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Original Article

Current Status of Flock Management, Care and Feeding Practices in Fattening Sheep Farms in Karacabey District

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ABSTRACT

This study aims to determine some structural features and breeding practices in fattening sheep farms in Karacabey district of Bursa province and to identify the problems encountered in these issues. The material of the study consists of survey data conducted with the owners of 76 fattening sheep farms in Karacabey district in 2025. In the surveyed farms, in addition to the socio-economic characteristics of the farm owners, breeds of sheep raised in the farms, number of mother sheep, care and feeding of mothers and lambs, feeding methods, lamb production, roughage supply, roughage used, silage production, grazing on pasture, fattening period, marketing and frequently encountered diseases were examined. The vast majority of the sheep raised in the farms were Karacabey Merino and the rate in all businesses was calculated as 79.9%. The average ages for disposal of mother rams and sheep in the businesses were found as 4.88 and 6.93 years, respectively. The business owners announced that they obtained an average of 173.75 lambs per year. The mortality rate of lambs from weaning to weaning was determined as 9.11%. The average weaning age of the lambs was 3.78 months and the average fattening period applied was determined as 4.82 months. At the end of fattening, the live weight of the lambs was calculated as 48.33 kg. It was determined that 93.5% of the farm owners took their sheep to pasture and 57.9% kept their animals in pasture all year round. The rate of those receiving feed support in the examined farms was determined to be 15.8%. The farm owners stated that they saw high feed costs, shepherd problem, high medicine-treatment expenses, roughage problem, insufficient support and pasture problem as the most important problems. As a result, it can be said that there are problems in the examined fattening sheep farming farms regarding the care-feeding, benefiting from feed support, silage production and use, lamb deaths and diseases, and that it is important to carry out studies to solve these problems in terms of the profitability of the farms.

Key words: Care-feeding practices, farm owners, grazing on pasture, lamb fattening, marketing, sheep breeding.

Karacabey İlçesindeki Besi Koyunculuğu İşletmelerinde Sürü İdaresi, Bakım Ve Besleme Uygulamalarının Mevcut Durumu

ÖZ

Bu çalışmada, Bursa ilinin Karacabey ilçesinde besi koyunculuğu yapan işletmelerdeki bazı yapısal özelliklerin ve yetiştiricilik konularındaki uygulamaların belirlenmesi ve bu konularla ilgili karşılaşılan sorunların saptanması amaçlanmıştır. Çalışmanın materyalini, 2025 yılında Karacabey ilçesinde yetiştiricilik yapan 76 adet besi koyunculuğu işletmesinin sahipleri ile yapılan anket verileri oluşturmuştur. Anket yapılan işletmelerde, işletme sahiplerinin sosyo-ekonomik özelliklerinin yanı sıra, işletmelerde yetiştirilen koyunların ırkları, anaç koyun sayıları, anaç ve kuzuların bakım ve beslenmesi, yemleme şekilleri, kuzu üretimi, kaba yem temini, kullanılan kaba yemler, silaj üretimi, mera durumu, besi süresi, pazarlama, desteklemeler ve sık karşılaşılan hastalıklar konuları incelenmiştir. İşletmelerde yetiştirilen koyun varlığının çok büyük bir kısmı Karacabey Merinosu olup, tüm

