Socio-Economic Structure of Cattle Enterprises Operating in Karaçoban County of Erzurum Province

Erzurum İli Karaçoban İlçesinde Faaliyet Gösteren Sığır İşletmelerinin Sosyo-Ekonomik Yapısı

iD Mete YANAR[1]

iD Rıdvan KOÇYİĞİT[1]

iD Abdulkerim DİLER[2]

iD Recep AYDIN[1]

iD Bahri BAYRAM[1]

iD Sadrettin YÜKSEL[1]

iD Veysel Fatih ÖZDEMİR[1*]

iD Oğuz Fatih ERGÜN[1]

iD Ali TİRYAKİ[1]

[1]: Department of Animal Science, Faculty of Agriculture, Atatürk University, Erzurum, TÜRKİYE

[2]: Erzurum Vocational College, Atatürk University, Erzurum, TÜRKİYE

ABSTRACT

This study aimed to gain insight into the socio-economic conditions of livestock farming enterprises in Karaçoban county, Erzurum province, Türkiye. Face-to-face surveys with 280 cattle enterprisers were carried out to obtain data of the study. It was found that the majority of these enterprisers (97.9%) were literate, and that 31.3% of the breeders were university graduates. The study revealed that 76.1% of the enterprises surveyed engaged in combined (dairy and beef) cattle farming. The majority of farming households consisted of 4 individuals (15.2%), 5 individuals (23.5%), and 6 individuals (20.6%). It was determined that 35.1% of enterprises engage in plant production, with barley (37.4%) and clover (34.0%) being the most commonly cultivated crops for feeding purposes. It was also found that 73.5% of enterprise owners solely engage in animal husbandry, with the remaining 26.5% involved in other professions alongside it. Of all the breeders, 60.6% consider cattle farming as their primary occupation, while 22.5% are retired, 9.9% work in the public sector, and 7.0% are employed in the private sector. It was revealed that 92.2% of the breeders are engaged in cattle rearing as a means of livelihood, 5.1% contribute to the family budget and 2.8% do it as a habit. It could be recommended that diverse participants involved in livestock production in the Karaçoban county of Erzurum province could benefit from educational and incentive programs targeted at the region by public institutions. Such interventions may promote the development of animal husbandry as well as improve the socio-economic situation and welfare of the enterprises.

Keywords: Erzurum, Animal Husbandry, Karaçoban county, cattle breeding, socio-economic structure.

ÖZ

Bu çalışma, Erzurum ili Karaçoban ilçesinde bulunan sığırcılık işletmelerinin sosyo-ekonomik durumu hakkında bilgi edinmek amacıyla yürütülmüştür. Araştırmada 280 işletmeciyle yüz yüze görüşülerek anket yapılmıştır. İşletmecilerin büyük çoğunluğunun (%97.9) okur-yazar olduğu ve yetiştiricilerin % 31.3'ünün ise üniversite mezunu olduğu tespit edilmiştir. Araştırmada incelenen işletmelerin %76,1'i kombine (süt ve besi) sığırcılık yapmaktadır. Yetiştirici aile fert sayısı çoğunlukla 4 kişi (%15.2), 5 kişi (%23.5) ve 6 kişi (%20.6) den oluşmaktadır. İşletmelerin %35.1'inde bitkisel üretim yapıldığı, yem bitkisi olarak ekimi yapılan bitkilerin ise çoğunlukla arpa (%37.4) ve yonca (%34.0) olduğu belirlenmiştir. İşletme sahiplerinin %73.5'i sadece hayvancılıkla uğraşırken, % 26.5'inin ek olarak farklı mesleklerle uğraştıkları tespit edilmiştir. Yetiştiricilerin %60.6'ının sığırcılığın asıl mesleği olduğu, %22.5'nin emekli, %9.9'unun kamu çalışanı ve %7.0'sinin ise özel bir işte çalıştıkları belirlenmiştir. Yetiştiricilerin % 92.2'sinin geçim kaynağı olarak sığırcılık yapmakta olduğu, % 5.1'inin aile bütçesine katkı ve % 2.8'inin ise alışkanlık olduğu için bu faaliyeti yaptıkları tespit edilmiştir. Kamu kurum ve kuruluşları tarafından bölge yetiştiricilerine yönelik eğitim ve teşvik çalışmalarının bölge hayvancılığın gelişimi açısından faydalı olacağı sonucuna varılmıştır. Yürütülecek olan bu faaliyetlerin işletmelerin sosyo-ekonomik durum ve refahının sağlanması hususunda da yararlı olacağı düşünülmektedir.

