

## Sustainable Meat Production from a Marketing and Management Perspective: a Case Study of Kirsehir Province<sup>2</sup>

Basar Altuntas <sup>1,\*</sup> and Halil Ozcan Ozdemir <sup>2</sup>

<sup>1</sup>Associate Professor, Department of Agricultural Economics, Faculty of Agriculture, Ahi Evran University, Kirsehir, Turkiye; <sup>2</sup>Associate Professor, Department of Agricultural Economics, Faculty of Agriculture, Ahi Evran University, Kirsehir, Turkiye

\*Corresponding author's e-mail: [baltuntas@ahievran.edu.tr](mailto:baltuntas@ahievran.edu.tr)

In recent years, a series of reports have been published highlighting the negative environmental impacts of meat production, emphasizing its substantial contribution to greenhouse gas emissions and climate change. Concerns regarding the high-water consumption associated with cattle farming and the environmental issues caused by livestock waste are among the significant barriers to the sustainability of meat production. The primary objective of this study is to conduct a situational analysis aimed at ensuring sustainable beef production and to evaluate the marketing and management strategies of enterprises operating in this field. To achieve this objective, a qualitative study was conducted with producers in Kirsehir. The findings reveal that producers' local market knowledge, high-quality meat production, and awareness of sustainability stand out as key strengths. In contrast, the lack of integrated facilities, a declining young population, and price volatility were identified as major weaknesses. Key opportunities include the establishment of modern farms, digitalization, and geographical indication labeling. At the same time, climate change, water scarcity, and economic uncertainty pose critical threats. The findings highlight the need for adopting innovative technologies, environmentally friendly practices, and direct-to-consumer distribution channels. Branding, such as the "Kirsehir Beef" label, is crucial, and promoting local products through events can boost regional visibility. Environmental strategies, including reducing carbon footprints, producing biogas, and improving waste management, are also essential. Policymakers, NGOs, and academics must actively engage in promoting sustainable practices and developing strategies that balance environmental and economic goals.

**Keywords:** Food sector, sustainable solutions, food security, environmental concerns, meat consumption, SWOT analysis.

### INTRODUCTION

In recent years, the growing global population has increased the importance of developing sustainable solutions to key challenges in the food sector, such as hunger, malnutrition, and food security (Candogan and Ozdemir, 2021). Sustainability is defined as the ability to maintain the functions and productivity of ecological systems over time (Chapin III *et al.*, 1996). It refers to the capacity to sustain a process or state over time. Businesses can use sustainability as a key factor to meet legal and environmental regulations, improve reputation, increase efficiency, and reduce costs (Gedik, 2020). A sustainable future is possible when environmental, social, and economic factors are balanced.

Producers need to meet legal obligations, satisfy customer and investor demands, build public trust, and address environmental concerns, making sustainability even more critical. As sustainability is applied in various areas, its meaning changes depending on the context (Yavuz, 2010). Ensuring the sustainability of agricultural activities is essential to preserve resources for future generations. Global food demand is expected to rise by 35-50% between 2012 and 2050 (FAO, 2019). However, unplanned efforts to meet this demand often result in overexploitation of natural resources, leading to environmental problems such as climate change, water pollution, and biodiversity loss (Candogan and Ozdemir, 2021). The livestock sector, driven by increasing

Altuntaş, B. and H.Ö. Özdemir. 2025. Sustainable meat production from a marketing and management perspective: a case study of Kirsehir province. *Journal of Global Innovations in Agricultural Sciences* 13:943-953.

[Received 20 Nov 2024; Accepted 13 Jan 2025; Published 21 Jun 2025]



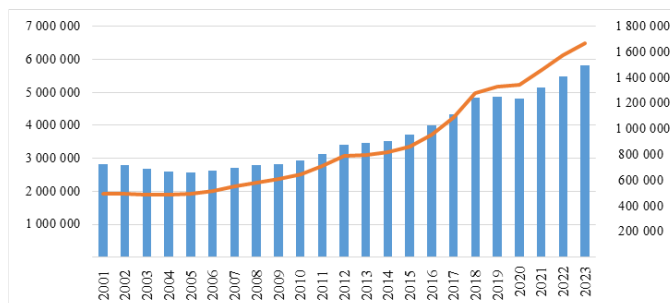
Attribution 4.0 International (CC BY 4.0)

<sup>2</sup>This study was presented as an oral presentation at the 2nd International Conference on Food Security and Value Chain Systems: Challenges and Opportunities in Emerging Economies (December 9-10, 2024, Multan, Pakistan) and is included as an abstract in the conference proceedings book.

global meat consumption, continues to grow, often under unsustainable conditions (OECD-FAO, 2019).

