

## Nomadic Sheep Breeding Turkey (A Case Example of Isparta)

<sup>1</sup>M. Yilmaz, <sup>2</sup>V. Ayhan and <sup>3</sup>H.E. Bardakcioglu

<sup>1</sup>Department of Animal Sciences, Faculty of Agriculture,  
Adnan Menderes University, Aydin, Turkey

<sup>2</sup>Department of Animal Sciences, Faculty of Agriculture,  
Suleyman Demirel University, Isparta, Turkey

<sup>3</sup>Department of Animal Sciences, Faculty of Veterinary Medicine,  
Adnan Menderes University, Aydin, Turkey

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**Abstract:** The aim of this study is to introduce the nomadic sheep breeding system, its importance in the economical life and its effects on the crossover of the sheep genotype in the city by means of the observations and surveys carried out on the registered nomadic sheep breeders of Isparta city breeding sheep-goat breeder's association. They live in tents woven of goat hair. In this life style, two or three families who are close relatives with one another and who have 250-400 head sheep migrate altogether. The animals shelter temporarily in places called as bed which are surrounded with simple fences. Nomads from Isparta have tried to convert their sheep into a form with no tail bringing Sakiz and Kivircik crossbred or Kivircik rams from the cities of Aydin and Izmir. It has been observed that in their flocks which have different crossbred types and are not in a single structure, they prefer a sheep genotype which can give twin births which has high milk productivity which is completely white and which is close to Kivircik genotype. The folk of the region has named this genotype as Pirit. While the annual income obtained in nomadic flocks is 45075 TL (20684.85 EUR) total expenditure is 6150 TL (2822.54 EUR) thus, the net income is 38925 TL (17862.31 EUR). In an average family of four members monthly income per member is 810.9375 TL (371.75 EUR). The number of enterprises dealing with nomadic sheep breeding has been decreasing due to the prohibition of forest areas and the high levels of fiscal punishment applied. We claim that with regards to the development of the nomadic sheep breeding of the city of Isparta and the sustainability of it and for the purpose of generating the desired sheep type in the city, its spread and stud flow, an improvement model must be developed and applied on the nomadic sheep flocks which will speed up the change process of the sheep breeding in the region. For this reason, some legal arrangements must be made to determine the boundaries of the available pasture areas and for their utilization. A cooperative or a company should also be established for a better marketing and evaluation of the products in present production conditions.

**Key words:** Nomadic sheep breeding, migration circulation, economical analysis, pirit sheep, cooperative, legal arrangement

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### INTRODUCTION

The first animals to be domesticated, after the dog were sheep and goats. Sheep are multi-purpose animals, producing meat, milk, skins and wool/hair sheep production is a crucial sector of human activity and in case the industry declines, large areas will be adversely affected, leading to the loss of a culture that has survived virtually unchanged for centuries (Zygoyiannis, 2006). Turkey has been one of the major sheep and goat producers of Europe and the West Asia and North Africa (WANA) region in the 20th century (Gursoy, 2006). Sheep

and goat management systems in Turkey evolved through thousands of years of adaptation and adjustment to the natural resources, climate, topography and the ever-changing production environments. There are three general systems, the sedentary, transhumant and nomadic (Yalcin, 1986; Kaymakci and Sonmez, 1996). Sheep and goats followed a declining trend since the early 1980s and are no longer the major meat and milk supplying species (Kaymakci *et al.*, 2005; Bardakcioglu *et al.*, 2007). The nomadic system is declining because it cannot keep up with the social and economic changes and is practiced only in the sheep industry mainly in the Southeast and

Eastern Turkey and involves about 10% of the flocks in these regions (Gursoy, 2006). The number of the sheep in Turkey has been 23.974.591 according to the 2008 year end statistics, decreasing 5.84% with respect to 2007.

This number has been falling continuously because of the migration to cities from rural areas caused by terror in Eastern Anatolia and caused by the narrowing pasture areas in Central and Western Anatolia. Sheep breeders in cities with high altitude in inner Aegean region which has a cold and rainy climate in the winter and the autumn migrate to the city of Aydin. They live in tents woven of goat hair.