Anahtar Kelimeler: Erzurum, hayvancılık, Karaçoban ilçesi, sığırcılık işletmesi, sosyo-ekonomik yapı.

INTRODUCTION

Agriculture, a biological production activity under human control, has been in existence since the transition to settled life and continues up to day. Türkiye, due to its geographical features, climatic structure, and vegetation characteristics, is an agricultural country with a significant number of animals. Despite the decline in economic value witnessed over the past 25 years, Türkiye's industry based on agriculture has shown a continuously growing production rate.

Animal husbandry is a vital component of agricultural production and a significant source of income for rural inhabitants, particularly in the Northeastern Anatolia area of Türkiye. Erzurum and its counties are now pivotal centers for the progression of animal farming in Türkiye, because of their large areas of grassland and pasture. The province is the fourth largest province in Türkiye with an area of 25,330,000 decares. 62.8% of the available land is covered by pastures. The total cattle population in Erzurum province is 800,893 heads, with 36,757 of those cattle raised in Karaçoban county. The percentage of cattle in Karaçoban county accounts for 4.61% of the total cattle population of Erzurum province. An additional 15.6% of cattle breeds in this county are of European cattle breeds, while 81.2% are crossbred and 3.2% are indigenous breeds (TUIK 2023). Furthermore, In the county of Karaçoban, there is natural roughage area covering 106523 decare, of which 66859 decare consist of pasture and 39664 decare of meadowland. Considering that Erzurum province has 10685924 decare roughage area the share of Karaçoban in the total pasture and meadow area is considerably low.

According to the 2023 census, the Karaçoban county has a total population of 22,250, with 11,337 males and 10,913 females. The number of young people aged between 15 to 29 is reported at 6,428, while the number of elderly aged 60 and over is 2,075, which is approximately three times less than the young population. Over the last decade, the total population has decreased by 10.9%, indicating a shift from rural to urban areas in the county (TUIK, 2023). While rural migration in developed countries is linked to the need for labor during industrialization, in our country it is mainly caused by high unemployment rates and rapid population growth resulting from mechanization in the agricultural industry. Limited job prospects in rural areas along with low household income and better education and health conditions in urban regions further contribute to the migration trend (Aşkın et al. 2013).

In order to improve the economic value of cattle farming in Türkiye, it is essential to carry out a detailed scientific study of the socio-economic framework of the existing cattle farms. This comprehensive evaluation should cover the existing cattle breeds and different types cattle enterprises, as well as the age and gender distribution of the animals. The assessment must also take into account the demographics structure of the enterprisers, including their age, level of education, staff composition and work experience (Boz, 2013). Certain issues in these enterprises have a significant impact on the livestock sector nationwide, while others may vary from region to region. Conducting local studies and detailed investigations is this imperative to formulate accurate and coherent solutions (Doğanay and Yanar 2023). The optimal approach to assessing breeders' requirements is via on-site research, identifying issues. Consequently, in recent years, there has been a notable increase in investigations exploring the structural elements of cattle enterprises in various regions of the country and in other countries (Rhone et al. 2008; Ayenew et al. 2011; Şeker et al., 2012; Van den Berg, 2013; Daş et al., 2014; Güler et al., 2016; Bakan and Aydın, 2016; Saleh, 2018; Houessou et al. 2019; Paksoy and Bulut, 2020; Ermetin, 2020; Diler et al. 2022; Özsağlıcak and Yanar, 2022). On the contrary, no research has been conducted on the socio-economic condition of cattle farms in Karaçoban county in the province of Erzurum. Therefore, this study was conducted to determine the socio-economic profile of cattle farms operating in this county, to identify the problems related to animal husbandry and to propose solutions.

