*Dicle Üniversitesi Veteriner Fakültesi Dergisi*
*Dicle University Journal of Faculty of Veterinary Medicine*

**e-ISSN:1308-0679**
*https://dergipark.org.tr/tr/pub/duvetfd*

**RESEARCH ARTICLE**

# Socio-economic Structure and Current Problems of Horse Breeding Enterprises in Mahmudiye District of Eskisehir

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**Received**
05.04.2024

**Accepted**
04.07.2024

**Published**
31.12.2024

**DOI**

10.47027/duvetfd.1464314

**How to cite:** Peker A, Ün AE, Aral Y, Altın O, Orkan Ş (2024). Socio-economic structure and current problems of horse breeding enterprises in mahmudiye district of Eskisehir. *Dicle Üniv Vet Fak Derg*., 17(2):94-99



**Abstract**

The horse has been an significant farm animal throughout history and has been used especially in agriculture, transportation and military activities. This study was conducted to ascertain the socio-economic status and current problems of horse enterprises in Mahmudiye district of Eskişehir province. The material of the study consists of the data obtained as a result of face-to-face interviews in 12 horse enterprises in Mahmudiye district of Eskişehir province in 2019. In the results of the survey, it was determined that the average age of the enterprise owners was 41.25 years and their average professional experience was 17.67 years. Of the total cost, 49.33% was feed costs, 16.87% was labor costs, 14.55% was litter costs and 8.68% was natural mating costs. The main problems identified in the region for the enterprise are marketing and feed supply (83.33%), labor supply (50%) and health problems (41.67%). Mahmudiye district is still a significant breeding region for horse breeding and racing. Encouraging tourists and children to participate in equestrian sports and activities like horseback riding will have an impact on the socio-cultural growth, career opportunities, and overall economic diversity of the local population and national income of Türkiye. Therefore, with this study, it is thought that it would be useful to establish a horse training area in Mahmudiye district in order to spread the love of horses and equestrian culture and to develop equestrianism.

**Key Words:** Horse breeding, livestock, Mahmudiye, socio-economic status

## Eskişehir İli Mahmudiye Ilçesindeki At Yetiştiriciliği İşletmelerinin Sosyo-Ekonomik Yapısı ve Güncel Sorunları

**Öz**

At, tarih boyunca önemli bir çiftlik hayvanı olmuş ve özellikle tarım, ulaşım ve askeri faaliyetlerde kullanılmıştır. Bu çalışma, Eskişehir ili Mahmudiye ilçesindeki at işletmelerinin sosyo-ekonomik durumunu ve mevcut sorunlarını tespit etmek amacıyla yapılmıştır. Çalışmanın materyalini, 2019 yılında Eskişehir ili Mahmudiye ilçesinde 12 at işletmesinde yüz yüze yapılan görüşmeler sonucunda elde edilen veriler oluşturmaktadır. Anket çalışması sonuçlarında işletme sahiplerinin yaş ortalamasının 41.25, ortalama mesleki tecrübelerinin ise 17.67 yıl olduğu belirlenmiştir. Toplam maliyetin %49.33'ünü yem maliyetleri, %16.87'sini işçilik maliyetleri, %14.55'ini altlık maliyetleri, %8.68'ini ise doğal aşım maliyetleri oluşturmaktadır. İşletme açısından bölgede tespit edilen başlıca sorunlar; pazarlama ve yem temini (%83.33), işgücü temini (%50) ve sağlık sorunları (%41.67) olarak sıralanmaktadır. Mahmudiye ilçesi at yetiştiriciliği ve yarışları açısından halen önemli bir konumda bulunmaktadır. Turistlerin ve çocukların binicilik faaliyetlerine katılmalarının teşvik edilmesi, Türkiye'nin sosyo-kültürel değişimine, kariyer fırsatlarına, yerel nüfusun genel ekonomik çeşitliliğine ve milli gelirine büyük katkı sağlayacaktır. Bu nedenle bu çalışma ile at sevgisinin ve binicilik kültürünün yaygınlaştırılması ve atçılığın geliştirilmesi amacıyla Mahmudiye ilçesinde bir at eğitim alanının kurulmasının yararlı olacağı düşünülmektedir.

**Anahtar Kelimeler:** At yetiştiriciliği, hayvancılık, Mahmudiye, sosyo-ekonomik durum

## INTRODUCTION

The horse has had an important place among farm animals throughout history. It has been actively used in jobs such as shooting, harness, people and goods transport, especially in agriculture, transportation and military operations (1-2). However, with the mechanization that emerged in the industrial revolution, the use of horses in these areas has been decreased, and horse breeding for racing and sports has become a more common activity. People in some countries and regions continue to benefit from horse traction to varying degrees in agriculture and other service sectors. Horse production and training differ significantly from other farm animals in terms of management and purpose. When comparing horses in a competitive setting, it's critical to consider the economic service provided and to plan the working rates of horses who are employed or forced to work (2).