The sheep shelter temporarily in places called as bed which are surrounded with simple fences (Yilmaz *et al.* 2009a). They make a migration circulation following the vegetation inside the city and among cities. While the number of nomadic sheep has decreased, the number of families who deal with nomadic sheep breeding has fallen in recent years depending on some reasons such as the restriction of pasture areas, applied fiscal punishment and having an unorganized production.

Nomadic sheep breeding is commonly done in the Aegean Region, especially in the cities of Denizli and Isparta. Flock owners, migrating to the cities Aydin and Izmir have tried for years to turn their flocks from fat-tailed into thin tailed buying Kivircik or Kivircik-Sakiz crossbred rams there.

While nomads of the city of Denizli who started to cross their flocks 20-25 years ago have completed the transfer into Sakiz-Kivircik sheep genotype which is absolutely resistant to the regional conditions and has a high reproductive performance and a high milk yield. It can be said that sheep breeders of Isparta are still at the beginning of this process. An unsystematic crossing has started either in the nomadic flocks or in the other flocks in the city.

Since Kivircik is resistant to poor conditions, a Kivircik blood dominant genotype is required here which has a high reproductive performance because namely the climatic conditions in the region are harsher than in Denizli city. There are few enterprises having single sheep bred. Some of the flocks are in a structure that has been composed of a mixed crossbred of fat-tailed, wedge tailed and thin tailed Sakiz-Kivircik crossbred or Kivircik rams.

This study was done to introduce the nomadic sheep breeding system, its economical importance and its effects on the change of the sheep genotype in the city, depending on the observations in the region and the survey results carried out on the nomadic sheep breeders who are registered members of Isparta city breeding Sheep-Goat Breeder's Association.

## **MATERIALS AND METHODS**

In this study, results of the observations and surveys carried out on the registered nomadic sheep 24 breeders of Isparta city breeding sheep-goat Breeder's Association were used. Each member has a family consisting of average four members and has 250-400 mature female sheep. All members are close relatives with one another and migrate altogether.

## **RESULTS AND DISCUSSION**

Approximately 15-20 years ago the sheep genotype started to change via the nomadic sheep breeders in the region where the dominant sheep genotype was commonly Daglic Breed. Daglic breed is a fat-tailed genotype and in the region, the demand for fat-tailed breeds has been decreasing. Since, the marketing conditions of this regionally dominant and fat-tailed genotype Daglic have changed, unsystematic crossbreedings have been done by the breeders in order to change the type into a primarily thin tail form.

Today, the Daglic genotype can hardly be seen in the region which once used to be the regional breed years ago in cities (Denizli, Isparta, Afyon, Usak, Eskisehir and Kutahya) in the Interior Aegean Region (Yalcin, 1986). The nomads have tried to convert the sheep into a form thin tailed bringing Sakiz-Kivircik crossbred or Kivircik rams from the cities of Aydin and Izmir (Yilmaz *et al.*, 2009a, b).

It has been observed that in their flocks which have different crossbred types and are not in a single structure, the desired sheep genotype is the one which can give twin births the most which has high milk productivity which is completely white and which is close to Kivircik genotype. The folk of the region (The cities of Denizli, Isparta) have named this genotype as Pirit. Similarly, Pirit is a preferred genotype in the cities of Afyon and Usak. In order for a complete determination of this genotype, studies at molecular genetics level should be done.

It has also been observed that some of these breeders have been in a trial to increase the reproductive performance of the genotype crossbreeding it with the material Akkaraman, Ivesi and Merinos rams and sheep brought from the nearby cities in addition to the former genotype.