The livestock sector is of significant economic and social importance in Türkiye, as it is globally. It contributes to balanced nutrition, supports rural development, reduces agricultural unemployment, and prevents rural-to-urban migration (Saygın and Demirbas, 2017; Karagoz, 2009; Bayrac and Cemrek, 2011). In Türkiye, beef cattle farming is largely intensive, using dual-purpose breeds in various types of facilities, including open, semi-open, or closed systems. Despite Türkiye's geographical suitability for raising beef cattle, much of its red meat is produced in intensive systems. Türkiye's livestock sector benefits from its geographical suitability for raising beef cattle. Beef production and slaughter data from 2001 to 2023 show a general increase (Fig.1), despite some fluctuations. After 2017, growth in production became more pronounced. Carcass yield, which was relatively low before 2017, improved significantly in subsequent years, indicating more efficient and higher-quality production, particularly from dual-purpose breeds.

In 2017, Türkiye produced 1,093,841 tons of beef, which rose to 1,281,234 tons the following year. The average carcass weight per animal increased from 174 kg in 2001 to 286 kg in 2023 (Tuik, 2024a). Long-term trends show an increase in both beef production and the number of cattle slaughtered. With a growing population, increasing tourism, and substantial migration, meat demand is expected to rise.



**Figure 1. Number of slaughtered cattle and beef production volume in Türkiye over the years.**

A healthy society relies on healthy individuals. To maintain health, it is essential to meet daily protein needs—approximately 1.6 grams per kilogram of body weight—through plant-based or animal-based sources (Schoenfeld and Aragon, 2018). Red meat is a key protein source. While meeting daily protein needs is essential for individual health, the methods and sources used to produce this protein have far-reaching implications for environmental, economic, and social sustainability. This highlights the importance of sustainable practices in sectors such as agriculture and livestock production

Sustainability is something like meeting our present needs without compromising the ability of future generations to meet their needs (Basiago, 1995). In agriculture, *sustainability* has become a frequently used term. Sustainable agriculture is commonly examined about the environmental problems relating to the utilization of the environment. Sustainability in livestock production refers to a holistic approach that ensures the sector's viability and growth while maintaining a balance among environmental stewardship, social equity, and economic profitability. In the context of agriculture, sustainable development aims to ensure long-term food security while minimizing environmental degradation and promoting social equity (Streimikis and Balezentis, 2020). Agricultural sustainability includes environmental, economic and social sustainability. Environmental sustainability involves the careful use and management of natural resources to fulfil the needs of the current generation while ensuring that future generations can also meet their own needs. It covers aspects like ecological integrity, social equity, and economic viability, striving to balance human activities with the preservation of the natural environment (Smith, 2023). Assessment of environmental sustainability must consider many factors, including use of limited resources and various emissions and losses to the environment (Rotz and Rotz, 2020). As stated by Miao *et al.*, (2019), the sustainable development goals highlight the critical role of environmental sustainability in preventing environmental degradation and enhancing global well-being. Developing cost-effective production systems ensures profitability for farmers and stakeholders while maintaining affordability for consumers. This includes diversifying income streams, leveraging technological innovations, and enhancing market access. Economically sustainable systems also promote long-term resilience by mitigating risks associated with market volatility and climate change. Economic sustainability is often understood as the ability of a farming system to remain economically viable over time within a shifting economic environment. These changes may stem from fluctuations in input and output prices, variations in yields, market opportunities, and changes in public policies or regulations. The notion of "long term" can refer either to the farmer's active professional life or to continuity across generations, which connects to the concept of durability meaning the farm's capacity to be handed down to a successor (Latruffe, 2016). Another dimension of sustainability is social sustainability. The social dimension has been neglected in the sustainability discourse and its use seems inconsistent in the development of sustainability assessments (Vallance *et al.*, 2011; Binder *et al.*, 2010). The social dimension is increasingly integrated into sustainability assessment tools. Ensuring fair working conditions, improving the livelihoods of farmers and workers, and promoting community well-being have become social sustainability issues (Shreck *et al.*, 2006). Given the multifaceted nature of sustainability,



numerous studies have sought to explore its implications within the context of meat production, addressing environmental, economic, and social dimensions. These studies provide valuable insights into current practices and innovative solutions aimed at achieving long-term sustainability.

Studies in the literature regarding the sustainability of meat production have been examined. The research (Jiang *et al.*, 2020; Candogan and Ozdemir, 2021; Pintado and Delgado-Pando, 2020; Kumar *et al.*, 2017) highlights the increase in meat consumption due to the growth of the global population, pointing out that a significant portion of greenhouse gas emissions, which are considered a major cause of global warming, is attributed to livestock production. As a solution, they suggest the production of plant-based meat alternatives, the development of green technologies, cultured meat, insect protein, and other innovative applications.

