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Status of sheep and goat farming in Lagkada Province of Thessalonika prefecture, in Central Macedonia, Greece

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Abstract. Lagkada Province of Thessalonika prefecture is located in Central Macedonia-Greece. In this region, 103,943 sheep and 100,281 goats are farmed. The total number of sheep and goat farms is 898. The number of sheep farms, goat farms and mixed farms with sheep and goat are 278, 357 and 263 respectively. With regard to the farm size 12.9, 23.6, 26.5, 31.8 and 5.2% of farms have got less than 100 animals, 101-200, 201-300, 301-500 and more than 500 animals respectively. The diet of sheep and goats in this region is based on pasture grass for the bigger part of the year. One month before the lambing and kidding and during the first 4-5 months of lactation, animals are supplemented with alfalfa hay and a concentrate based on cereals. Sixty sheep and goat farms of the province were surveyed. Results of the survey showed that with regard to the breed structure 8.3% of farms rear animals of the Chios breed, 50.0% possess crossbreds between local breed sheep and the Chios breed, while 41.7% have crossbreds between local breed sheep and a cross between Chios ewes and Friesian rams. For goat farms 5.9% of these have Saanen breed, 17.7% have crossbreds between the local Greek goat and imported breeds (i.e. Saanen, Alpine and Damascus) and 76.4% are breeding goats of the local Greek breed. 71.7% of farms derive from heritage, while 28.3% derived from a gradual development by farmers. With regard to the farmer's age structure, 13.3% of them are under 30 years old, 18.4% are between 31 and 45 years, 55.0% are between 46 and 60 and 13.3% are above 60. 6.7% of farmers did not achieve an elementary school certificate and 56.7%, 33.3 and 3.3 of farmers have an elementary school certificate, a secondary school certificate and a high school certificate respectively. As for the future of sheep-goat farms in the region, according to the farmers' answers, 45.0% of them will continue their profession, 23.3% will sell their animals, while 31.7% will continue through a family successor(s). With regard to farm size the study showed that 6.6, 30.0, 31.7, 21.7 and 10.0% of farms possess respectively less than 100 animals, 101-200, 201-300, 301-500 and more than 500 animals. As far as the land use is concerned in 25.0, 6.7, 48.3, 20% of cases, land is respectively privately-owned, only leased, community provided, and privately-owned and leased land. Finally, as far as the average milk yield (in kg milk/animal/year) is concerned, the study showed that 6.7% of farms produce 111-130 kg, 55.0% produce 131-150 kg and 38.3% produce above 150 kg.

Keywords. Sheep and goat breeding – Farm size – Breed structure – Milk yield – Lagkada Province – Crossbred – Land.

Situation de l'élevage des ovins et caprins dans la province de Lagkada en Macédoine centrale, Grèce

Résumé. La province de Lagkada relevant de la préfecture de Thessaloniki se trouve en Macédoine centrale, Grèce. Cette région abrite 103 943 têtes ovines et 100 281 têtes caprines. Le nombre total d'exploitations disposant de troupeaux ovins et caprins est de 898, dont 273 exploitations hébergent des ovins, 357 hébergent des caprins et 273 disposent des deux espèces animales en même temps. Concernant la taille des exploitations, 12,9, 23,6, 26,5, 31,8 et 5,2% des exploitations disposent, respectivement, de moins de 100, 101-200, 201-300, 301-500 et plus de 500 animaux. La ration des ovins et caprins élevés dans cette région est basée sur la végétation herbacée prélevée au niveau des parcours. Un mois avant agnelage (ovins et caprins) et pendant les 4 à 5 premiers mois de lactation, les animaux reçoivent une supplémentation sous forme de foin de luzerne et de concentré basé sur les grains. Des enquêtes ont été menées sur 60 élevages ovins et caprins de cette province. Ce travail a permis de montrer que 8,3% des fermes disposent de la race Chios, 50% ont des races croisées (race locale × race Chios), alors que 41,7% ont des races croisées issues de croisement entre la race locale et les animaux issus du croisement entre la brebis Chios et le bélier Friesian. Quant aux caprins, 5,9% des fermes disposent de la race Saanen, 17,7% ont des races croisées [chèvre grecque locale × races importées (Saanen, Alpine, Damascus)] et 76,4% sont des races locales améliorées. On compte 71,7% de

