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Some morphological and physiological characteristics of South Karaman sheep II. Curly pelt and wool features*

Güney Karaman koyunlarının bazı morfolojik ve fizyolojik özellikleri II. Bukleli post ve yapağı özellikleri

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ABSTRACT

This study was carried out to determine the pelt and some wool characteristics of South Karaman sheep. The animal material of the study was selected from the South Karaman sheep raised by the nomadic system in Tarsus district of Mersin province. Lambs were observed during the birth period to determine the pelt status. In order to determine the fineness and length characteristics of the fleece, wool samples were taken from the rib area of lambs and ewes. These samples were evaluated with instrumental analysis devices. At the end of the study, it was determined that the lambs of this breed could have astrakhan-like, curly pelt. In addition, it was determined that the thickness and length of fleece in lambs and ewes varies between 29.1 µ and 32.4µ (P>0.05) and between 23.8 cm and 36.5 cm (P<0.01), respectively.

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ÖZ

Bu çalışma Güney Karaman koyunlarında post durumu ve bazı yapağı özelliklerini belirlemek için yapılmıştır. Çalışmanın hayvan materyali Mersin ili Tarsus ilçesinde göçer sistem ile yetiştirilen Güney Karaman koyunlarından seçilmiştir. Kuzular doğum döneminde post durumları için gözlemlenmiştir. Yapağıda incelik ve uzunluk özelliklerini belirlemek için kuzu ve koyunların kaburga bölgelerinden örnekler alınmıştır. Bu örnekler enstrümantal analiz cihazları ile değerlendirilmişlerdir. Çalışma sonunda bu ırkın kuzularının astragan benzeri bukleli post verebildikleri belirlenmiştir. Ayrıca, kuzu ve koyunlarda yapağı incelik ve uzunluğunun sırası ile 29.1 ve 32.4 mikron (P>0.05) ve 23.8-36.5 cm (P<0.01) olduğu belirlenmiştir.

1. Introduction

Sheep farming in Turkey is generally carried out with native breeds under semi-intensive or extensive conditions. The degree of semi-intensive rearing conditions may change depending on the region and even the condition and habits of the breeders. In this context, herd management is very different in nomadic animal husbandry. Nomadic sheep breeders graze their animals in the pastures without supplemental feeding during the circulation from sea level to the mountain depending on the season all of the year. In this circulation, the breeders, who spend the winter months in the temperate regions by the sea, begin to migrate to the highlands when the spring comes and spend the summer months in the plateaus approximately at altitude of 2000 meters. Another feature of this breeders is that they prefer native breeds (Keskin et al. 2017; Aydın and Keskin 2018; Bebek and Keskin 2018; Karagöl and Keskin 2018).

Nomadic sheep breeders in Mersin region mostly prefer South Karaman sheep named as Güney Karaman in Turkish. Although this indigenous breed is generally bred primarily for meat and then milk yield (Bebek and Keskin 2018), their lambs give different peltry fur similar to Karakul lambs (Özcan 1989; Öztürk 2000). However, unfortunately, it has not been possible to find a study in which South Karaman sheep is evaluated in terms of the production potential of astrakhan, which is an important product for the world market.

The nomads named as yörük in Turkish call the South Karaman sheep as “black sheep” (Bebek and Keskin 2018). These are durable animals that are well adapted to rural areas and have tolerance to cold and hot weather conditions. Since milk yields are enough for only one lamb, twin births are not required for this breed. The animals migrate between the sea

* The study was carried out with the approval of the Mustafa Kemal University Ethics committee (MKUHADYEK-2017/9-3).

level and the areas of the Taurus Mountains at an altitude of 2000-2500 m to take advantage of the climatic conditions (Ministry of Agriculture and Forestry 2020).

Karakul lambs, which are thought to be related to South Karaman, also have curly fur until the third day after birth (Özcan 1989; Öztürk 2000; Erol and Akçadağ 2009). Ertuğrul et al. (2009) reported that South Karaman lambs are known for their curly hides. They stated that lambs of this breed could produce hides that can be used for making astrakhan fur, even if it is not like as Karakul quality.