The expenses related to horse breeding include the general upkeep and care of horses. In the long run, a horse breeding enterprise's budget must account for expenses associated with housing, feed, veterinary care, and general maintenance. Other important financial considerations of horse breeding include the expenses associated with caring for breeding stallions, mares, and foals in addition to the frequent weight assessments required to maintain the health of the horses (3-4). Although the cost of horse breeding is high, it makes significant contributions to the national economy of the countries where breeding is common (5).

The historical prominence and distinctive genetic qualities of the Arabian horse breed have made breeding them economically significant. The matrilineal side has always played a significant role in defining the purity of Arabian horses (6). However, genetic considerations are also very important in the economics of raising Arabian horses (7). Oxidative stress markers, and reproductive performance are additional aspects that affect the economic viability of Arabian horse breeding farms and can have an impact on the overall success and profitability of these enterprises (8). Horse breeding enterprises may enhance their productivity, preserve the quality and worth of their horses, and make a substantial financial impact on the equine sector by incorporating these factors into their operations.

Pure blood Arabian horse breeding has been carried out for about 200 years in enterprise of Anatolia Agriculture which was established under the name of Çiftlikat-ı Hümayun by II. Mahmut to meet the horse needs of the Ottoman army in 1815, in the Mahmudiye district of Eskişehir (9). In Mahmudiye district, there are many enterprises that are engaged in breeding and racing horse, together with horse boarding. Due to its geographical location, historical development process, trained and educated manpower etc., Mahmudiye has become one of the important centers of equestrianism and it still maintains this feature today (10). The aim of this study is to reveal the socio-economic structure of horse breeding enterprises in the Mahmudiye district of Eskişehir province and to examine their current problems.

## MATERIAL AND METHODS

The material of the study consists of the primary data obtained from the enterprises engaged in Arabian horse breeding in the Mahmudiye district of Eskişehir through the data supply form. Eskişehir province is located in northwestern Türkiye (Figure 1). Eskişehir is classified as having a cold semi-arid steppe climate (BSk) according to the Köppen climate classification. This means it experiences warm to hot dry summers and cold to freezing winters. As of 2020, there are 57 private horse enterprises in Mahmudiye district and nearly 2000 horses in total (10).

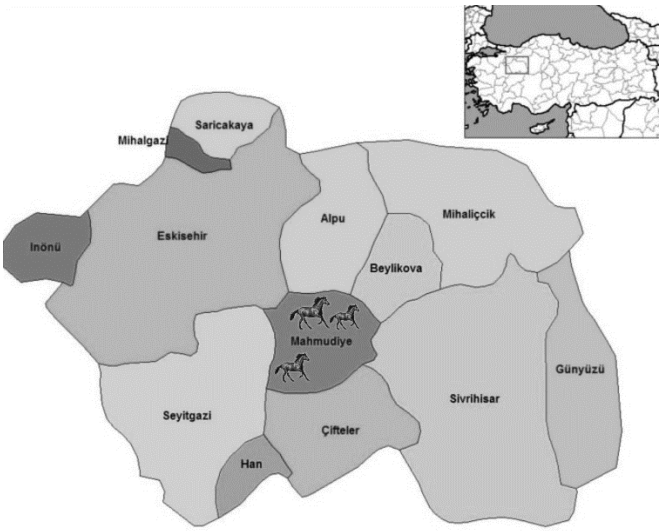


**Figure 1.** Display of study area.

In order to determine the socio-economic status of the enterprises, the questions such as the age of the enterprise owner, education level, experience level of owners, whether the owners have any other income, labor type, organizational structure, number of animals and technical structure, operating cost-income elements, basic problems encountered in the enterprises, etc. were asked in the data supply form. Although the data used in the study belong to 2019, 12 enterprises were visited within the scope of the study.

The data obtained from the study were transferred to the computer using Microsoft Excel 16.21 program. Descriptive statistics consisting of frequency, percentage, average and standard deviation were used in the analysis and evaluation of the data.