In a study Kumm (2002) examined whether organic meat production is more sustainable than conventional meat production. He found that organic production requires more land, and in situations where there is a scarcity of land for food production and energy crops, its sustainability would be limited.

Van Hertem *et al.* (2016) conducted a study where they assessed sustainable meat production at the farm level by monitoring animal behavior with advanced technologies. They emphasized that measuring the biological responses of animals with this technology makes production processes more comprehensible, enabling farmers to manage processes more efficiently.

This study, in contrast to the others, focuses on the perspectives of producers and identifies key factors for maintaining their current production. As such, it holds unique value, offering an in-depth analysis of the economic and environmental impacts of livestock farming for sustainable meat production.

In this context ensuring the sustainability of meat production to meet current and future consumer needs is crucial for both nutrition and the economy. This study aims to analyze the strengths and weaknesses of enterprises and the sector in achieving sustainability in livestock activities for meat production through marketing and management strategies. It also seeks to identify potential opportunities and threats in the external environment, offering insights into how enterprises can leverage their strengths and opportunities while addressing risks and uncertainties posed by threats.

The lack of studies focusing on this area in literature highlights the significance of this research. By addressing this gap, the study provides valuable insights to stakeholders and supports the development of effective strategies. Its findings aim to help overcome challenges faced by producers, address sectoral threats, and identify opportunities for future growth, ultimately contributing to the sustainability of meat production.

## MATERIALS AND METHODS

The material for this study consists of producers engaged in cattle farming activities in the Kirsehir province. Located in the Central Kizilirmak basin, Kirsehir is a suitable region for agricultural production with its geographical location and characteristics, soil structure and climate. Therefore, the main economy of the province is agriculture and livestock sector (Altuntas, 2021). One of the reasons this province was chosen as the research area is that approximately 32% of the 613,977 cattle in the TR71 region—which includes Aksaray, Nevsehir, Nigde, Kirikkale, and Kirsehir—are raised in Kirsehir (Tuik, 2024b). Kirsehir meets approximately 2.5% of Turkiye's beef market needs, making it a significant player in ensuring the sustainability of livestock activities and meat production in the country.

Scientific research employs two primary methods: qualitative and quantitative. Qualitative research focuses on understanding human behaviors through methods such as observation, interviews, document analysis, and focus group studies (Aydın, 2018). Given the exploratory nature of qualitative research (Altuntas *et al.*, 2024), this study utilizes qualitative methods and employs the interview technique to evaluate the marketing management strategies of meat enterprises. The interview technique is a powerful tool for uncovering participants' perspectives, subjective experiences, emotions, values, and perceptions (Karatas, 2017).

In this study, data collected from the field was used to conduct SWOT analysis. SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis involves evaluating an enterprise's internal and external environmental factors and organizing the resulting data systematically (Altuntas, 2021; Ozdemir, 2024). Strengths represent competitive advantages derived from internal resources and capabilities, whereas weaknesses indicate areas where the enterprise lags compared to competitors. Opportunities arise from favorable external factors, while threats stem from external changes that could negatively impact the enterprise's competitive edge.

The SWOT analysis aims to identify the current state of red meat production in the region, ensure sustainability in production, and develop suitable strategies. According to Baltacı (2018), determining the sample size in qualitative research involves balancing breadth and depth. For this reason, no specific limit was set for the number of interviews in this study, and data collection ceased once repetitive patterns and responses were observed.

This study used thematic analysis, which is commonly preferred in qualitative research. Thematic analysis is a qualitative data analysis method used to identify themes and patterns within a dataset. The interview form prepared for farmers (provided in Appendix - 1 of this study) asked questions regarding the challenges faced during the fattening process, the farmers' strengths in performing these tasks, their weaknesses, and potential opportunities for the future of the



sector. Based on the data obtained from participants, various themes were identified according to recurring statements. Water scarcity, labor issues, input costs, prices, climate change, and drought were the main themes. Since these themes emerged naturally during the analysis process, an inductive approach was followed, ensuring that the results were free of researcher bias.

Primary data were collected through face-to-face interviews with cattle farmers in Kirsehir using in-depth interview techniques. Participants were informed before the interview that they might have ethical concerns. They were informed about the purpose, process, and potential risks of the research (no personal data was collected), as well as the time and psychosocial risks involved. Participation in the study was ensured only with the participant's consent. They were also informed that this data would be used exclusively for scientific purposes. Stratified purposive sampling was employed to select the number of participants from Kirsehir and its districts. This method was chosen to facilitate comparisons and analyses by dividing the population into specific subgroups, thereby increasing representation and reducing sampling errors (Sencer and Sencer, 1978; Pamuk, 2017). It allows for a higher degree of representativeness with smaller sample groups and lower costs compared to simple random sampling (Creswell and Clark, 2016).

