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Basic Characteristics of Some Turkish Indigenous Sheep Breeds

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Abstract: Turkey is among the major sheep raising countries of the world, with sheep population over 29.4 million head. Sheep have an important place in the economy of Turkey and in the nutrition of its people. Sheep breeding in Turkey is principally based on indigenous breeds, while studies on crossing and producing new types to increase fleece, meat and milk yield have been carried out. These indigenous breeds are more resistant to disease and parasites while also being able to survive even unfavourable environments and to maintain their productivity. At present, they contribute 27.18 % to the total read meat, 8.15 % to the total milk and 59.11 % to the total leather produced in the country. Sheep breeds in Turkey can be categorized into two main groups: Fat-tailed (White Karaman "Akkaraman", Red Karaman "Kızılkaraman or Morkaraman", Dağlıç, Awassi "İvesi") and fine-tailed (Kıvırcık, Karayaka, Chios "Sakız", İmroz "Gökçeada). For various reasons, it has been observed that indigenous sheep genetic resources in Turkey have been damaged. Some breeds have become extinct, some is under serious threat and some may be also considered as being under threat. The fact that the some conservation projects carried out by the government agencies is already at the stage of implementation may be regarded as a hopeful start.

Key words: Indigenous *sheep breeds, Turkey, Phenotypic characteristics, Production performance*

Introduction

Sheep breeding is a productive activity which makes use of poor meadows, stubble, fallowing and fields that are not suitable for plant production, transforming them into such products as meat, milk, fleece and leather. Factors such as rural consumption patterns and the fact that Turkey's natural resources are more suitable for sheep breeding have cost it to become a widespread sector in the country (Kaymakçı and Sönmez, 1996). According to the latest statistics, there are over 29.4 million sheep in Turkey (DİE, 1998). It is also reported that 27.18 % of red meat, 8.15 % of milk and 59.11 % of leather needs in Turkey are provided by sheep.

Sheep breeding in Turkey is principally based on indigenous breeds while studies on crossing and producing new types to increase meat, milk and fleece yield have been carried out since the early stages of the republic (Kaymakçı *et al*. 2000). These breeds are more resistant to disease and parasites while also being able to survive even in unfavorable environments and to maintain their productivity. Thanks to this characteristics, it is inevitable and also necessity that these breeds are being used as basic genetic resources for the formation of new sheep types.

Sheep breeds in Turkey can be categorized into two main groups: Fat-tailed and fine-tailed. In this paper, the basic phenotypic and production performance characteristics of some Turkish indigenous sheep breeds classed under two groups are reviewed.

A) The Turkish Fat-Tailed Local Sheep Breeds: The White Karaman (Akkaraman), Red Karaman (Morkaraman), Dağlıç and Awassi (İvesi) breeds are included in this group. The general characteristics of these breeds are as follows:

* The colour is generally white (except for the Red Karaman). Head and legs are darker and have spots.
* The wool is of mixed, coarse carpet type.
* These breeds have multi purpose production level (both meat and milk) except for the Awassi.
* They adapted to bad management and feeding conditions.

1) White Karaman (Akkaraman): The distribution area of the White Karaman breed begins in the Central-Western provinces of Turkey, namely Eski°ehir, Kütahya and extends towards the central Anatolian provinces, such as Sivas. The breed is also raised in the parts of Black Sea and Mediterranean regions adjacent to Central Anatolia. It has the largest population among the local sheep breeds of the country. The White Karaman breed has two local types (Kangal and Karaka°) and one colour variety (Southern Karaman). The Kangal Type exists in the provinces of Sivas and Malatya in the Central Anatolian region and the Karakaş type in the province of Diyarbakır in the Southeast Anatolian region. The Southern Karaman is also raised at the foothills of the Taurus Mountains facing Central Anatolia.

Phenotypic and Production Performance Characteristics: The colour of the White Karaman breed is white with black around the nose, eyes and on the legs. Ears are drooping. Only about 10 % of the rams are horned. Ewes rarely have small horns. The tail has three main parts and forms an S-shaped curve. The fleece of this breed is of the carpet-wool type. The head, underside of neck and legs are usually devoid of wool. This breed is generally medium-sized. However, the Kangal type is larger and the Karakaş is smaller than the usual type. Height at withers is around 65 cm. This breed has multi purpose production characteristic. Mean levels reported by several sources for different characteristics are given in Table 1 (Sandıkçıoğlu, 1961; Yalçın, 1979; Başpınar, 1985; Kaymakçı and Sönmez, 1996).