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## RESULTS

The average age of the enterprise owners included in the study was found to be 41.25. It has been determined that the average duration of horse breeding activity in the enterprise is 17.67 years. The average number of horses available in the enterprises is 37.50. From the findings related to the land assets of the enterprises; it has been determined that 16.67% are tenants and 83.33% are property owners. The average total area of irrigable and dry land in the enterprises was 282.41 decares, the total paddock area was 58.45 decares, the total horse barn area was 4.06 decares, and the total land area was found to be 344.93 decares on average (Table 1).

**Table 1.** Descriptive presentation of quantitative parameters in enterprises

| Parameters | Enterprises | | | |
|---|---|---|---|---|
| | Mean | Min. | Max. | Stand. Deviation |
| Age (years) | 41.25 | 25 | 73 | 14.05 |
| Experience of owner (years) | 17.67 | 2 | 33 | 8.08 |
| Year of establishment | 7.75 | 1 | 24 | 7.68 |
| Number of horses | | | | |
| **Land distribution of enterprises** | 37.50 | 6 | 109 | 33.09 |
| Irrigable + dry land (da) | 282.41 | 0 | 1230 | 405.05 |
| Paddock area (da) | 58.45 | 3 | 320 | 90.19 |
| Horse barn area (da) | 4.06 | 0.1 | 30 | 8.61 |
| Total land area (da) | 344.93 | 10 | 1246.10 | 422.94 |

Table 2 shows descriptive presentation of some categorical parameters in enterprises. When the education levels of the enterprise owners are examined; it was determined that 16.67% of them were secondary school, 33.33% were high school, 41.67% were university and 8.33% were of a post-graduate program graduates and 50% of the owners of the enterprises receive training in this field of activity.

**Table 2.** Descriptive presentation of qualitative parameters in enterprises

| Parameters | Enterprises | |
|---|---|---|
| | n | Mean |
| **Education Level (%)** | | |
| Secondary School | 2 | 16.67 |
| High School | 4 | 33.33 |
| University | 5 | 41.67 |
| Post-graduate | 1 | 8.33 |
| **Main Economic Activity (%)** | | |
| Yes | 10 | 83.33 |
| No | 2 | 16.67 |
| **Scale-up Targets (%)** | | |
| Continue with current scale | 6 | 50.00 |
| Increase the scale | 4 | 33.33 |
| Continue with current capacity for 5 years | 2 | 16.67 |
| **Labor Type (%)** | | |
| Family Labor | 7 | 58.33 |
| Hired Labor | 1 | 8.33 |
| Family and Hired Labor | 4 | 33.33 |
| **Membership of any associations (%)** | | |
| Yes | 3 | 25.00 |
| No | 9 | 75.00 |
| **Satisfaction of state supports (%)** | | |
| Yes | 7 | 58.33 |
| No | 5 | 41.67 |
| **Working with contracted veterinarian (%)** | | |
| Yes | 6 | 50.00 |
| No | 6 | 50.00 |
| **Receiving training in horse breeding (%)** | | |
| Yes | 6 | 50.00 |
| No | 6 | 50.00 |
| **Insurance presence (%)** | | |
| Yes | 1 | 8.33 |
| No | 11 | 91.67 |
| **Land ownership status (%)** | | |
| Owner | 10 | 83.33 |
| Tenant | 2 | 16.67 |

The enterprises are asked about their future enterprise scale targets and 50% of the enterprises declared that they want to ensure continuity with the current herd size, 33.33% plan to increase the scale of the enterprise (to make foal production places, etc.), 16.67% of them want to continue at the same capacity for at least 5 years.

The ratio of enterprises that carry out horse breeding as the main source of income has been determined as 83.33%. The remaining enterprises declared that they also earned income from agricultural activities and retirement. When the labour structure in the enterprises is examined; it has been determined that 58.33% of the enterprises use family labor. The number of enterprises that do not use family labor in the enterprise is only 1, and other enterprises use both family and hired labor together. However, 50% of the enterprises work with a veterinarian on a contractual basis (Table 2).

When the organizational structure of the enterprises is examined; it was observed that 75% of them were not members of any organization. When asked about their opinions on support and credit adequacy, 58.33% of the enterprises stated that the facilities were sufficient, and 41.67% of the enterprises stated that the facilities were not sufficient.

Table 3 shows cost and income factors disctribution among total cost and income in horse enterprises. Among the elements that make up the costs of the enterprises; while the feed cost is in the first place with a rate of 49.33%, it is followed by; labor cost with 16.87%, litter cost with 14.55%, natural mating cost with 8.68%, water-electricity-fuel cost with 5.88%, veterinary-health cost with 1.54% and other costs (such as equipment maintenance, blacksmith cost, riding supplies cost) with 3.14%. When the factors that make up the total income of the enterprises are examined; it has been determined that 43.09% of the total income consists of foal sales income, 21.02% income from races, 16.63% breeding income, 19.26% other income elements such as breeder sale and horse riding-training activities (Table 3).