fermes issues de l'héritage et 28,3% de fermes obtenues après amélioration progressive par les éleveurs. La classification en fonction de l'âge de l'éleveur révèle que 13,3% des éleveurs sont âgés de moins de 30 ans, 18,4% ont un âge compris entre 31 et 45 ans, 55% sont âgés de 46 à 60 ans et 13,3% sont âgés de plus de 60 ans. Environ 6,7% des éleveurs n'ont pas de certificat d'études primaires. En revanche, 56,7%, 33,3% et 3,3% éleveurs disposent de, respectivement, certificat d'études primaires, secondaires et supérieures. Quant au devenir des fermes de la région abritant des ovins et des caprins, il ressort que 45% des éleveurs vont continuer à s'occuper de l'élevage, 23,3% vont vendre leurs animaux, alors que 31,7% des éleveurs stipule que cette activité va continuer grâce à leurs successeurs dans leurs familles respectives. Concernant la taille de l'exploitation, cette étude a montré que 6,6, 30,0, 31,7, 21,7 et 10,0% des éleveurs possèdent moins de 100, 101-200, 201-300, 301-500 et plus de 500 animaux. Il apparaît que dans 25,0, 6,7, 48,3, 20% de fermes, la propriété de la terre est, respectivement, privée, louée à bail, appartenant à la communauté et en même temps privée et louée à bail. L'enquête a aussi montré que 6,7%, 55% et 38,3% des éleveurs produisent, respectivement, 111-130, 131-150 et plus de 150 kg de lait/animal/an.

Mots-clés. Elevage ovin et caprin – Taille de l'exploitation – Races – Production laitière – Province de Lagkada – Hybrides – Terre.

I – Introduction

Lagkada Province of Thessalonika prefecture is located in Central Macedonia of Greece. There is a strong tradition and a large accumulated experience on small ruminant production in the region. Natural pastures cover about a half of the total land surface. Sheep and goats make use of these pastures and are the most efficient transformers of vegetation into high quality animal products (Laga *et al.*, 2005).

II – Materials and methods

In 60 sheep and goat farms of this region, a survey was carried out on farmers. The farms were visited at least twice in order to interview the farmers and assist in the completion of the above-mentioned questionnaire. The survey contained questions related to the background of the farms, the age and educational level of farmers, the feeding system, the type of breeds of sheep and goat, the breeding methods, the productivity of animals, and the future of the farms, etc.

III – Results and discussion

According to the Agricultural Service of Thessalonika (2007) the total numbers of sheep and goats in the Province of Lagkada are, 103,943, and 100,281 respectively, reared by 898 farmers. Among them 278 are solely sheep farms, 357 are solely goat farms and 263 are mixed farms with sheep and goats (Tables 1 and 2). With regard to the farm size in all farms of the Province of Lagkada 12.9% of farms have got less than 100 animals, 23.6% belong to the class of 101-200 animals, 26.5% have got 201-300 animals, 31.8% have got 301-500 animals and 5.2% have a size of more than 500 animals (Table 3).

Table 1. Number of sheep and goat farms in Province of Lagkada

Farm with	No. of farms
Sheep	278
Goat	357
Mixed (sheep and goats)	263
Total	898

Table 2. Number of sheep and goat in Lagkada Province

Kind of animals	Heads
Sheep	103,943
Goat	100,281
Total	204,224

Table 3. Sheep and goat distribution in flocks in region of Lagkada

Classes	No. of farms	%
<100	116	12.9
101-200	212	23.6
201-300	238	26.5
301-500	285	31.8
>500	47	5.2
Total	898	100.0

The questionnaire's data analysis produced the following results: 6.6% of the farms under study have got less than 100 animals, 30.0% of them have got 101-200 animals, 31.7% have got 201-300 animals, 21.7% have got 301-500 animals and only 10.0% have more than 500 animals (Table 3). These results of farm size distribution are similar with those of all Lagkada region (Tables 3 and 4).