Interviews were conducted with participants from each region, and it was observed that similar responses were obtained after interviewing 38 producers, at which point the study reached a sufficient sample size.

A semi-structured interview form consisting of nine open-ended questions was used to collect research data. Depending on the flow of the interview, questions were elaborated to gather more detailed data from participants. Initially, participants were asked to provide general information about themselves and their enterprises. Subsequently, open-ended questions were used to understand the factors influencing marketing management processes and strategies. Descriptive statistics and frequency distributions of the data were analyzed using the SPSS software. Qualitative data from interviews were transcribed and compared with the findings of other studies in literature to provide interpretations.

The interviews were conducted face-to-face by the researchers. Although each interview was designed to last approximately 30 minutes, the actual duration extended to an average of 50 minutes.

## RESULTS

The demographic characteristics of the 38 producers included in the study, along with the number of cattle and the size of their operations, are detailed below (Table 1).

In the descriptive statistical analysis, it was determined that the average age of the participants was 51, with the youngest being 28 years old and the oldest being 64 years old. The

median age was 49, and 84.2% of the participants were aged 41 and above, with only 15.8% categorized as young. Approximately 58% of the participants had higher education. It is important for a conscious group to engage in sustainable production. 65.8% of the participants have been involved in livestock farming for more than 11 years. Experience is a critical factor in conducting this activity. Having accumulated knowledge is essential for ensuring and maintaining high-quality production. In terms of business size, it was observed that 31 businesses had more than 101 cattle, and 34.2% of these businesses were large-scale operations. It was also found that 63.2% of the participants engaged in crossbreeding activities.

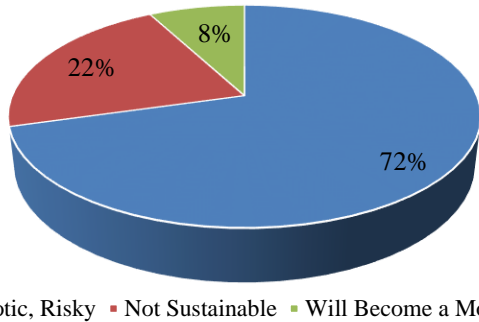
**Table 1. Characteristics of participants.**

		Frequency	%
Age	18-40 years	6	15.8
	41-55 years	18	47.4
	56 years and above	14	36.8
	Total	38	100.0
Education level	Secondary Education	16	42.1
	Higher Education	22	57.9
	Total	38	100.0
Duration of cattle farming activity	1-10 years	13	34.2
	11-20 years	17	44.7
	21 years and above	8	21.1
	Total	38	100
farm size	Small (1-100 animals)	7	18.4
	Medium (101-250 animals)	18	47.4
	Large (> 250 animals)	13	34.2
	Total	38	100.0
Number of cattle	Local Cattle	14	36.8
	Crossbred Cattle	24	63.2
	Total	38	100.0

To determine the participants' views on the sustainability of livestock farming, the question "What do you think about the sustainability of livestock farming?" was asked (Fig. 2). 27 respondents (about 70%) stated that this sector will continue in a chaotic process due to economic developments, and that environmental developments, particularly drought and water scarcity, pose a significant risk for animal husbandry. 8% of the participants believe that soon, this sector will fall under the control of large businesses, forcing smaller businesses to cease operations. 22% of the participants stated that if breeding production does not transition soon and incentives are not provided, livestock farming will not be sustainable. A large majority of livestock farmers (96%) emphasized the importance of creating brand value in their production processes. They highlighted that the meat quality of animals raised in the Kirsehir region is relatively higher compared to other regions, and that the "marbling" of the meat, which refers to fat retention, is an important criterion for determining quality. These types of meat, rather than being processed into products like salami or sausage, should be sold

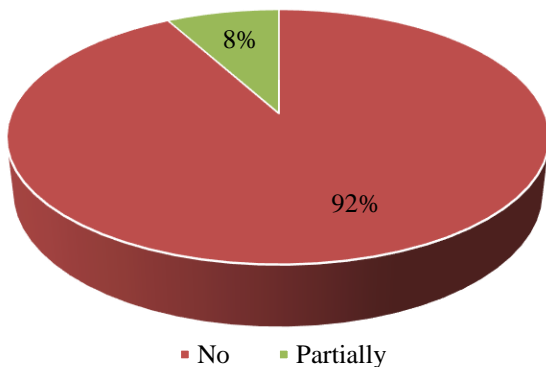


at higher prices in restaurants and butcher shops. Therefore, they are seeking support from the Kirsehir Chamber of Commerce and local authorities to brand the meat as "Kirsehir Meat." They believe that creating brand value for the product will increase market demand, which will play a significant role in ensuring sustainability in production.