işletmelerdeki oranı %79.9 olarak hesaplanmıştır. İşletmelerde anaç koç ve koyunları elden çıkarma yaşları ortalama olarak sırasıyla; 4.88 ve 6.93 yaş olarak bulunmuştur. İşletme sahipleri yılda ortalama 173.75 adet kuzu elde ettiklerini açıklamışlardır. Kuzuların sütten kesime kadar ölüm oranları %9.11 olarak saptanmıştır. Kuzuların ortalama sütten kesim yaşı 3.78 ay olup, uygulanan besi süresi ortalama 4.82 ay olarak belirlenmiştir. Besi sonunda kuzuların canlı ağırlıklar 48.33 kg olarak hesaplanmıştır. İşletme sahiplerinin %93.5'inin koyunlarını meraya çıkardıkları, %57.9'unun ise hayvanlarını yıl boyu merada tuttuğu belirlenmiştir. İncelenen işletmelerde yem desteği alanların oranı %15.8 olarak tespit edilmiştir. İşletme sahipleri, en önemli sorunlar olarak, yüksek yem maliyetleri, çoban sorunu, ilaç-tedavi giderlerinin yüksekliği, kaba yem sorunu, yetersiz destekler ve mera sorununu gördüklerini beyan etmişlerdir. Sonuç olarak, incelenen besi koyunculuğu işletmelerinde, uygulanan bakım-besleme, yem desteğinden yararlanma, silaj üretimi ve kullanımı, kuzu ölümleri ve hastalıklar konusunda sorunlarının olduğu ve işletmelerin karlılığı bakımından söz konusu sorunların çözülmesine yönelik çalışmalar yapılmasının önemli olduğu söylenilebilir.

Anahtar kelimeler: Bakım- yemleme uygulamaları, işletme sahipleri, koyun yetiştiriciliği, kuzu besisi, mera durumu, pazarlama.

INTRODUCTION

Sheep farming is an important component of the livestock sector in Türkiye and around the world, and has great economic value in terms of meat, milk and wool production. Türkiye's geographical and climatic characteristics provide suitable conditions for sheep farming. In addition to contributing to the rural economy, sheep farming also supports economic sustainability in rural areas by reducing migration (Akçapınar, 2000; Arıkan et al. 2013; Karadaş, 2017).

Fattening sheep in Türkiye is a breeding method that aims to produce higher quality and more efficient meat by feeding animals with high nutritional value feeds. Studies show that intensive fattening systems provide higher weight gain and meat quality compared to extensive and semi-intensive systems (Ertuğrul et al., 2009). However, the supply of quality feed and high feed costs are among the biggest challenges for breeders. Breed selection is also of great importance in terms of fattening performance. Breeds such as Akkaraman and Kivırcık are widely preferred in fattening sheep in Türkiye. The most important reasons for this are that these breeds have advantages in terms of adaptation abilities and feed utilization capacity (Koyuncu et al., 2006). In addition, studies conducted in Elazığ and Erzincan have revealed that planned breeding programs play a critical role in increasing fattening efficiency and carcass quality (Özyürek et al., 2018; Köseman et al., 2022).

Although fattening sheep farming has significant potential in the country's livestock, the sector faces various difficulties and problems. One of the most important problems is that intensive feed costs negatively affect profitability. Producers mostly carry out a farming based on pasture feeding system, but this method cannot provide the high-energy feeds required by fattening lambs (Sezenler et al., 2016; Tüney Bebek and Keskin, 2018). In addition, inadequate shelter conditions and lack of access to veterinary services also negatively affect fattening performance. Marketing and price fluctuations also have a major impact on the profitability of fattening sheep farming. Producers have difficulty reaching larger markets due to instability of meat prices and high transportation costs (Çağlıyan and Durmuş, 2010; Özyürek et al., 2018). In addition, the lack of government incentives designed specifically for fattening sheep farming farms is an important factor hindering the growth of the sector.

Fattening sheep farming is a production activity that is cultivated in all regions of our country. The South Marmara region, where this study was conducted, is in a very good position in this respect. Karacabey district of Bursa province, located in the region, is one of the prominent centers in terms of the density of the number of farms where fattening sheep farming is carried out. The climate and pasture areas of the region provide suitable conditions for fattening sheep farming. However, studies on the structural characteristics, feeding strategies and management practices of these farms are limited. A detailed examination of these factors is of great importance in terms of determining the problems encountered in the sector and developing solution proposals.

This study was planned and conducted to analyze the current status and problems encountered by farms engaged in fattening sheep farming in Karacabey district and its villages. In the study, the socio-economic status, structural features, maintenance-feeding, health-protection and marketing practices in the farms were discussed. By evaluating the obtained data, important problems of fattening sheep farming farms in the region were determined and solution suggestions were made. It can be said that the results of the study can make a significant contribution to the determination of policies aimed at increasing the profitability and ensuring the sustainability of the sheep sector in the region and in Türkiye.