MATERIAL AND METHODS

The research material consists of questionnaire data acquired from cattle farms located in the Karaçoban county of Erzurum province. The questionnaires were completed through mutual interviews and observations. The sample size was comprised of 280 enterprises, which represents 10% of the 2808 cattle breeding enterprises. It is worth noting that Yamane (2006) recommends a minimum sample size of 3%, while Lane (2003) suggests a minimum of 10% when making such calculations. Nevertheless, according to Sümbüloğlu and Sümbüloğlu (2007), the larger the sample size, the better it becomes at representing the broader population. Verbal consent was taken from all participants who took part into this study.

After the completion of the face-to-face survey, the gathered data were entered into MS- Excel 2010 and analyzed utilizing the SPSS statistical software, employing the descriptive frequency analysis procedure detailed by SPSS (2004). Proportional values were employed to generate the graphs, and the resulting findings were subsequently interpreted.
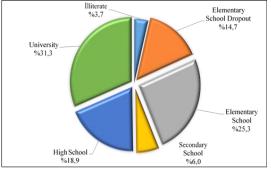
RESULTS and DISCUSSION

Education level of cattle breeders

The majority (93.7%) of cattle farmers in Karaçoban county, Erzurum province, are literate. Of these, 31.3% are university graduates and 18.9% have completed high school (Figure 1). This high proportion of university-educated individuals suggests that both the county's inhabitants and

those in the animal husbandry field prioritize education. In addition, it is thought that this situation will lead to the positive progress of animal husbandry in the county by following the developments in animal production, adopting modern breeding principles and trying to implement these gains in the enterprises.

Figure 1. Education status of enterprise owners
Şekil 1. İşletme sahiplerinin eğitim durumu

Out of the total surveyed enterprises, 69.4% of them held primary school qualifications, 17.0% held secondary school qualifications, 5.4% were high school graduates, 5.4% were illiterate, while only 1.2% held university degrees. In research conducted across various provinces and counties of Erzurum, Bastem (2018) noted the educational qualifications of cattle breeders in the Horasan county. Similarly, Eltas (2018) conducted a study within the central counties and found that 51.6% of the breeders held primary school qualifications. The study found that 23.7% of individuals possessed a high school degree, 17.2% possessed a secondary school degree, 4.3% possessed a university degree, and 3.2% were illiterate. According to Güler et al. (2016), Hınıs county had a 4.5% illiteracy rate amongst breeders, with 70.9% having dropped out of primary school, 13.7% possessing a primary school certificate, 3.7% holding a secondary school diploma, 6.4% possessing a high school diploma and 1.3% possessing a university degree. Interestingly, the results indicate that Karaçoban county has the highest proportion of university graduates within the Erzurum region.

In various regions of our country, research conducted by Doganay and Yanar (2023) has shown that 39.3% of enterprisers in the Eyyubiye county of Şanlıurfa province had a primary school education, while 26.7% and 25.9% of cattle farmers were secondary and high school graduates, respectively. Özsağlıcak and Yanar (2022) reported that 50.6% of livestock farmers in the central county of Erzincan province were primary school graduates, 20.7% were secondary school graduates, 19.7% were high school graduates and 5.7% were university graduates. In Tekirdağ, 15.0% of the cattle farmers are high school graduates and 14.0% are university graduates (Soyak et al., 2007). In Edirne, only 3.5% of the breeders have completed high school (Önal and Özder, 2008), in Giresun, 9.1% of the breeders have