2) Red Karaman (Kızılkaraman or Morkaraman): The Red Karaman is another local breed of Turkey. Its Turkish name is Kızıl Karaman or Mor Karaman. It is raised in Kars, Erzurum, Ağrı, Muş, Bingöl, Van, Bitlis, Erzincan and Elazığ provinces of the eastern and north eastern regions. It has the second largest local sheep population after White Karaman.

Phenotypic and Production Performance Characteristics: The colour of this breed is brown or reddish-brown. It is darker on head, neck and legs. Ears are pendulous or semi-pendulous. It is a fat-tailed sheep. The fat tail and the end-piece form an S-shape, as in case of White Karaman. The wool is of mixed,

Table 1: Performance characteristics of White Karaman (Akkaraman) sheep.

Characteristics	Mean Level
Twinning rate (%)	4-5
Body weight (kg)	
Ewe	35-40
Ram	50-60
Lactation milk yield (kg)	40-55
Lactation length (month)	3-5
Greasy fleece weight (kg)	1.5-2
Staple length (cm)	8-12
Fiber diameter (cm)	29-35

Table 2: Performance characteristics of Red Karaman (Kızıl or Morkaraman) sheep

Characteristics	Mean Level
Twinning rate (%)	4-8
Body weight (kg)	
Ewe	45-50
Ram	60-70
Lactation milk yield (kg)	50-65
Lactation length (month)	4-5
Greasy fleece weight (kg)	1.2-2.0
Staple length (cm)	10-12
Fiber diameter (cm)	30-34

Table 3: Performance characteristics of Dağlıç sheep.

Characteristics	Mean Level
The first oestrus age (day)	225
The length of mating season(day)	146
Twinning rate (%)	1-2
Body weight (kg)	
Ewe	35-40
Ram	50-60
Lactation milk yield (kg)	35-40
Lactation length (day)	130-140
Greasy fleece weight (kg)	1.8-2.0
Staple length (cm)	11-18
Fiber diameter (cm)	27-31

Table 4: Performance characteristics of Awassi (İvesi) sheep

Characteristics	Mean Level
The first oestrus age (day)	304
The length of mating season (day)	104
Twinning rate (%)	5-10
Body weight (kg)	
Ewe	35-40
Ram	60-70
Lactation milk yield (kg)	
In rural condition	100-150
In improved flocks	250-300
Lactation length (months)	6-7
Greasy fleece weight (kg)	1.5-2.0
Staple length (cm)	8-12
Fiber diameter (cm)	32-35

Table 5: Performance characteristics of Kıvırcık sheep

Characteristics	Mean Level
Twinning rate (%)	10-20
Body weight (kg)	
Ewe	30-40
Ram	45-50
Lactation milk yield (kg)	60-90
Lactation length (day)	150-160
Greasy fleece weight (kg)	1.3-1.7
Staple length (cm)	8-12
Fiber diameter (cm)	29-33

coarse carpet type and the breed has open head, neck, belly and legs. Body weight and body size of the Red Karaman are larger than that of White Karaman. This breed has also combined production level like the White Karaman breed.

Table 6: Performance characteristics of Karayaka sheep

Characteristics	Mean Level
Twinning rate (%)	4-8
Body weight (kg)	
Ewe	35-40
Ram	40-50
Lactation milk yield (kg)	40-45
Lactation length (day)	130-140
Greasy fleece weight(kg)	1.8-2.4
Staple length (cm)	21-28
Fiber diameter (cm)	39-43

Table 7: Performance characteristics of Chios (Sakız) sheep

Characteristics	Mean Level
Litter size	1.7-2.3
The first oestrus age (day)	217
The length of mating season (day)	116
Body weight (kg)	
Ewe	35-40
Ram	50-60
Lactation milk yield (kg)	120-180
Lactation length (day)	160-180
Greasy fleece weight (kg)	1.6-2.0
Staple length (cm)	11-15
Fiber diameter (cm)	28-34

Table 8: Performance characteristics of İmroz (Gökçeada) sheep

Characteristics	Mean Level
Twinning rate (%)	15-25
Body weight (kg)	
Ewe	35-40
Lactation milk yield (kg)	70-100
Lactation length (day)	150-170
Greasy fleece weight (kg)	1.6-2.0

Mean levels reported by several authors for different characteristics are shown in Table 2 (Yalçın and Müftüoğlu, 1969; Tellioğlu, 1975; Yalçın, 1979; Başpınar, 1985).