MATERIALS AND METHODS

The material of the study consisted of data obtained from a survey conducted with 76 sheep farming farm owners who are members of the Breeding Sheep and Goat Breeders Association in Karacabey district of Bursa province in 2025. In order to collect the data required for the research, the determined sheep farming farms were visited in January and February of 2025. The prepared survey forms consisting of 35 questions were filled out by face-to-face interviews with the farm owners. The survey forms included questions that would reveal the socio-economic, technical and structural status of the farms. According to the data obtained from the Bursa Breeding Sheep and Goat Breeders Association, the number of registered farms engaged in sheep farming in Karacabey district and villages as of 2024 was determined as 343. When determining the number of samples, first of all, the stratified sample volume formula was intended to be used, but we were informed that no data could be given regarding land information according to Article 3 of the ÇKS Circular No. 23591310-010.06.01 dated 06.06.2017 of the General Directorate of Agricultural Reform (Circular 2014-1) (ÇKS documents of farmers will not be given to any institution or organization except for examinations and investigations to be conducted by judicial and law enforcement forces by provincial and district directorates). Therefore, the proportional sampling method was used, taking into account the number of producers in the provinces and districts in the research area. In this study, probability sampling method was used to ensure the generalizability and reliability of the data. Probability sampling is a method in which the probability of each individual being selected for the sample is known and random selection is based. In this way, the sample can represent the main population and the scientific validity of the study is increased. Sample size was calculated using a standard probability formula. The p and q values in this formula represent the probabilities of the investigated feature being present in the universe (p) and not being present ($q = 1 - p$). The product of these probabilities is the main factor affecting the variance and therefore the sample size. Especially when there is no prior information, to obtain the highest variance, it is generally taken as; $p=0.5$ and $q=0.5$. This approach minimizes the margin of error of the sample and supports the accuracy of the results. The sample volume, i.e. the number of farms to be surveyed, was determined by the Simple Random Sampling Method. The number of farms to be used in the research was calculated as 76 with the help of the formula below, within 95% confidence limits and with a sampling error of 5% (Çiçek and Erkan, 1996; Ceyhan et al., 2015).

$$n=(N * t^2 * p * q)/(d^2 * (N - 1) + t^2 * p * q)$$

n: number of farms to be included in the sample.

N: number of farms in the target population (343 sheep farms).

p: probability of occurrence of the event under investigation (0.50).

q: probability of occurrence of the event under investigation. (0.50).

t: standard normal distribution value (1.96).

d: sampling error (0.05).

The statistical methods used in data evaluation were selected in line with the objectives of the research. In this context, independent descriptive statistics such as frequency, percentage, mean and standard deviation were used. The answers given to the questions asked about the structural and technical problems of the farms through surveys were analyzed through SPSS 22 program and the descriptive statistics and frequency tables obtained were presented (SPSS, 2013).

RESULTS AND DISCUSSION

In the study, the findings regarding the operator profile and demographic characteristics of the farms engaged in fattening sheep farming in Karacabey district and its villages are given in Table 1. The findings in question are largely similar to the results of research conducted in different regions of our country and on this subject. In the study, the average age of the farm owners was calculated as 49 years. This figure was reported as 46.8 years in Sivas (Gezer, 2010), 47.1 years in Elazığ (Yakan et al., 2016) and 49 years in Hakkari (Karadaş, 2018). It was observed that the average age calculated in this study was quite close to the age averages in other provinces. This situation shows that sheep farming is mostly done by middle-aged and older individuals and that the interest of young people in the sector is limited.