Akkaraman, Merinos and Ivesi Breeds are fatty tailed and are bred in the cities in the east of Isparta. The average lamb number per sheep is one in the whole region, except for the nomadic sheep breeders. The genotype, named as Pirit could be said to be the desired

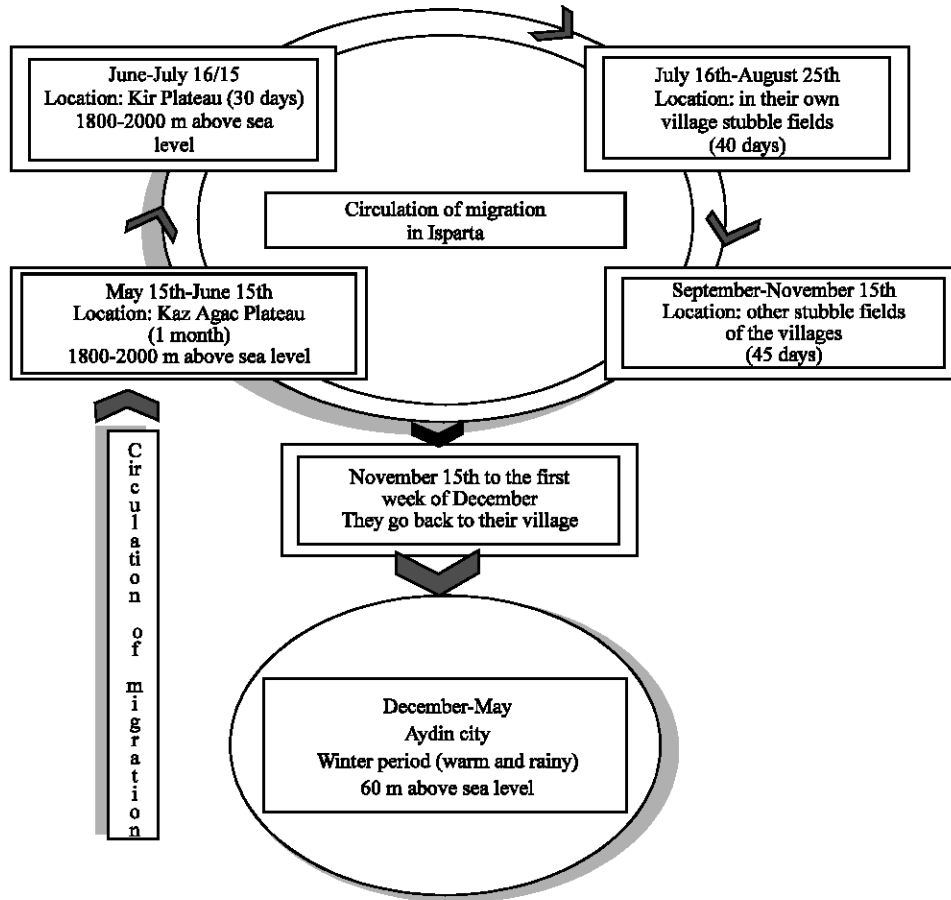


Fig. 1: Nomadic circulation in Isparta city and inter-cities

genotype in the city. This genotype is desired to be the one which has a reproductivity performance over 1,5 per sheep, a high milk productivity, a physical appearance of a white larger body and thin tail and a Kivircik phenotype structure carrying a little Sakiz blood.

**Nomadic sheep breeding system and the migration circulation:** In the Western Anatolia, family enterprises that deal with nomadic sheep breeding migrate to coastal regions (to the cities of Aydin and Izmir) from their inner regions (cities of Isparta and Denizli) for 6 months (December-May) to spend the winter and spring seasons.

Pasturing, in this system based on nomadic livestock has made up a living and cultural style from lowlands to highlands during the spring and from highlands to lowlands during the falls depending on the season. The annual flock management has been formed according to the climate changes and consequently to the development of grass. Sheep breeders of Isparta city settle down on the high plateaus of the city during the hot summer seasons

starting in mid May. The sheep which are pastured there for a month or two are taken to lower areas from higher plateaus. From July until October, they utilize stubble fields in villages.

Nomadic flocks are moved to the city of Aydin in December where they are kept in very large rented pastures (1000-2000 m<sup>2</sup>) for 6 months and are moved back again in May (Fig. 1). In the migration circulation of interior province, nomads who settle down on the highest plateaus, move down to another area later. Nomadic flocks that stay there for 30-45 days are then taken to their own villages and are pastured on stubble fields for 40 days.