Daglic: This breed is distributed throughout the provinces of Eskişehir, Kütahya, Afyon, Aydın, Muğla, Isparta, Burdur, Antalya in the central-west, along the Aegean coast and in the lake region of Turkey. It is around 12 % of the total sheep population in the country. It is the third largest breed in the country in population size. The Dağlıç has a few different types resulting from crossing with other sheep breeds. The Çandır and the Kesber types are obtained by crossing the Dağlıç with the White Karaman in the eastern parts of its distribution. In the western parts of its distribution the Pırlak type is obtained by crossing the Dağlıç with the Kıvırcık. The Kamakuyruk type is obtained from the Kıvırcık x the Dağlıç.

Phenotypic and Production Performance Characteristics: The colour of the Dağlıç is white, with black or brown spots on the head and legs. Rams have large spiral horns; ewes have no horns. The shape of tail is different and it consists of one part and oval. The fleece has some common characteristics with that of the White Karaman. The Wool is of the carpet-wool type, but lustrous. Its wool is the most preferred wool for carpet-making. The Dağlıç is the smallest breed in Turkey. Its height at withers is around 60-62 cm. Mean production performance levels for different characteristics for Dağlıç are summarized in Table 3 (Yarkın and Yavuz, 1964; Evrim, 1978; Yalçın, 1979; Kaymakçı, 1982).

Awassi (İvesi): The motherland and distribution area of the Awassi sheep is the Mesopotamia area between the Tigris and the Euphrates rivers. Its Turkish name is İvesi. It is raised in the southern provinces of Gaziantep, Şanlıurfa and Hatay,

along the Syrian border of Turkey. It constitutes around 2-3 % of the total sheep population in the country.

Phenotypic and Production Performance Characteristics: The colour is white on the body and brown, black, dirty yellow on the head, neck and legs. The dominant colour is brown. The profile of the head is convex (Roman nose). The ear is long and drooping. The tail is one-part and it is shorter and wider than in case of White Karaman. Rams have spiral horn. Ewes usually have no horns. The wool of this breed is of the carpet-wool type and one of the coarsest among Turkish sheep breeds. The Awassi is one of the largest breed in size in Turkey. Height at withers of ewes is 65-68 cm. It is an important breed in milk production. Meat production has also importance than other breeds. Mean levels of some production characteristics are given in Table 4 (Özcan and Kaymaz, 1968; Eliçin, 1970; Özcan and Yalçın, 1977; Kaymakçı, 1982).

B) The Turkish Fine-Tailed Local Sheep Breeds: The Kıvırcık, Karayaka, Chios (Sakız) and İmroz (Gökçeada) are Turkish fine-tailed sheep breeds. The general characteristics of these are as follows:

* The colour is white. Head and legs are darker or black except for the Kıvırcık breed.
* The fleece is finer than in fat-tailed breeds except for the Karayaka breed. The wool is moderately mixed.
* These breeds have combined production level. But the Chios has high milk yield and an outstanding prolificacy.
* Growth rate is faster than those of fat-tailed sheep. Meat quality is also better.
* These breeds are more susceptible to some diseases than fat-tailed breeds. But they are also resistant to some diseases and parasites.

1) Kıvırcık: The Kıvırcık is raised in the Thracian, southern and eastern provinces of the Marmara region (Edirne, Kırklareli, Tekirdağ, İstanbul, Bursa, Balıkesir, Çanakkale, İzmit and Sakarya) and in some Aegean provinces (Manisa, İzmir and Aydın). It constitutes around 6-7 % of the total sheep population in the country.

Phenotypic and Production Performance Characteristics: The colour of this breed is white and may rarely have black spots on the head and legs. Rams have horizontal spiral horns extending sideways. Ewes have no horns. The ear is relatively short. The tail is thin and long. This breed has carpet-wool type fleece. Its wool is of a better quality than those of all other breeds. The wool of the young animals of the Kıvırcık can be used in worsted manufacture. The Kıvırcık is a medium size breed. Average height at withers of ewe is around 64-66 cm. Mean performance levels for different characteristics are given in Table 5 (Sönmez and Wassmuth, 1964; Sönmez *et al.*, 1976; Yalçın, 1979; Kaymakçı, 1982).