Table 1. Average age of business owners, business size, education level, how many years they have been doing sheep farming, why they do this job, and whether they have received training on the subject

Age of Business Owners	
Mean	49.263
Std. Deviation	12.1462
Minimum	24
Maximum	73
Land size of the business	
Mean	169.363
Std. Deviation	316.6368
Minimum	1
Maximum	2000
Educational background	Ratio (%)
Primary school	44.7
High school	25
Literate	7.9
Middle school	6.6
University	15.8
Total	100.0
Whether the business owners have received training in sheep farming	
No	84.21
Yes	15.79
Total	100.0
How many years has he been raising sheep?	
Mean	25.605
Std. Deviation	16.5884
Minimum	2
Maximum	70
Where did he first get the sheep from to start his business?	Ratio (%)
Inherited from father	5.3
Inherited from grandfather	28.9
From the state	3.9
Animal market	5.3
From the village	52.6
From the merchant	3.9
Total	100.0

In the study, the average land size of the farms was determined as 169.36 da. This value is generally higher than the average land size reported in similar studies conducted in different regions of Türkiye. In the study conducted by Kırmızıbayrak and Akman (2015) in the central districts of Antalya province, the average land size was determined as 85.2 da. Similarly, Çağlıyan and Durmuş (2010) reported an average of 40.6 da in sheep farming farms in the Diyarbakır basin, while Kaymakçı and Sönmez (1996) reported an average farm size of around 60 da throughout Türkiye. In addition, Yakan et al. (2016) reported an average land size of 112.4 da in their study conducted in Elazığ province, and Tüney Bebek and Keskin (2018) reported this value as 95.6 da in Mersin province. These findings show that the farms in Karacabey district are in a more advantageous position compared to many regions in terms of land assets.

In the study, when the education levels of the business owners were examined, it was seen that 44.7% of them were primary school graduates, 25% were high school graduates and 15.8% were college graduates. The high number of business owners who were primary school graduates draws attention to the low level of education. In other studies on the subject, it was reported that low levels of education were also noted in the provinces of Ordu (Alkan and Türkmen, 2021), Niğde (Ceyhan et al., 2015) and Mersin (Tüney Bebek and Keskin, 2018). The low level of education can be seen as a situation that makes it difficult to adopt modern and rational animal husbandry techniques and innovative practices.

It was determined that only 15.8% of the business owners who participated in the survey received training on sheep farming. This situation is important as it shows that a large proportion of 84.21% did not receive any animal husbandry training. In different studies, this rate is much lower, reported as 6% for Karaman province (Şahinli, 2014) and 8.4% for Tokat province (Şahin and Olfaz, 2019), and it was reported that the majority of the producers were engaged in traditional knowledge-based farming. It is noteworthy that the level of education in Karacabey district is 2 times higher than in the mentioned provinces.

Table 2. Values related to the average number of maternal sheep in the farms, breed preference and breeding purpose

Number of breeding rams and ewes in farms	
Mean	141.45
Std. Deviation	151.297
Minimum	16
Maximum	1000
Breed of sheep	Ratio (%)
Karacabey Merino	79.9
Merino Crossbreed	5.2
Kıvırcık	3.9
Merino, Ile de France	2.6
Karacabey Merinos, East Friesian	1.4
German Blackhead, Ile de France, Hungarian Merino	1.4
Merino, Ile de France	1.4
Merino, Kıvırcık	2.8
Suffolk	1.4
Total	100.0
The purpose of raising this breed	Ratio (%)
Breed of the region	34.2
Breed of the region, Meat yield	23.7
Adaptability	18.5
Meat yield	11.8
Personal preference	5.3
Breed of the region, Meat yield	2.4
Breed of the region, Twin rate	1.4
More economical	1.4
For state support	1.3
Total	100.0

When the sheep farming experience of the owners of the examined farms is examined, it is seen that this period is quite long and the average period of time they have been involved in sheep farming is 25.6 years. Regarding this period, similar results were reported in the studies conducted in Hakkari (Karadaş, 2018), Niğde (Ceyhan et al., 2015) and Şanlıurfa (Karadaş, 2017) provinces and it was explained that the farm owners have many years of experience. Regarding the places where the farm owners obtain the mother sheep, it was determined that they generally start by obtaining animals from breeding farms and markets. In the studies conducted in Niğde (Ceyhan et al., 2015) and Elazığ (Yakan et al., 2016) provinces, it was stated that breeding unions and local markets are more important as the place of supply of breeding animals. This finding is important in terms of showing that local resources are still at the forefront in animal supply. It is understood that the general trends regarding the farmer profile obtained from the study are similar at the national level, and that the lack of education and young participation continues. The data obtained regarding some characteristics such as the presence of breeding sheep, sheep breed preference and breeding reason of the farms engaged in fattening sheep breeding in Karacabey district are given in Table 2.