**Table 3.** Cost and income factors distribution in total cost and income in %

| | Factors | Distribution rate (%) |
|---|---|---|
| **Expenses of enterprises** | Feed cost | 49.33 |
| | Labor cost | 16.87 |
| | Litter cost | 14.55 |
| | Natural mating cost | 8.68 |
| | Water- Electricity- Fuel cost | 5.88 |
| | Veterinary-Health cost | 1.54 |
| | Other costs (Equipment-maintenance cost- Blacksmith cost- Riding supplies cost) | 3.14 |
| **Incomes of enterprises** | Foal sales income | 43.09 |
| | Racing income | 21.02 |
| | Breeding income | 16.63 |
| | Other incomes (Breeder sales, Horse riding and training activities) | 19.26 |

When the main problems encountered in enterprises are examined; it has been observed that the increase in input costs is the main problem in all enterprises. While 83.33% of the enterprises had problems in both marketing and supplying feed, 50% in the supply of labor, and 41.67% of them stated that they faced health problems (Table 4).

**Table 4.** Current problems in horse enterprises

| | Enterprises | |
|---|---|---|
| **Current Problems (%)** | **n** | **Mean** |
| Marketing | 10 | 83.33 |
| Feed supply | 10 | 83.33 |
| Labor supply | 6 | 50.00 |
| Education/Training | 2 | 16.67 |
| Credit supply | 1 | 8.33 |
| Health issues | 5 | 41.67 |

*Some owners has reported more than one problem

## DISCUSSION AND CONCLUSION

The findings from this study were rather evaluated and interpreted independently because the quantitative and qualitative scientific research on the socio economic analysis of horse breeding enterprises was lacking in the literature. The present study found that the average age was 41.25 while the average working experience was 17.67 years among enterprise owners.

When the education levels of owners were examined, it was revealed that almost more than half of them had a university or higher degree. It is noteworthy that the average age of those engaged in horse breeding is lower than other livestock sub-sectors, but their education level is higher compared to other sectors (11-13).

This situation may cause some positive effects in the sector. Although older horse enterprise owners may have accumulated years of experience and knowledge about breeding practices, horse care, and managing the enterprise, on the other side younger owners may bring fresh perspectives, education in modern practices, and a willingness to adopt innovative approaches. Some researches indicate that there is a favorable correlation between education level and the ability to adjust to new developments and technological advancements (14-16).

In one of the study conducted in Bangladesh, it is reported that horse pulling cart was only and main source of earning for their livelihood in the society (17). Similar to this study, it has been observed that horse breeding is carried out as the main economic activity in most of the enterprises and this is provided mostly by family workforce (81.66%) in our study. The average number of horses was 37.50 in enterprises. When the scale-up goals of enterprises are evaluated, it is seen that the majority of enterprises want to stay at their current scale. It's essential to recognize that the decision to scale up or stay at a certain scale is complex and influenced by a combination of personal preferences, market conditions, and strategic considerations. However, large-scale horse breeding operations can have heavy workloads and responsibilities. Owners may evaluate their time, energy, and experience when determining if they can effectively oversee a larger enterprise. Therefore, to improve work-life balance and minimize risks, some could decide to maintain a smaller scale enterprises.

In this study, it was determined that only 3 of the enterprises included in the research were members of any organization, and the remaining was not members of any organization. One of the most important problems in livestock enterprises in Türkiye is the marketing problem that arises as a result of the insufficient level of organization of the producers. This was also the main problem faced by enterprise owners in our study findings.

In our study, when the main problems faced by enterprises are examined, it is seen that marketing comes first and followed by feed and labor supply respectively. In a study conducted in Çanakkale province, it was stated that a significant portion of horse breeding enterprises had difficulties with feed prices. However, similar to our study, it was observed that there were also problems in labor supply (18). In another study conducted in Western Ethiopia, it was determined that feed shortage was also one of the problem that the horse enterprises faced (19). The study conducted in Central Ethiopia, the constraints were ranked from higher to lower rank based on their impact on equines; accordingly, diseases were the first major constraints (46.67%), followed by feed shortage (26%), water shortage (18%), and marketing problem (9.33%) (20). The results of this study are similar to the results of our study in terms of problems encountered in enterprises.

It is frequently necessary to combine strategic planning, good management techniques, keeping up with market developments, and situational flexibility to overcome these obstacles. Horse enterprise owners can create plans to deal with these difficulties by regularly evaluating the enterprise's strengths and limitations.