2) Karayaka: The Karayaka breed is distributed along the Black Sea coast from Sinop to Trabzon provinces. It is also raised in Tokat, Amasya and Niksar. It constitutes about 3.5 % of the total sheep population in the country.

Phenotypic and Production Performance Characteristics: The colour is white. There are two different types in this breed, namely the Çakrak and the Karagöz. The Çakrak type has a white body. The head, ears, legs and tail of this type are black. The Karagöz has black spots around the eyes, mouth and on legs. The Çakrak is larger than the Karagöz. The tail is thin and long. The rams of the Karayaka have strong spiral horns. The ewes have usually no horns. The wool of the Karayaka is very coarse. It is very suitable for making mattresses. It is also the most expensive wool in Turkey. The Karayaka is a small-sized breed. The height at withers of the ewe of this breed is around 60-62 cm. The production level of the Karayaka is generally low. The meat quality comes second order after the Kıvırcık. The mean values for performance characteristics are given in Table 6 (Öznacar, 1962; Yalçın, 1979; Arıtürk *et al.*, 1985; Kaymakçı and Sönmez, 1996).

3) Chios (Sakız): The Turkish name of this breed (Sakız) originates from the Greek island of Chios in the Aegean Sea. The breed is mostly populated in the province of İzmir and in the town Çeşme. It is also raised throughout costal area from İstanbul to Antalya. They are kept in groups of 3-5 animals by individual families. Its numbers are estimated to be around 50.000-60.000.

Phenotypic and Production Performance Characteristics: The colour is white. There are black spots and speckles around the mouth, eyes, and on the ears and legs. Rams have spiral horns; and the ewes are usually polled. The tail is long and not fat, but has a triangular fat deposit at the base. Increases in the fat deposition in tail is a good indicator of whether this breed is pure. It has thin bones, long and narrow body. The wool is of the mixed, coarse carpet type. The wool is finer than in the White Karaman. Sakız is the best one in view of high milk yield and an outstanding prolificacy in other local breeds. It has good quality meat. Some performance characteristics of this breed are given in Table 7 (Sönmez and Kızılay, 1972; Yalçın, 1979; Kaymakçı, 1982; Kaymakçı and Sönmez, 1996).

4) İmroz (Gökçeada): The İmroz breed is also referred to as the Gökçeada in Turkish. Gökçeada is a Turkish island in the Aegean Sea. This breed is also raised in the province of Çanakkale. Its number is estimated to be around 70.000. It is more active breed.

Phenotypic and Production Performance Characteristics: The body colour is white. There are black spots around the mouth, nose and eyes and on the ears and rarely on the tip of the legs. Rams have spiral horns extending sideways. Ewes are usually polled. The tail is thin and long, and has no fat. The wool is very coarse and long. Staples are quite long. This breed has the smallest size among the sheep breeds in Turkey. Its height at withers is around 61-62 cm. The İmroz has a high milk yield. Performance levels of this breed are given in Table 8 (Özcan and Yalçın, 1977; Koçak *et al.*, 1989; Kaymakçı and Sönmez, 1996).

Discussion

Sheep breeders in Turkey are not satisfied with the yield they obtain from local sheep breeds. For this reason, various crossing studies have been carried out by both universities and other government agencies to produce first new sheep types that have high fleece yield and later these with high lamb and milk yield so as to response to breeders' demands (Kaymakçı, 1990; Kaymakçı and Sönmez, 1996; Kaymakçı *et al.* 2000). Furthermore, breeders also carry out crossing for their own purposes. As a result of all these studies, it has been observed that genetic resources in Turkey have been damaged. Some local sheep breeds such as "Ödemiş" and "Karakaçan" have become extinct. "Chios (Sakız) is under serious threat. Breeds such as "Kıvırcık" and "Dağlıç" may be considered as being under threat. There seems to be no apparent risk of extinction

for such breeds as "White Karaman" and "Awassi". However, the probability that crossing studies, both scientific and unscientific, may be carried out more extensively in near future brings about the need for the government to measure for the conservation of Turkey's local breeds. The fact that "The Animal Genetic Resources Conservation Project" carried out within the Ministry of Agricultural and Rural Affairs of the Republic of Turkey is already at the stage of implementation and may be regarded as a hopeful start (Ertuğrul *et al*. 2000).

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