Table 3. The average number of lambs obtained by the farms per year, the place where the animals are sold at the end of fattening, the use of concentrated feed, the number of daily feedings and the values related to the determination of the amount of feed to be given

How many lambs do you get in total per year?	
Mean	173.750
Std. Deviation	185.1596
Minimum	15.0
Maximum	1000.0
Where do you sell the lambs at the end of the fattening period?	
	Ratio (%)
Butcher	52.6
Merchant	25.0
Sacrificial	15.8
Butcher, Sacrificial	3.9
Butcher, Sacrificial, Votive	1.3
Butcher, Merchant	1.3
Total	100.0
Do you use concentrated feed in lamb fattening?	
	Ratio (%)
Yes	56.6
No	43.4
Total	100.0
How many times a day do you feed fattening lambs?	
	Ratio (%)
1 per day	10.93
2 per day	79.44
3 per day	9.63
Total	100.0
How do you determine the amount of feed to be given per animal?	
	Ratio (%)
Automatic feeder	57.9
Eye decision	23.7
Experience	18.4
Total	100.0

In this study, it was determined that the majority of the farms were small and medium-sized and the average flock size was 141.45 heads. The findings obtained in terms of flock size are similar to the results of the studies conducted in Niğde (Ceyhan et al., 2015) and Sivas (Gezer, 2010) provinces and show that small and medium-sized family farms have an important share in Türkiye's sheep farming. The fact that the most preferred breed (79.9%) in the examined farms was Karacabey Merino indicates that breeds with high adaptation to the region and advantageous breeds in terms of meat yield and quality characteristics are prioritized. Similarly, in a study conducted in Konya province, it was reported that crossbred and high-yielding breeds were preferred for fattening (Özdemir et al., 2017). In general, the structural characteristics of sheep farming farms in Karacabey district are shaped by the selection of breeds compatible with the region and traditional housing practices. However, the need to switch to modern shelters and increase infrastructure investments is clearly evident. The results of the farms' lamb production, marketing location, concentrated feed use and feeding methods are given in Table 3.

The data obtained regarding the annual lamb yield, sales method, feeding habits and feed management methods of the farms engaged in fattening sheep farming in Karacabey district are generally similar to sheep farming in Türkiye. It was determined that the farms examined obtained an average of 173.75 lambs per year. Although this value is similar to the results of the studies conducted in Niğde (Ceyhan et al., 2015) and Elazığ (Yakan et al., 2016) provinces, it is seen that the production potential of the farms in Karacabey region is higher. It was determined that at the end of the fattening period, the lambs were sold to towns (52.6%) and merchants (25%). This situation was also reported in studies in Ordu (Alkan and Türkmen, 2021) and Şanlıurfa (Karadaş, 2017). It is observed that producers prefer to sell to butchers due to direct cash conversion and ease of access to the market.

Table 4. Values regarding the hours at which animals are fed in the farms, how roughage and concentrated feeds are given, silage production, silage use, grazing in pastures and feed support

Which times of day do you feed your sheep outside of the grazing season?	Ratio (%)
Morning-evening	81.6
Morning-noon- evening	7.9
Morning	6.6
Evening	3.9
Total	100.0
Do you feed roughage and concentrate separately or mixed?	Ratio (%)
Separately	75.0
Mixed	25.0
Total	100.0
Do you make silage in your farm?	Ratio (%)
No	84.2
Yes	15.8
Total	100.0
Do you feed silage to mother ewes or fattening lambs?	Ratio (%)
No	72.4
Yes	27.6
Total	100.0
Do you take your sheep out to pasture?	Ratio (%)
Yes	93.5
No	6.5
Total	100.0
Do you receive government support for feed?	Ratio (%)
No	84.2
Yes	15.8
Total	100.0