**Figure 2. What do you think about the sustainability of livestock farming activities?**

To determine the environmental impact of cattle farming activities, producers were asked, "Do you think cattle farming activities have a negative impact on the environment?" followed by two additional questions: "Do you think the high-water demand of cattle could be a significant factor in future water problems?" and "What do you think about the environmental impact of farm waste?" (Fig. 3). Upon closer examination, it is evident that 92% of the producers believe that cattle farming does not have a negative impact on the environment. They view production as a necessary activity aimed at meeting the country's significant demand for meat, which is an essential food source for its citizens.

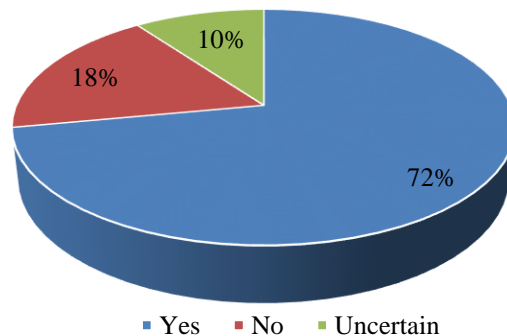


**Figure 3. Do you think cattle farming activities have a negative impact on the environment?**

In Turkiye, where per capita meat consumption is about 30 kg, producers believe that cattle farming does not harm the environment compared to other countries. Participants noted that in the U.S., per capita consumption exceeds 100 kg, and in many European countries, it is above 50 kg, leading them

to believe that cattle farming in Turkiye does not cause as much environmental harm as in Europe or the U.S. Furthermore, the farm waste produced is used in agricultural lands, and the organic fertilizer that mixes with the soil positively impacts crop yield. They argue that it is more beneficial than the chemical fertilizers imported into the country. Only 8% of the participants acknowledged that cattle farming could cause minimal environmental harm but believed that with modern technology, establishing modern facilities, integrating renewable resources into production processes, and afforestation activities to offset carbon emissions, this damage could be minimized.

To determine the producers' opinions on whether they will continue cattle farming activities in the future, an open-ended question was asked (Fig. 4). In response 72% of the participants stated they would continue, 18% said they would not, and 10% expressed uncertainty. The producers who intend to continue explained that they have no alternative to the cattle farming business they are currently involved in. However, an important finding is that producers emphasized the need to benefit from government support and grants available in livestock activities. They suggested that these incentives could be used for projects involving renewable energy production and the collection of rainwater for use in production, which would provide advantages. On the other hand, the 18% who do not intend to continue cattle farming highlighted market uncertainty as a major concern. They viewed the risk of production being dependent on environmental conditions, which are beyond their control, as greater. These producers have different primary income sources, and the income derived from cattle farming is secondary. Therefore, they see no problem in sacrificing this secondary income.

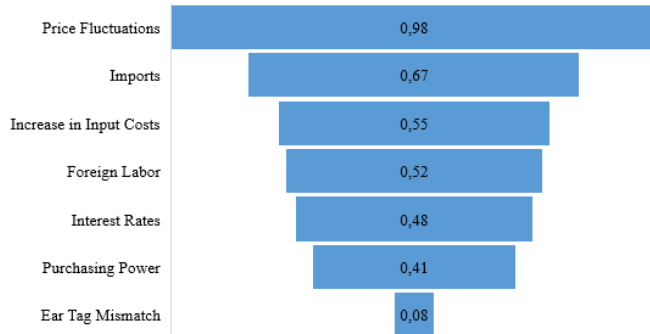


**Figure 4. Do you plan to continue cattle farming activities in the future?**

The beef farm owners were asked about their awareness of external factors affecting their operations and their views on agricultural policies. According to the data presented below (Fig.5), a large majority of the farm owners (98%) stated that price fluctuations are the most significant factor impacting their operations. In second place, with 67%, is the import of

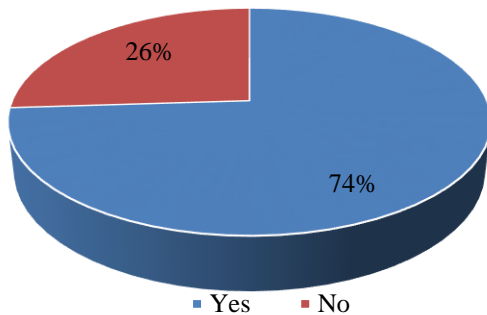


live animals and slaughtered meat. Other factors are as follows: continuous increases in input costs (55%), dependence on foreign labor (52%), high credit interest rates (48%), and the decrease in consumers' purchasing power (41%). Additionally, 21% of the participants noted that the lack of ear tags or mismatched ear tags for livestock has caused delays, particularly in financing and insurance processes.