The cost factors are important in enterprises. In this study, feed costs with a ratio of 49.33% rank first among the cost factors that constitute the total cost in enterprises. This was followed by 16.87% labour costs, 14.55% litter costs, 8.68% natural mating cost and 5.88% water- electricity- fuel costs, respectively. In a study conducted in Hungary, it was determined that the highest share of costs in horse keeping is labour costs, followed by other costs, feeding costs and finally veterinary costs (21).

The cost of feed and labor in horse breeding enterprises can be higher due to a combination of specialized nutritional needs of race horses, individual horse care requirements, labor-intensive jobs, and the requirement for professional workers. Therefore, effective cost management is essential to the enterprises's capacity to remain financially viable.

On the other hand, for horse breeding enterprises to be successful overall and to remain sustainable, income considerations must be taken into consideration. In a study which is conducted in Hungary, it is stated that horse enterprises get their revenue from mostly renting out their board and providing riding training (21).

Our study results showed that, foal sales income and racing income were two important income factors in total income distribution with the ratio of 43.09% and 21.02% respectively. Since the Arabian horses and racing income have a complex relationship, with each horse's performance on the track affecting both its breeding value and the possible revenue streams available to their owners. The general financial picture of the industry is also significantly influenced by the level of support and popularity for Arabian horse racing.

The market for horses and associated services is subject to fluctuations, since they are impacted by various variables like prevailing equestrian sports and leisure pursuits. Especially in regions with numerous horse enterprises such as our study area, agro-tourism should be more at the

forefront to provide tourists with opportunities to engage in and learn about horse-related activities within a farm or rural setting. Agro-tourism with an equine focus benefits horse enterprises financially and increases tourists' admiration for horses and rural living. In an engaging and instructive way, it may be a mutually beneficial experience that links people to the worlds of agriculture and equestrian sports (22-24).

Horse breeding and training activities in the world, is gradually developing as a more modern and conscious livestock sub-sector, especially in developed countries. On the other hand, equestrianism is on its way to reaching an important industrial level in the development of horse races and other equestrian activities in Türkiye. However, the sector's contribution to the country's economy is also increasing.

From the findings of this study, which was based on horse breeding, it was concluded that horse breeding is the main source of income for most enterprise owners and this activity still maintains its importance for Mahmudiye district. As in many livestock sub-sectors, it is seen that feed cost constitutes the highest share in input costs in horse breeding. The increase in input and especially feed prices and the difficulties experienced in the supply of feed form the basis of the problems faced by the enterprises. In order to provide profitable and productive feeding in horse enterprises, the nutritional needs of horses must be known very well and the ration content must be determined in a balanced and adequate manner accordingly. Therefore, the measures to be taken and the policies to be applied to reduce input costs are important for the sustainability of this livestock activity.

Mahmudiye district is an important location for horse breeding, but also offers important opportunities especially within the scope of agro-tourism activities. The dissemination of activities such as horse riding, equestrian sports etc. to spread the love of horses and equistrian culture, will contribute significantly to the increase in income levels and socio-cultural development with the employment and economic diversity to the local people.

On the other hand, two important recommendations can be given for enterprises operating in Mahmudiye district: i) to create a fieldhouse in Mahmudiye district where horses can train in order to reach a certain condition before the race and to ensure their physical and mental development. ii) to establish a foal sales area in Mahmudiye district in order to shorten the travel time of horses during horse sales transactions and to prevent horses from being injured or traumatized. The work to be carried out by public institutions to implement these suggestions is important for the horse breeders of Mahmudiye district.

In conclusion, it should be taken into consideration that financial and economic researches to be carried out at different levels and areas of activity in the horse industry will make a significant contribution to enterprises and the sector in general.

## ACKNOWLEDGMENT

In this study, we would like to thank all horse breeding enterprises that accepted to join the study. We have presented this study as an oral presentation at the 4th National Congress of Livestock Economics, 2022.

## FINANCIAL SUPPORT

In the conduct of this research no support was received from any organization.

## CONFLICT OF INTEREST

The authors have no conflicts of interest to report.

## AUTHOR CONTRIBUTIONS

In this study, the research design and methodology were determined by AP, AEÜ and YA. Data collection and fieldwork were conducted by AEÜ, AP and OA, and data analysis was conducted by AP, OA, ŞO and YA. The writing of the article was carried out by AP, AEÜ and ŞO, and the editing and control of the article was completed by all authors. All authors read and approved the final version of the article.

## ETHICAL STATEMENT

The authors declare that this study does not require the ethical statement.

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