They move to neighbour villages and utilize the stubble fields there then move back to their own villages at last. Nomads who return to their own villages in order to be able to make their preparations to other cities, complete their preparations in 15-20 days and migrate to the city of Aydin (Fig. 1). In this way, before the inter city migration starts, they migrate to at least 5 different areas in the city of Isparta, developing a circulation model

according to the harvesting seasons and seasonal grass growth so that they can have a more economical production.

**Flock management:** Apart from their economical importance, the nomadic sheep breeding whose historical past dates back too early times and which has descended from ancestors is a life style in this city, similarly to the other cities that has been going on for centuries. It is a lifestyle of families of 4-5 members, living in tents made of hair and migrating to different areas during certain periods of the year. In this lifestyle, about 2 or 3 families migrate together who are close relatives and who have 200-400 heads sheep.

About 2 or 3 families having totally 1000-1500 heads sheep rent the same pasture area. In this way, they can co-operate during the maintenance and feeding of the flocks and the migration. Women and children play an active role in maintenance, feeding and milking the sheep. Women also do the cheese making and men provide the marketing mainly the lamb, cheese and other products. In each flock, 7 rams are kept within the year and a ram is kept in the flock for only three years.

About 120-130 lambs are obtained in 100 sheep. Following the lambs birth, they are weaned in 4-5 months and immediately marketed. The sheep whose lambs have been sold are milked twice a day and the ones whose lambs havent been sold yet are not milked and the whole milk is left to their lambs.

As shown in Fig. 1, the sheep mated during the period from June until August in Isparta city which has a high altitude and cooler summer months give their births in the coastal city of Aydin which has warmer winters in late December and January. However since there are rams continuously in the flocks, mating season could be extended to a period of 4 or 5 months.

The sheep which are in their latest 3 months pregnancy period and which are fed especially in stubble fields are not given extra feeding. Lambings occur between February and May in coastal regions which have well pastures conditions and the lambs are fed most economically in these pastures. Lambs reaching marketing weight are marketed in this region. Aydin Province is a marketplace for nomads. After the sale of the lambs, nomads migrate back to high-altitude cities. After May, sheep whose lambs have been sold are milked and cheese is made from this milk and the cheese is marketed in Isparta city (Table 1).

**Economical analysis of nomadic sheep breeding:** An average productivity and the yearly income of a nomadic flock consisting of average 250 head sheep were calculated

Table 1: Some annual management applications periods of nomadic sheep flocks

Applications	Period
Mating period	During the year
The most intense birth months	December-January-February
Weaning time of the lambs (4-5 months of age)	August-September
Marketing time of the lambs (4-5 months of age)	May

Table 2: Resources of income in a nomadic flock and the income obtained

Income resources	Unit price	Sum
Lamb carcass (kg)	(13 g carcass x 12.5 TL) x 194 head	31525
12 months old lamb	25 head x 250 TL	6250
Cheese: (40 kg milk/4) x30 days x 5 month	(10 kg cheese x 150 days) x 4.0 TL	6000
1 ram	1 ram x 250 TL	250
Wool	500 g x 200 head x 0.5 kurus	50
10 sheep x 100 TL	10 x 100 TL	1000
<b>Total income</b>		<b>45075</b>

Table 3: Expenses in a nomadic flock

Costs	Unit price	Sum
Land rent (Pasture rent for 1 year)	2 000	2000
Truck rent (1 year)	1.800	1800
Feeding expenses (1 kg year <sup>-1</sup> )		
Barley	330 kurus * 5 000 kg	1650
Vetch hay	300 kurus *1000 kg	300
Wheat hay	200 kurus * 2 000 kg	400
	<b>Total</b>	<b>6150</b>

according to the lowest profit margins in Table 2 and Table 3. The calculations were made assuming the infertility rate was 8% and the fertilization rate per sheep to was 1.2 and each year, 30 breeding sheep were added to the flock. The income of the 30 added sheep was excluded while calculations were made.