**Figure 5. What external factors affect your ongoing operations?**

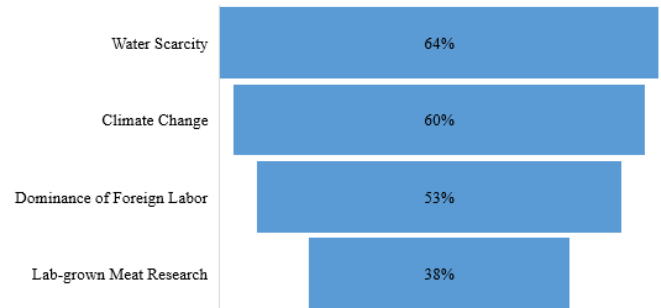
Producers were asked how they evaluate themselves in their activities (Fig. 6). The number of those who stated that they are more successful in their activities compared to the past is 28, which accounts for 74%. The remaining 26% believe that they have not yet achieved success, but they are confident that with more experience, learning the job better, staying open to innovations, and over time, they will become more successful. Those who consider themselves successful evaluate this success by looking at the post-fattening carcass yield, the rate of loss during the fattening period, and the increase rates in their annual barn capacities and assets.



**Figure 6. Do you think you are successful in your activities?**

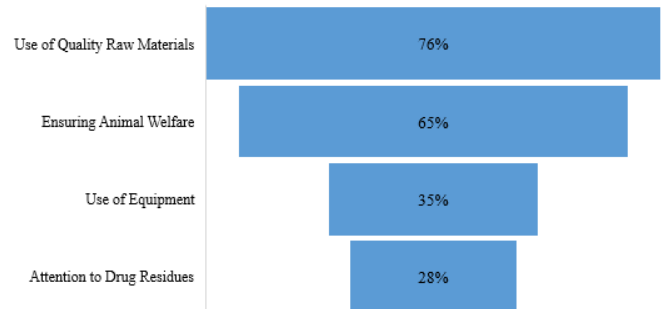
Producers indicate that there are certain risks regarding the future of the meat market (Fig. 7). The primary risks identified include water scarcity (64%), drought due to climate change (60%), the foreign and refugee-heavy labor market (53%), and the risk of artificial meat production (38%). On the other hand, participants who mentioned the presence of some

opportunities in the market pointed to the EU Pre-Accession Assistance Instrument (IPARD) and the support and grants provided by the Agricultural and Rural Development Support Institution (TKDK), as well as the establishment of modern farms, which they believe offer significant advantages, particularly in ensuring animal welfare and managing farm waste effectively. Furthermore, it is believed that more efficient production can be achieved by using up-to-date technology, and carbon emissions can be controlled. They also mentioned that with new product differentiation, producing more specialized meat could lead to higher profits in wholesale and retail trade. Additionally, distribution channel strategies aimed at delivering products directly to consumers are considered important for success in the future.



**Figure 7. What could be the future threats to meat markets?**

When the answers given to the question about the strategies used by producers to ensure quality meat production were evaluated, 76% of producers stated that they focus on the raw materials and concentrate they use to improve product quality. 65% of the participants emphasized the importance of the features of animal shelters, noting that at least 6-7 square meters of space should be provided per animal. 35% of participants indicated that using tools like grooming brushes could help improve product quality, while 28% of participants highlighted the importance of being cautious about drug usage, ensuring that applications are done according to residue times to improve product quality (Fig. 8).