It was determined that the rate of using concentrated feed in lamb fattening in farms was 56.6% and 43.4% of the farms did not use concentrated feed. The findings obtained are similar to the results of the studies conducted in Burdur (Erdoğan et al., 2018) and Tokat (Şahin and Olfaz, 2019). The low rate of using concentrated feed in farms can be seen as an important problem. Because concentrated feed is of critical importance in terms of fattening performance and carcass quality. It was determined that the lambs fattened in the examined farms were generally fed twice a day (79.4%). This practice is compatible with the feeding frequency recommended in the literature and is important in terms of balanced growth and rational feed consumption (Özdemir et al., 2017). In determining the amount of feed to be given per animal, the use of automatic feeders was prominent (57.9%). 23.7% of the farm owners stated that they determined the amount of feed to be given by eye. This situation was similarly determined in studies conducted in Elazığ (Yakan et al., 2016) and Konya (Özdemir et al., 2017) and reveals that modern systems should be expanded in terms of homogeneous feeding and efficiency. Data on feeding times, feeding method, silage production and use, pasture removal status and whether or not they receive feed support of farms engaged in fattening sheep breeding in Karacabey district are given in Table 4.

Table 5. Values related to the periods of taking sheep out to pasture in the farms

Periods of taking animals out to pasture	Ratio (%)
All Year Round (12 months)	57.9
April-August	9.2
April-October	5.3
April-November	3.9
March-December	2.6
April-December	2.6
March-November	2.6
May-October	1.3
May-November	1.3
March-October	1.3
March-November	1.3
January-November	1.3
February-December	1.3
February-November	1.3
No pasture	6.6
Total	100.0

When we look at the hours when sheep are fed outside the pasture period, it is seen that 81.6% of the farms feed in the morning and evening. This rate was found to be similar in the study in Tokat (Şahin and Olfaz, 2019) province, and morning and evening feeding is generally a standard practice. In the study, the habit of giving roughage and concentrated feed separately draws attention with a rate of 75%. This approach is important for the animals to better evaluate their rations and for digestive health. In the studies in Mersin (Tüney Bebek and Keskin, 2018) and Elazığ (Yakan et al., 2016), it was reported that separate feeding was common. It was determined that very few of the farms examined (15.8%) produced silage. It was observed that 84.2% of the farms did not produce silage. This rate was similar to the rates in studies conducted in Konya (Özdemir et al., 2017) and Burdur (Erdoğan et al., 2018). However, the low rate of silage making reveals that modern feeding techniques should be adopted more.

The silage feeding rate for mother ewes and fattening lambs was 27.6%, which was found to be similar to the Turkish average. Although silage use is important in maintaining nutritional balance, it was also found to be

at low levels in studies conducted in Elazığ and Ordu provinces (Yakan et al., 2016; Alkan and Türkmen, 2021). In Karacabey district, the rate of sheep being taken to pasture was found to be as high as 93.5%. Similar results were also emphasized in studies conducted in Tokat (Şahin and Olfaz, 2019) and Sivas (Gezer, 2010), indicating that pasture farming is still the basic farming practice. The rate of farms receiving state support for feed was determined to be only 15.8%. This rate can be seen as an important problem since it is insufficient for producers to meet the high feed costs. In similar study conducted in Hakkari province, lack of support was among the main problems of producers (Karadaş, 2018). Data on pasture usage periods and pasture periods of farms engaged in fattening sheep breeding in Karacabey district are given in Table 5.