completed high school, 7% have exceeded high school (Tugay and Bakır, 2009). While 8% of the adult population of Diyarbakır (Han and Bakır, 2009 and 2010) completed high school, only 1% completed university. In the center of Kahramanmaraş and in various counties (Kaygısız et al., 2010), the percentage of high school graduates is 21%, and the percentage of college graduates is 1%. In the Çatak, Erciş and Özalp counties of Van province (Terin and Ateş, 2010), only 5.9% of cattle breeders has graduated from high school and 0.8% from university. In the province of Muş (Şeker et al., 2012), the percentage of high school graduates is 18.4%, and the percentage of university graduates is 2.4%. in 2012, a graduation rate of 17.7% for high school and 3.4% for university was observed in the central and county regions of Kars province. Similarly, in Çayırlı county of Erzincan province, there were 20.8% of high school graduates and 1.0% of university graduates (Özyürek et al., 2014). According to the literature, the rates of high school and university graduates among breeders in the Karaçoban county of Erzurum province are generally favorable.
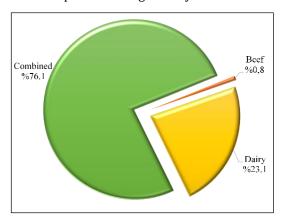

Figure 2. Type of cattle breeding
Şekil 2. Sığır yetiştiriciliği tipi

Type of cattle breeding enterprises

In the study, it was found that 76.1% of the examined enterprises engage in combined meat and dairy cattle farming (dairy and fattening), while 23.1% focus solely on dairy cattle farming and only 0.8% specialize in fattening (Figure 2). The results suggest that a production system based on mixed cattle breeding prevails in the Karaçoban county, in line with the expectations, demands, and economic conditions of the breeders. Male calves born on dairy farms in Karaçoban county are typically raised for beef, while the females are bred as heifers for milk production. As a result, farms in the region often utilize a combined system, encompassing both dairy and fattening, for cattle breeding.

These results were in agreement with the findings of Yanar and Doğanay (2023), who reported that 40.7% of the cattle enterprises in Eyyubiye county of Şanlıurfa province were fattening, 14.9% were dairy and 44.4% were combined type. Güler et al. (2016) reported that 94.0% of the farms in Hınıs
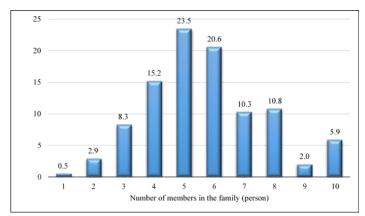
county, Erzurum province were combined type (dairy and fattening), 4.0% were dairy and 2.0% were fattening. Şeker et al. (2012) indicated that 79.2% of the farms were mixed cattle rearing system, 11.7% were dairy type and 9.2% were fattening type.

In studies conducted in other countries, Ahaotu et al. (2013) reported that 77,5% of farms solely engaged in dairy farming. Silva et al. (2014) found that only 10% of Brazilian cattle farms were involved in milk production, and most of those raised cattle for fattening purposes.

Number of family members of enterprisers

In the study, the number of family members of the enterprisers in Karaçoban county was found to be mostly 4 persons (15.2%), 5 persons (23.5%) and 6 persons (20.6%). Considering that the average household size in Türkiye on cattle farms is 3.35 persons (Özdemir et al., 2021), the number of breeder family members in the current study is above the national average.

The high number of people in the family is important in terms of caring for the animals and sharing the workload. Furthermore, the management of cattle farming enterprises by family members is an important factor in ensuring the continuity of cattle husbandry.