**Figure 8. What strategy do you follow for producing high-quality meat?**



**Table 2. SWOT analysis matrix for marketing and management strategies**

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• Having an advanced marketing information system</li> <li>• Local market knowledge and experience</li> <li>• Excess labor force (foreign workers)</li> <li>• Development of breed improvement studies</li> <li>• Belief in high carcass meat quality in Kirsehir</li> <li>• Sustainability-focused production efforts</li> <li>• Ability to adapt to new Technologies.</li> <li>• Ability to collect data and predict demand.</li> <li>• Increased production quality through smart agriculture technologies</li> <li>• Organized supply chain structures for input and output markets</li> <li>• Use of quality raw materials and feed</li> <li>• Awareness of "Kirsehir Meat" among consumers at sales points</li> <li>• Open communication and potential for self-improvement of conscious producers</li> </ul>	<ul style="list-style-type: none"> <li>• Characteristics of the labor market</li> <li>• Lack of influence by producers in pricing</li> <li>• Lack of integrated facilities in the region</li> <li>• Underdevelopment of agriculture-based industries</li> <li>• Lack of knowledge in branding</li> <li>• Middle-aged and older groups being more involved in livestock farming.</li> <li>• Climate change-related risks</li> <li>• High inflation</li> <li>• Incompatibilities in animal tags</li> <li>• Low interest in livestock farming among the youth</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Establishment of modern farms</li> <li>• Transition or transformation to modern technology-supported business structures.</li> <li>• Adoption of innovative product differentiation strategies</li> <li>• Direct-to-consumer sales (B2C)</li> <li>• Government support and grant programs</li> <li>• Establishment of an integrated meat processing facility</li> <li>• Need for an organized structure.</li> <li>• Application for a geographical indication for Kirsehir meat</li> </ul>	<ul style="list-style-type: none"> <li>• Limited water resources</li> <li>• Climate change (drought, irregular rainfall etc.)</li> <li>• Dominance of foreign labor in production processes</li> <li>• External policy and import risks.</li> <li>• Economic uncertainty and inflationary environment</li> <li>• High average age of producers</li> </ul>

The SWOT matrix created based on the research findings is presented above. Evaluations regarding marketing and management strategies for each element are provided in detail in the conclusion section.

In delivering the product to the consumer, if the producer does not have a restaurant or butcher shop, they supply the market through intermediaries. The producer, who agrees on the carcass kilogram price with the intermediaries, cannot intervene after the slaughter. 65% of the participants believe that having integrated facilities will benefit the consumer. Another important issue on which the participants have almost reached a consensus (94%) is the establishment of an organized structure. Operating under a cooperative framework will protect the producer. By benefiting from economies of scale, costs can be kept under control, and thus, meat products can be delivered to the consumer under more favorable conditions. Only 6% of the participants believe that being part of an organized structure would not be beneficial. Based on the findings and after evaluation of data collected from the field, a SWOT matrix for marketing and management strategies has been created. The detailed SWOT matrix is shown above (Table 2).

## DISCUSSION

Ensuring that all segments of the population have access to "meat" products, which play a significant role in the nutrition of the country's citizens, is essential for the continuity of production in the future. One of the most important conditions for healthy and balanced nutrition is that 40-50% of the daily protein intake per person should come from animal-based proteins (Aygün *et al.*, 2004). However, in Türkiye, only 29% of this protein requirement is met by animal products (Gunduz *et al.*, 2006). The main factor contributing to the low percentage is the income level of the consumers. Additionally, factors such as living standards, consumption preferences, and healthy eating also play a role. Although there has been an increase in the number of livestock businesses due to recent support and incentives in livestock, sufficient levels of red meat production have not been achieved. The most significant indicator of this is the ongoing import of live animals and carcass meat.

Due to the continuous population growth, the increase in demand, the reduction of water resources, the phenomenon of



drought caused by climate change, and changing environmental conditions, it is expected that the food demand needed in the future will increase significantly. A significant portion of this demand increase will be made up of meat and meat products.

In this study, the strengths and weaknesses of producers in ensuring sustainability in meat production were identified, and opportunities and threats were highlighted. Marketing and management strategies were evaluated within the framework of the current situation analysis, and some managerial and strategic inferences were drawn.

According to the research findings, producers' market knowledge and industry experience are seen as significant advantages for sustainable production. Additionally, findings from field studies indicate that the producer profile is more aware compared to the past. Having a producer group that is open to communication and development is an important strength in production. Moreover, the knowledge of local demand and product preferences facilitates the development of marketing and management strategies.

Although foreign labor is seen as a threat, it also points to the abundance of labor supply. This situation presents an important opportunity to reduce production costs and gain a competitive advantage. Producers must recognize this and realize that collaborating in employing the labor force could provide a significant competitive advantage.

The promotion of locally produced meat as "Kirsehir Meat" in the cities where it is distributed for sale, with demand in certain butcher shops, is seen as an important strength. Efforts to brand the product should be accelerated through organizations like the Chamber of Commerce and Industry, and the registration and patent processes should be promptly carried out to create a strong brand, which will provide significant benefits to the producers and could serve as a driving force for ensuring sustainability in production.

The use of new technologies in production processes by producers, particularly in feeding programs, ration preparation techniques, and the use of equipment aimed at animal welfare, represents a progressive and innovative producer profile, which is seen as a significant and strong feature in meat production. Efforts to promote the acceptance of innovations by producers could help them become more efficient in their business processes. In this context, it is recommended that academics in the field consider this issue.

Another important strength is the producers' knowledge and experience, which have strengthened their control over input markets. As a result, they have established supply chains that provide advantages in cost control. In essence, this situation prevents different suppliers from entering the market, hindering the producers from assessing opportunity costs. There is a possibility that they may not be able to recognize inputs with better conditions from other suppliers. In this regard, awareness-raising activities for producers would be beneficial.