It should be remembered that any kind of resources can be used in the best way when needed for the country's economy. In this study, both for this reason and to contribute to the literature, it was aimed to determine the post productability of lambs as well as some wool characteristics of ewes in South Karaman sheep.

2. Material and Methods

The animal material of the study consisted of 100 head of female and 10 head of male South Karaman sheep and their lambs, which were reared in the nomadic system in Tarsus district of Mersin. Fleece samples to detect the fineness and length were taken from 20 head of male lambs and 10 head of ewes. The study was carried out with the approval of the Mustafa Kemal University Ethics committee (MKUHADYEK-2017/9-3).

In order to determine the post structure, the lambs were observed daily for 3 days after the birth. Approximately 50 g of wool sample was taken from the rib region of the sheep with a clipper on 30 April 2018 for the fineness and length determination in the fleece. Fleece samples of each sheep were put in separate nylon bags together with the labels containing the sheep's ear number. Fibres length analysis was done with USTER® FL100 device. After the ends of the fibres were aligned and combed, it was automatically measured with the USTER® FL100 device. The USTER® FL100 device uses the capacitive measuring method, which includes a capacitor that measures the fibre samples placed in the fibre length measuring unit at 1200 points. Fibre diameter (fineness) analysis was done with OFDA 100 (Optical Fibre Diameter Analyzer) device. Measuring with optical principles, this instrument determines the average diameter of 4000-5000 fibres in minutes. Statistical analysis of the study was evaluated with SPSS package program.

The mathematical model for fleece fineness and length is as follows;

$$Y_{ij} = \mu + \alpha_i + e_{ij}$$

Y_{ij}, recorded value of the animal in the i^{th} age group

μ, mean of the population

α_i, effect of age groups

e_{ij}, error term

3. Results and Discussion

Astrakhan is the name given to the pelt or skin with wool obtained from Karakul sheep. Especially in Central Asian geography, valuable clothing such as headdress and fur coat are produced from this post, which is a valuable product, and these items can be marketed at high prices. Although it was stated by Özcan (1989) and Öztürk (2000) that the lambs of the South Karaman sheep also had pelts with curling fleece similar to Karakul lambs when they were born, but unfortunately, any different literature on this subject could not be encountered. For this reason, in this study, where the South Karaman sheep breed was defined with different characteristics, the lambs also observed the postnatal pelt structures too. As a result of these observations, it was determined that lambs differed in their post structures and colour. The lambs of this breed were usually black or blackish lead colour, but some of them could be in different colours (such as brown, white, pied) (Figure 1). In terms of pelt characteristics; sometimes while one of the twins had curly-pelt, the other was not so (Figure 2). These differences may have resulted from the formation of South Karaman sheep as a result of crossbreeding of different breeds. In some literatures, it is stated that South Karaman sheep is a crossbred of Karakul sheep, White Karaman sheep and Dağlıç sheep (Özcan 1989; Porter et al. 2016).

It is known that Karakul lamb pelt production is in different regions of Central Asia (MEB 2013). Yılmaz (1997) reported that sheep breeding has a predominant place in animal production in the Karakalpak Mukhtar Republic, an autonomous republic in the Uzbekistan region, and Karakul sheep has an important place in animal husbandry. The researcher stated that Karakul lamb pelt was sold in this region at a price of 40-50 USD. Today, where human nutrition is the most important problem, the slaughtering of Karakul lambs at the age of 1-3 days for fur production can be considered as meat loss. However, in the region where this production is made, such a lamb is sold at the price of a lamb that has completed its fattening. Since the cost for fattening is eliminated and the mother's milk also creates extra income for the breeder during the suckling period, lamb production for fur can continue in these regions.

In South Karaman lambs, those with curly pelts were identified when they were born (Figure 2 and 3). However, an examination of their curls and post quality could not be made in this study. Although both South Karaman and Karakul lambs have curly pelts, the culture, conscience and religious feelings of Turkish breeders prevent them from producing lamb for fur.

Some of South Karaman lambs were born with glossy, tightly curled fur, however on the 3rd day the curls unravelled (Figure 4 and 5). There is no data in the literature about this change of curl structure in South Karaman lambs. We know that the curls of Karakul sheep disappear within a few days after birth, and the black colour that is dominant for this breed turns gray with the advancement of age (MEB 2011; MEB 2013; Snyman 2014). Therefore, lambs should be slaughtered within 3 days following birth for fur production.