Table 4. Sheep and goat distribution in flocks under study

Classes	No. of farms	%
<100	4	6.6
101-200	18	30.0
201-300	19	31.7
301-500	13	21.7
>500	6	10.0
Total	60	100.0

Moreover, 71.7% of the farms under study derived from the succession of the farms from parents to children, while 28.3% of the farms have resulted by initial establishment and gradual development by the farmers (Table 5). As regards the farmers age structure, 13.3% of them are younger than 30 years, 18.4% are between 31 and 45 years old and 55.0% are between 46 and 60 years old, while 13.3% of them are older than 60 (Table 6). As far as the breed structure is concerned, for the farms participating in the study, was found that in sheep farms 8.3% of farms are breeding animals of Chios breed, 50.0% of farms are breeding crossbreds between local breed sheep and Chios breed, while 41.7% of the farms have crossbreds between local breed sheep and a cross of Chios ewes with Friesian rams (Table 7).

Table 5. The background of farm formation

Farms background	No. of farms	%
By succession	43	71.7
Gradual establishment	17	28.3
Total	60	100.0

Table 6. Age structure of farmers

Farmer's age (years)	No. of farmers	%
<30	8	13.3
31-45	11	18.4
46-60	33	55.0
>60	8	13.3
Total	60	100.0

Table 7. Breed structure of sheep population

Breed	No. of farms	%
Chios	3	8.3
Crossbreds local with Chios	18	50.0
Crossbreds local with Chios and Friesian	15	41.7
Total	36	100.0

The majority of the goat population is from the local Greek breed (76.4%, Table 8). Only a small percentage (5.9%) are from the imported breed of Saanen, while the 17.7% of the farms have crossbreds animals (crosses of Saanen or/and Alpine or/and Damascus with local Greek breed). The animals are of small body size with 35-40 kg (♀) and 45-60 kg (♂) live weight. The goats of local Greek breed are very abstemious. There is a large variation regarding the phenotypical appearance of the animals. However, the dominant colour is the black. The goats of local breed have horns in both males and females. The prolificacy varies between 1-1.5 kids per doe, while the average milk yield arises to 150 kg (Katanos, 2001). The adaptation of these animals to their physical environment and their ability to the movements of flocks and to grazing in steep natural pastures are very satisfactory (Hatziminaoglou *et al.*, 1983; Laga, 2005).

Table 8. Breed structure of goat population

Breed	No. of farms	%
Saanen	2	5.9
Crossbreds	6	17.7
Local breed	26	76.4
Total	34	100.0

Unfortunately, the educational level of farmers is low. The 6.7% of breeders have not got elementary school certificate, 56.7% of breeders have got an elementary school certificate, 33.3% have got a secondary school certificate, but only 3.3% have got a high school certificate (Table 9). However, these results are slightly better than those of other regions of Greece (Laga *et al.*, 2005). With regard to the land use regime, the study showed that 25.0% of farms have got privately-owned land, 6.7% have got only leased land, 48.3% have got only community provided land, while 20.0% have got currently both forms: privately owned and leased land (Table 10). Based on farmers' answers about the perspective of sheep and goat production system in the region, 45% of them have answered that they will continue their profession, 23.3% are willing to sell their farms, and 31.7% will continue through family successors (Table 11). Finally, as far as the average milk yield (in kg milk/animal/year) is concerned, the study showed that 6.7% of farms produce 111-130 kg, 55.0% produce 131-150 kg and 38.3% produce more than 150 kg per animal (Table 12).

Table 9. Farmer's educational level

Educational level (school)	No. of farmers	%
Without elementary	4	6.7
Elementary	34	56.7
Secondary	20	33.3
High School	2	3.3
Total	60	100.0

Table 10. Land use regime

Land use	No. of farmers	%
Private-owned	15	25.0
Leased	4	6.7
Community provided	29	48.3
Private-owned and leased	12	20.0
Total	60	100.0

Table 11. The perspective of farms

Predicted farms' future	No. of farmers	%
Will continue	27	45.0
Will be sold	14	23.3
Succession by family children	19	31.7
Total	60	100.0

Table 12. Milk yield

Milk yield (kg)	No. of farms	%
>150	23	38.3
131-150	33	55.0
111-130	4	6.7
Total	60	100.0

IV – Conclusions

Sheep and goat production is an important sector of livestock in Lagkada Province. The extensive systems are dominant in goat production of this region. Natural pastures, which made up the largest part of land surface, can guarantee high quality sheep and goat products.

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