Figure 3. Number and percentages of family members of breeders
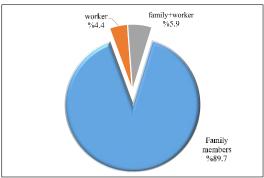*Şekil 3. Yetiştiricilerin aile üyelerinin sayısı ve yüzdeleri*

A study conducted by Kılıçtek and Aksoy (2019) in the Erzurum province has revealed that families with cattle farms have an average of 5.81 individuals. Similarly, Özdemir et al. (2021) analyzed the structural aspects of the enterprises that belong to the Balıkesir Province Gönen Milk Producers Association and found that the average number of family members in these enterprises is 4.23 individuals. Özdemir et al. (2023) reported that 26.0% of dairy farms in Gümüşhane province's Torul county were comprised of five individuals, 22.0% consisted of six individuals, while 16.0% were comprised of seven individuals.

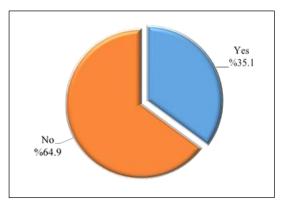## Distribution of employees in the cattle enterprise

The study revealed that the majority of people working on livestock enterprises in the Karaçoban county of Erzurum province were family members (89.7%), while only 4.4% were laborers (Figure 4).

Figure 4. Types of people working in the enterprise
Şekil 4. İşletmede çalışan insan tipleri

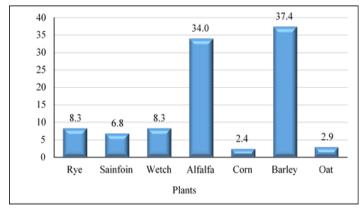Similarly, Bakan and Aydın (2016) discovered that 0.9% of

cattle farms in Ağrı province employed external laborers, and 5.7% used both family and hired labourers. As the majority of cattle farms in our country are small family businesses, family members work in these enterprises and provide the necessary workforce.

Figure 5. Status of crop production in the enterprises

Şekil 5. İşletmelerdeki bitkisel üretim durumu

Figure 6. Produced Crop Plants
Şekil 6. Üretilen Bitkiler

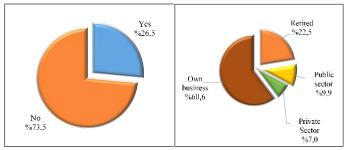## Crop production in cattle farms and fodder crops grown

In the surveyed county, it was found that 35.1% of cattle breeders were involved in plant production on their enterprises (Figure 5). Forage crops, mainly barley (37.4%) and alfalfa (34.0%), were predominantly cultivated on these farms (Figure 6).

In a study conducted in Kars province, it was reported by Demir et al. (2013) that 88.7% of dairy cattle farmers cultivated fodder crops and that barley, vetch and wheat crops were mostly cultivated as fodder crops. Han and Bakır (2014) found that 61.2% of dairy cattle farmers in Yalova province cultivated forage crops. Diler et al. (2016) found that 37.0% of cattle farms in the Hınıs county of Erzurum province were involved in crop production. Of these farms, 44.0% engaged in cultivation of forage crops. In another research, Bakır and Kibar (2018) reported that 87.2% of the dairy cattle farms in Muş province and its counties were engaged in forage crop cultivation and the types of forage crops given to the animals consisted of clover, meadow grass, sainfoin, wheat straw and a small amount of vetch.

Feed costs account for 60-70% of expenses, especially in cattle breeding enterprises. To achieve profitable breeding in this type of animal husbandry, it is crucial to prioritize cultivating forage crops. Referring such enterprises to the cultivation of fodder crops is believed to contribute to proper animal care and feeding, solving the roughage problem and obtaining quality products. Lower plant production rate of enterprises could be explained by the mountaneous and rugged structure of Karacoban county. The county contains less arable land suitable for plant production.