Wool characteristics are also among the criteria used in defining breeds. Fineness and length are the most important objective criteria of wool. The fineness and length determined in the lambs and adult ewes randomly selected from the experimental sheep were given in Table 1. As can be seen from this Table, the thickness and length values were determined as 29.1 ± 1.55 µ and 32.4 ± 1.81 µ, 23.8 ± 2.32 cm and 36.5 ± 4.22 cm in lambs and adult sheep, respectively. The difference in fineness between lambs and adult sheep was determined as insignificant ($P > 0.05$) and the length difference as significant ($p < 0.05$).

No previous study on fleece fineness and length has been found in South Karaman sheep. These values determined in the

Figure 1. South Karaman sheep lambs.

Figure 2. Twin born South Karaman sheep lambs.

Figure 3. The appearance of South Karaman sheep lamb on the first day curls.

Figure 4. Curl appearance on the second day.

Figure 5. Curl appearance on the third day.

Table 1. Wool fineness and length values in South Karaman sheep.

Age	Fineness (μ)	Length (mm)
Lambs	29.1±1.55 (20)	23.8±2.32 (20)
Ewes	32.4±1.81 (10)	36.5±4.22 (10)
Significance	>0.05	<0.01
Total	30.2±1.21 (30)	28.0±2.33 (30)

current study are compared with the values of Karakul, Dağlıç and White Karaman sheep that are considered to be related to this sheep breed (Özcan 1989). The fleece fineness determined in the present study was similar with the values reported as 27.96, 30.17 and 30.99 microns for White Karaman sheep by different researchers (Çolakoğlu and Özbeyaz 1999; Ünal et al. 2004; Tuncer and Cengiz 2018). On the other hand, the determined fineness value was thinner than those of Karakul sheep, which was reported as 39.11 microns by Küçük et al. (2000) and 37.99 microns by Erol and Akçadağ (2009). Also, it was seen that the detected fineness value in current study was similar to the fineness value reported by Sönmez et al. (2009) for Dağlıç sheep as 27-31 microns.

It was seen in the table that the fibre length was different between lambs and ewes. This may be due to the fact that the lambs were 6 months old when they were sheared. Wool length of ewes was longer than the length value of Dağlıç sheep (11-18 cm) reported by Sönmez et al. (2009). On the other hand, the wool length was similar to the value for White Karaman sheep reported by Tuncer and Cengiz (2018) as 30.99 cm and longer than the value for Karakul sheep reported by Küçük et al. (2000) as 7.34 cm.

4. Conclusion

It is known that South Karaman sheep, which is bred with an extensive and even nomadic animal husbandry system, is resistant to harsh conditions. Therefore, this sheep should be kept as a pure breed because of the advantages that have for global climate change. Besides, meat and milk, other yield alternatives can be also evaluated for the sustainable rearing of this breed. In this context, the results obtained in the present study are important in terms of showing that it could be produced astrakhan fur from South Karaman lambs, even if they are not in Karakul quality. In addition, it can be said that the fleece quality of South Karaman sheep is coarse and mixed quality.

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References

Aydın M, Keskin M (2018) Muğla ilinde küçükbaş hayvan yetiştiriciliğinin yapısal özellikleri. Mediterranean Agricultural Sciences, 31: 317-323.

Bebek DT, Keskin M (2018) Mersin ilinde koyun yetiştiriciliğinin mevcut durumu bazı verim ve yapısal özellikleri. Mustafa Kemal Üniversitesi Ziraat Fakültesi Dergisi 23(2):315-323.

Çolakoğlu N, Özbeyaz C (1999) Akkaraman ve Malya koyunlarının bazı verim özelliklerinin karşılaştırılması. Turkish Journal of Veterinary and Animal Sciences 23: 351-360.

Erol H, Akçadağ Hİ (2009) Halk elinde yetiştirilen Karagül koyun sürülerinde bazı verim özellikleri. Lalahan Hayvancılık Araştırma Enstitüsü Dergisi 49(2): 91-104.