The price paid for per kg carcass for the lambs which have a desired carcass weight of 13-14 kg as sucklings is 13-16 TL. The market price of a lamb which is 12 months old is 250 TL and 25 lambs at this age are marketed annually. The calculations related to milk and cheese production were made according to the assumptions that a sheep is milked for 5 months that 200 g milk is obtained from per sheep and that 1 kg cheese is made from 4 kg of milk. Beside the main incomes of lamb meat and cheese, the income obtained from the sales of the extracted rams and sheep from the flock was also included into the total income.

In Table 2, the annual expenses of the breeders are shown. Although, the rent for pasturing the nomadic flocks in the cities migrated to is generally, paid by 3-4 families, here it was thought that only one family defrayed it. Feeding is provided due 3-4 months payments from their own regions. In the table of expenses, the major expenses were given in their highest values and other trivial expenses were ignored.

The total annual income level provided in nomadic flocks is 45075 TL (20684.85 EUR) and the total expenditure is 6150 TL (2822.54 EUR) thus, the annual net

income is 38925 TL (17862.31 EUR) and the least monthly income per member in an average family of 4 is 810.9375 TL (371.75 EUR). When thought that the minimum wage in Turkey is 690.82 TL (316.41 EUR), it will easily be seen that this sector is a good business sector and that its contribution to the production is significant (Table 4). The number of the sheep in Turkey decreased 5.84% with respect to 2007.

This has been a continuous fall recently. However in Europe, the total sheep and goat populations remained relatively stable in 2007 relative to 2006. This may be seen in the light of the slight downward trend recorded in the last years. The main EU (European Union) sheep producing Member States are the United Kingdom, Spain and Greece while the major goat producers are Greece, Spain and France. From 2006-2007, EU sheep and goat meat production in tonnes decreased 3% while meat supply, mainly from New Zealand (86%), remained relatively stable. Sheep and goat prices were in 2007 relatively (Dias *et al.*, 2008).

During the last 30 years period, Iranian policy makers paid special attention to nomads' development program (Jahromi, 2008). As for the Kyrgyz Republic, the government considers the sheep industry as a high priority and there are now a number of donors actively supporting aspects of sheep production and marketing, including EU and the World Bank (Veen, 2009).

The number of nomadic sheep has been decreasing in recent years depending on some reasons such as the restriction of pasture areas, applied fiscal punishment and having an unorganized production. As result of this, the number of families who deal with nomadic sheep breeding has been falling as well. Recent Turkish governments have ignored animal production and have not had any stable development policies.

With no extra hand feeding and with no extra charge, the production provided by these naturally fed nomadic sheep which are pastured in areas called as forest land or treasury lands hired legally from the headman of the village and its contribution to the county's economy has been ignored. By ignoring them and the families who can only deal with this business area, their sole source of income has been eliminated. In addition to these, a tradition that has been going on in the region has been forced to their extinction.

Some fundamental problems observed in the flocks are the gradual narrowing of pasture areas and the displeasement for not achieving the desired genotype, the problems met in marketing the products and the need for an economical organization. Throughout the city, there are approximately 35 nomadic sheep breeders, 24 of whom are members of the Association of Breed Sheep and Goat

Table 4: Net profit statement

Profit	Values
Total annual income	45075 TL (20684.85 EUR)
Total annual expenditure	6150 TL (2822.54 EUR)
Annual net income	38925 TL (17862.31 EUR)
Monthly net income	3243.75 TL (1488.3704EUR)
The monthly income per capita in a family with 4 people	810.9375 TL (371.75 EUR)

Breeders, Isparta city. The support of the Breeders Union in the city is important for the solutions of the nomadic sheep breeders who have gathered for the first time under an organizational structure.

A breeding programme model should be developed and put into action for the breed flow and the creation of a new desired genotype in the city. This model to be applied should be carried out with the nomadic flocks that speed up the changing process of the sheep breeding in the region.

## CONCLUSION

In order for the products to be better evaluated and marketed, cooperatives or companies should be established. The suitable pasture areas in the migrated cities should first be determined according to the needs of the flocks and the families so that they can be used effectively as pastures and then these areas should be put into a legal status by the Union to facilitate their utilization regularly in the following years. When managed well, the sheep and the goat have significant effects on the fight against weeds on the decrease of the fire risk and for the protection and the development of the habitat.

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