Table 6. Values related to grain and forage produced in farms

What forages do you grow yourself?	Ratio (%)
Dried alfalfa	5.2
Dried alfalfa, Corn, Straw	3.9
Dried alfalfa, Ryegrass, Straw	3.9
Barley, Straw	3.9
Ryegrass, Barley, Straw	3.9
Dried alfalfa, Barley, Wheat	2.6
Hay, Straw	2.6
Dried alfalfa, Straw	2.6
Dried alfalfa, Corn, Straw	2.6
Dried alfalfa, Vetch, Oat, Straw	2.6
Ryegrass	2.6
Barley, Corn, Ryegrass, Straw	1.3
Barley, Dried alfalfa	1.3
Wheat, Barley, Corn	1.3
Wheat, Barley, Corn, Ryegrass	1.3
Hay	1.3
Dried alfalfa, Hay	1.3
Barley	1.3
Corn	1.3
Corn, Vetch, Ryegrass, Straw	1.3
Wheat, Barley	1.3
Corn, Dried alfalfa, Vetch, Straw	1.3
Corn, Dried alfalfa, Ryegrass, Straw	1.3
Corn, Dried alfalfa, Oat, Straw	1.3
Ryegrass, Barley	1.3
Ryegrass, Barley, Oat	1.3
Straw	1.3
Barley, Wheat, Dried alfalfa, Ryegrass, Straw	1.3
Barley, Wheat, Straw	1.3
Barley, Ryegrass, Straw	1.3
Vetch, Oat, Straw	1.3
Barley, Wheat, Oat, Corn	1.3
Dried alfalfa, Hay, Vetch, Straw	1.3
Not grown	34.2
Total	100.0

It was determined that 57.9% of the farms examined put their sheep on pasture throughout the year. This rate was found to be similarly high in study conducted in Tokat (Şahin and Olfaz, 2019). This result shows that pasture farming continues to be the basic element in terms of sheep farming. Especially, pasture use throughout the year is an important advantage in terms of reducing feed costs and providing natural nutrition. The rate of

farms where the pasture period changes between April-August, April-October or March-November remained lower. This situation can be interpreted as the width of pasture areas and climatic conditions in Karacabey district allowing grazing throughout the year. However, in Burdur (Erdoğan et al., 2018) and Mersin (Tüney Bebek and Keskin, 2018) provinces, pasture use between certain months is prominent due to seasonal restrictions. It has been determined that the rate of farms that are not put out to pasture is 6.6%, and this rate is at a similar level throughout Türkiye. It is thought that farms that are not put out to pasture have higher costs because they need to implement more intensive feeding and closed fattening practices. As a result, the pasture usage habits of sheep farming farms in Karacabey district provide advantages to the region in terms of both economic and production efficiency. However, it is important to spread sustainable pasture management practices against climate change and pasture destruction. The rates of grain and forage produced in the examined farms are given in Table 6.

When the data obtained regarding the feed production status and roughage sources of the farms engaged in fattening sheep farming in Karacabey district are compared with similar studies conducted in different regions of Türkiye, remarkable differences are observed. It was determined that 65.8% of the farms examined produced their own roughage, while 34.2% did not produce any roughage. This rate was observed similarly in the study in Tokat (Şahin and Olfaz, 2019) province, and the inadequacy of forage crop production was emphasized as an important problem. Dry alfalfa, barley straw and ryegrass stand out among the most produced roughage sources. This result was also reported similarly in the studies in Mersin (Tüney Bebek and Keskin, 2018), Konya (Özdemir et al., 2017) and Burdur (Erdoğan et al., 2018). It is understood that breeders do not diversify their forage crops and feed their animals with a limited number of products. The fact that farms that do not produce forage crops feed entirely through purchasing increases costs and negatively affects the profitability of the farm. In addition, it is stated in the literature that even feed production farms mostly focus on single-type feed production and have difficulties in maintaining ration balance (Yılmaz et al., 2019). As a result, it is seen that sheep farming farms in Karacabey district are inadequate in terms of roughage production. It is necessary to inform and support producers about feed crop production and to encourage forage crop diversification as well as efficient use of pasture areas. In the study, the answers given by the business owners when they were asked about the diseases and health problems they encountered most frequently are given in Table 7.

