	1.75
Total lambings	3705	890

Halkidiki Station (1977-1986)

Lactation	Lam- bings	Lambs alive + dead	Prolifi- cacy ratio	Lambs born alive	Prolifi- cacy ratio
1st	885	1597	1.80	1511	1.71
2nd	573	1184	2.07	1105	1.93
3rd	316	691	2.19	638	2.02
4th plus	290	647	2.23	584	2.01
Total or average	2064	4119	2.00	3838	1.86

1B. Kimi

Euboea (1981-1985)

Lactation	Lam- bings	Lambs alive + dead	Prolifi- cacy ratio
1st	169	294	1.74
2nd	205	361	1.76
3rd plus	275	529	1.92
Total or average	649	1184	1.82

Halkidiki Station (1977-1986)

Lactation	Lam- bings	Lambs alive + dead	Prolifi- cacy ratio	Lambs born alive	Prolifi- cacy ratio
1st	1015	1629	1.60	1524	1.50
2nd	125	1177	1.88	1102	1.76
3rd	366	760	2.07	710	1.94
4th plus	296	643	2.17	577	1.95
Total or average	2302	4209	1.82	3913	1.70

1C. Skopelos

Island data (1985-1988)

Lactation	Lam- bings	Lambs alive + dead	Prolifi- cacy ratio
All lactations	2526	3941	152.0

Table 2 : Annual commercial milk production (post weaning) kg

2A. Chios

Island (1979-83) - Mainland (1984-86)

Lactation	N	x	N	x
1st	377	165.5	256	137.9
2nd	560	189.5	224	178.5
3rd plus	1635	204.6	433	178.7
Average Total	2572	195.6	913	162.2

Halkidiki Station (1977-86)

Lactation	N	x
1st	886	174.7
2nd	572	215.0
3rd plus	606	218.4
Average Total	2064	198.7

2B. Kimi

Euboea

Lactation	N	x
1st	169	101.6
2nd	205	134.7
3rd plus	275	150.5
Average Total	649	132.76

Halkidiki Station (1977-86)

Lactation	N	x
1st	552	109.0
2nd	350	127.8
3rd	169	125.1
4th plus	119	125.5
Average Total	1190	118.9

2C. Skopelos

Island data (1985-88)

Lactation	N	x
All lactations	2185	152.0