Ertuğrul M, Dellal G, Soysal İ, Elmacı C, Akın O, Aras S, Barıtçı İ, Pehlivan E, Yılmaz O (2009) Türkiye yerli koyun ırklarının korunması. Uludağ Üniversitesi Ziraat Fakültesi Dergisi 23(2): 97-119.

Karagöl E, Keskin M (2018) Problems of nomadic goat breeders and their effects on forest. Mugla Journal of Science and Technology 4(1): 11-15.

Keskin M, Gül S, Biçer O, Gündüz Z (2017) Kıl Keçisi yetiştiriciliğinin organik üretim bakımından uygunluğu. Türk Tarım – Gıda Bilim ve Teknoloji Dergisi 5(13): 1700-1704.

Küçük M, Yılmaz O, Ateş CT (2000) Morkaraman, Hamdani ve Karagül yapağılarının halı tipi yapağı özelliklerine göre değerlendirilmesi. Yüzüncü Yıl Üniversitesi Veteriner Fakültesi Dergisi 11(2): 54-59.

MEB (2011) T.C. Milli Eğitim Bakanlığı, Kimya Teknolojisi, Kürklük Deriler. http://megep.meb.gov.tr/mte_program_modul/moduller_pdf/K%C3%BCrkl%C3%BCk%20Deriler.pdf. Accessed 04 April 2019.

MEB (2013) T.C. Milli Eğitim Bakanlığı, Hayvan Yetiştiriciliği, Küçükbaş Hayvan Yetiştiriciliği. http://docplayer.biz.tr/12421685-Hayvan-yetistiriciligi.html Accessed 26 February 2019.

Ministry of Agriculture and Forestry (2020) Yerli koyun ırkları. Tarım ve Orman Bakanlığı, https://www.tarimorman.gov.tr/HAYGEM/Belgeler/Hayvanc%C4%B1l%C4%B1k/K%C3%BC%C3%A7%C3%BCkba%C5%9F%20Hayvanc%C4%B1l%C4%B1k/Koyun%20Yeti%C5%9Ftiricili%C4%9Fi/Yerli%20Koyun%20Irklar%C4%B1.pdf. Accessed 07 April 2020.

Özcan L (1989) Küçükbaş Hayvan Yetiştirme-II. Çukurova Üniversitesi Ziraat Fakültesi Yayınları No: 108, Adana.

Öztürk A (2000) Koyunculuk ve Yapağı. Selçuk Üniversitesi Zootekni Bölümü Ders Notları. Konya.

Porter V, Alderson L, Hall SJG, Sponenberg DP (2016) Mason's World Encyclopedia of Livestock Breeds and Breeding. 2 Volume Pack. Nosworthy way Wallingford Oxfordshire OX108DE UK.

Snyman MA (2014) South African Sheep Breeds: Karakul sheep. Info-pack ref. 2014/019. Grootfontein Agricultural Development Institute.

Sönmez R, Kaymakçı M, Eliçin A, Tuncel E, Wassmuth R, Taşkın T (2009) Türkiye koyun ıslahı çalışmaları. Uludağ Üniversitesi Ziraat Fakültesi Dergisi 23(2): 43-65.

Tuncer S, Cengiz F (2018) Akkaraman, Anadolu Merinosu, Ile de France X Akkaraman (G1) ve Ile de France X Anadolu Merinosu (G1) melezlerinde yapağı verim ve özellikleri. Yüzüncü Yıl Üniversitesi Tarım Bilimleri Dergisi 28(3): 353-357.

Ünal N, Akçapınar H, Atasoy F, Koçak S, Aytaç M (2004) Akkaraman, SakızxAkkaraman ve Kıvırcık x Akkaraman melezleri (F1, G1) ile Karayaka ve Bafra koyunlarda canlı ağırlık ve yapağı özellikleri. Lalahan Hayvancılık Araştırma Enstitüsü Dergisi 44 (2): 15-22.

Yılmaz S (1997) Karakalpak Türkleri ve bugünkü Karakalpakistan. Yeni Türkiye, Türk Dünyası Özel Sayısı 3(16): 1320-1329.

* The study was carried out with the approval of the Mustafa Kemal University Ethics committee (MKUHADYEK-2017/9-3).