Table 7. Values for the most common diseases in farms

What are the most common diseases you encounter?	Ratio (%)
Lameness	15.7
Diarrhea	6.6
Mastitis, Lameness	5.2
Lameness, Brucella	5.2
Mastitis	2.6
Smallpox	2.6
Brucella	2.6
Smallpox, Brucella	3.9
Nail disease	2.6
Lameness, Smallpox	2.6
E. Coli, Diarrhea	1.3
Diarrhea, Smallpox, Brucella	1.3
Parasite, Smallpox	1.3
Brucella, Diarrhea	1.3
Nail disease, Lameness, Brucella	1.3
Nail disease, Scabies, Brucella	1.3
Bloat	1.3
Scabies	1.3
Stillborn	1.3
No disease	31.6
Total	100.0

It has been determined that the most common diseases are lameness (15.7%), diarrhea (6.6%), mastitis and infectious diseases such as brucellosis. The findings are similar to the results of other studies conducted in Elazığ (Yakan et al., 2016), Tokat (Şahin and Olfaz, 2019) and Sivas (Gezer, 2010). The results show that foot health problems and infectious diseases are among the most common problems in sheep and animals. Lameness is caused by poor shelter conditions, inadequate hygiene and unsuitable floor structure, and causes serious economic losses for producers. In the studies in Ordu (Alkan and Türkmen, 2021) and Mersin (Tüney Bebek and Keskin, 2018), lameness was also stated as the most common disease encountered by producers. Diarrhea and parasitic infections play an important role, especially in lamb losses. This situation points to the inadequacy of preventive medicine practices and the lack of vaccination programs (Erdoğan et al., 2018). The existence of zoonotic diseases such as brucellosis and smallpox is important for both animal and public health. Regular vaccination, herd management and hygiene measures should be increased to prevent the spread of these diseases. As a result, the diseases encountered by sheep farms in Karacabey district largely overlap with those in other regions of Türkiye. It is very important to expand herd health protective measures and education activities and to ensure easy access of producers to veterinary support services.

CONCLUSION

This study was planned to reveal the technical and structural characteristics, maintenance-feeding and herd management practices and the problems encountered by the farms engaged in fattening sheep farming in Karacabey district and villages of Bursa province. For this purpose, the data obtained as a result of the survey studies were evaluated and the current situation of fattening sheep farming in the region was examined. Although the results were generally similar to the problems in Türkiye, some different problems specific to the region were also encountered.

In the study, it was determined that the majority of the farms were small and medium-sized family businesses and the average herd size was around 141 head. It was understood that the farm owners were generally middle-aged and experienced people who had been doing this job for many years, but they used modern breeding practices limitedly due to their low level of education. The widespread preference of the Karacabey Merino breed in farms draws a positive picture in terms of its adaptation to the region and high meat yield. However, the main problems such as difficulty in finding shepherds and workers, high production costs, high feed prices, veterinary, medicine and treatment expenses, pasture problems, excessive medicine, fertilizer and fuel expenses, diseases and lamb deaths, low wool prices, marketing problems, lack of cooperatives and inadequacy of support and incentives come to the fore.

Inadequate silage production and the fact that the need for roughage is largely met through purchasing increases operating costs. Although pasture-based feeding is widespread, seasonal changes and poor pasture quality can negatively affect production efficiency. In addition, producers cannot evaluate the by-products obtained due to low wool prices and experience income loss due to difficulties in marketing channels. Diseases and lamb deaths are among the important problems, and it is clear that preventive health services and vaccination practices need to be increased. The problem of finding shepherds and workers is another important factor that makes the continuity of production difficult.

As a result, it can be said that in order to increase the sustainability and profitability of farms, it is necessary to expand training for producers, strengthen support, encourage local forage production, facilitate access to veterinary services, develop marketing infrastructure, strengthen cooperative activities and increase incentives for shepherd employment.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

Author Contributions

Ömer ŞENGÜL: Conceptualization; data curation; formal analysis; investigation; methodology; project administration; writing— original draft; writing—review and editing.

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