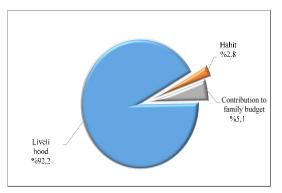## Business owner's employment status in another field other than cattle farming

It was found that about three quarters of the cattle farmers surveyed (73.5%) were engaged solely in cattle farming, while 26.5% had other occupations in addition to cattle farming (Figure 7a). Regarding their primary activity, the majority of participants (60.6%) identified themselves as cattle breeders, while 22.5% were retired, 9.9% were public employees, and 7.0% were employed in private companies (Figure 7b).

Figure 7. Status of having another occupation (a), the sector (b)

Şekil 7. Başka bir mesleğe sahip olma durumu (a), sektör (b)

A study conducted in the İspir county of Erzurum found that 41.6% of breeders participate in non-animal husbandry activities. Moreover, Diler et al. (2022) noted that 57.0% of participants operate their own businesses, 24.2% are employed in the private sector, while 18.8% work in the public sector. Further studies have revealed the percentage of farmers who have other occupations than animal husbandry, as reported by Şeker et al. (2012), who reported a percentage of 48.0% in Muş province, Hozman and Akçay (2016) reported 37.0% in Sivas province, and Koçyiğit et al. (2018) reported 29.8% in Narman county of Erzurum province. A study conducted by Duguma et al. (2021) found that 25.9% of livestock farmers in Ethiopia are civil servants, 25.9% are retired, 20.4% are traders, 11.1% are housewives, and 16.7% are only engaged in agriculture.

Şekil 8. Reasons to perform cattle farming
Şekil 8. Sığır yetiştiriciliği yapma nedenleri

Reasons for cattle farming in Karaçoban county

Among cattle breeders in the Karaçoban county, 92.2% stated that they engage in cattle farming for their livelihood, while 5.1% do so to supplement their family budget. Only 2.8% of the respondents reported that they reared cattle as a habitual practice (Figure 8).

A study carried out in the Eyyübiye county of Şanlıurfa found that cattle rearing was the primary source of income for 79.1% of farmers, while 20.2% engaged in it for supplementary income, and 0.7% for habituation (Doğanay and Yanar, 2023). Sahin et al. (2022) reported that cattle rearing was driven by several factors such as being the father's occupation (21.0%), a source of income (19.1%), personal interest in the activity (18.4%) and expectation of profitability (16.5%). Other studies by Kocyiğit et al. (2015), Çapadağ (2017), and Tugay and Bakır (2009) emphasize that livelihood was the primary motivation for farming.

CONCLUSION

The majority of dairy farmers in Karaçoban county may provide advantages for the development of animal husbandry, with 93.7% being literate and 31.3% having a university degree. The high level of education in the county offers opportunities for farmers to follow technological

developments, adopt innovations more easily, learn modern breeding techniques, and be guided towards easy implementation.

In the current study, the adoption of a combined type of cattle farming by approximately three-quarters of the examined enterprises is important as it allows for the production of both meat and dairy products, as well as creating employment opportunities on a large scale.

In rural areas, the number of family members in businesses generally ranges from 4 to 6, and most of the employees in these businesses consist of family members. Of the surveyed business owners, 73.3% are solely engaged in livestock farming, while 92.2% engage in this activity as a means of livelihood. These high rates of involvement are important factors that can contribute to the sustainability of livestock farming operations in the area.

From a financial standpoint, the cultivation of plants, specifically those used for animal feed, is critical to a farm's profitability. The achievement of high yields from raised cattle is only possible through proper animal husbandry and feeding conditions. In the county, the enterprises account for 35.1% of crop production. This is insufficient for profitable livestock production. As a result, cultivating feed crops on business should be encouraged and feed mixes should always include fodder crops.

In conclusion, the findings obtained in Karaçoban county can be considered positive results for cattle farming. However, these results are not sufficient for an ideal farming practice. Specifically, in order to produce feed crops, farmers need to be educated and provided with necessary incentives and support. Moreover, it is anticipated that the development of county livestock will be enhanced by conducting necessary work to increase operators' knowledge, skills and education levels.

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