In terms of ensuring sustainability in meat production, the importance of selecting high-yield, high-efficiency breeds is highlighted. In his study, [Grandin \(2019\)](#) pointed out that instead of increasing the number of animals to meet the growing demand for meat and meat products, producing livestock with genetically selected traits such as high slaughter weight, maximum growth rate, and optimal carcass composition could play a significant role in reducing the environmental impact of the livestock industry. This result is consistent with the findings of this study. During interviews, a substantial portion of the producers (87%) emphasized the importance of strong genetic animals in reducing feed costs and shortening the fattening period. Therefore, they stated a preference for feeding cultured breeds rather than local breeds. In this way, they can reach the target live weight in a brief time, reduce the water consumption of fattening cattle, and decrease the amount of waste produced.

Another important finding of the research is related to farm designs. Among the key issues in agricultural marketing, selecting the location of the establishment, designing, and planning the operation, and creating next-generation farms with renewable energy sources are seen as important opportunities. Operations that will be established or modernized with innovative technologies, using renewable energy sources, could ensure sustainable production. Supplying energy, one of the major cost elements in livestock businesses, from renewable sources could eliminate negative environmental impacts such as air pollution, thus taking measures against global warming and climate change.

It is observed that establishing an integrated meat processing plant in the region would benefit both the producer and the consumer. The producer would be able to offer their product at the value it deserves, according to market prices. Through sales points that will be established at various locations in the city, the producer could increase their earnings by directly delivering the product to consumers, while consumers would benefit from secure food at a fair price, without intermediaries. In this context, it presents an entrepreneurial opportunity for private sector businesses.

To improve the conditions of livestock operations, suitable credit financing opportunities should be provided, especially for small and medium-sized fattening businesses, to facilitate the use of low-interest investment and operating loans ([DPT, 2007](#); [Anonymous, 2011](#)). Furthermore, due to seasonal and political fluctuations in the supply of slaughter animals, meat industry businesses operate at low capacity ([Anonymous, 2011](#)). Policymakers need to address these issues by developing processes to prevent fluctuations and taking measures to increase capacity in fattening businesses.

In addressing the need for external financing to continue operations and the insurance of animals against risks, the information obtained by verifying the animal's age, breed, and ear tag must be consistent. However, issues with ear tag discrepancies are encountered in the market. Therefore, the



Provincial Agriculture Directorates and Commodity Exchanges have an important responsibility in this regard. Ensuring that the ear tags of fattening calves put up for sale in animal markets are checked and preventing the entry of animals with missing or mismatched ear tags into marketplaces can resolve this issue.

[Ozkaya and Kayaardi \(2018\)](#) examined techniques used to improve meat quality in their study, discussing quality-oriented genetic approaches on live animals, feeding strategies, and alternatives for processing, transforming, and packaging the meat after slaughter. The findings of this study support the literature and highlight the impact of drug residues and drug withdrawal times on meat quality, emphasizing the need to consider this factor as well.

The prevalence of middle-aged individuals in fattening activities poses a risk for the continuation of these activities in the future. Moreover, the fact that about 85% of producers are over 40 years old is considered a weakness. In marketing activities, it is important to consider the demographic characteristics of both consumers and producers. In this regard, policies and incentives should be implemented to encourage young people to return to rural areas and live prosperous lives there. This is crucial for ensuring sustainable production, and policymakers and NGOs bear significant responsibility in this area.

Water scarcity in fattening activities for meat production, the lack of impact on pricing, risks associated with climate change, and a fluctuating economic environment weaken marketing and management strategies and can even render them ineffective. Water scarcity affects product diversity, ineffectiveness in pricing hinders long-term planning, climate change risks negatively impact production quality and quantity, and the marketing process struggles to maintain reliable supply. High inflation and low purchasing power will reduce the marketing budget and narrow profit margins.

Adopting an innovative product differentiation strategy in the market presents an important opportunity for producers. By focusing on quality and sustainability in agricultural products, targeted marketing strategies can offer premium products (such as organic products) to high-income consumer groups. This allows producers to stand out in the market and earn more despite the limited impact on market pricing.

If meat producers adopt environmentally friendly production methods and practices for water conservation, they can develop marketing and management strategies targeting environmentally conscious consumers, increasing their profits. Developing direct-to-consumer sales channels presents another market opportunity. By reducing the share of intermediaries through B2C opportunities, producers can transition to a more profitable marketing model. This business model, which is partially applied in dairy production, allows producers to increase their earnings, especially with the inclusion of digital platforms, even in an inflationary environment.

It is observed that producers believe in the power of acting together within an organized structure. Therefore, cooperative formation in agriculture should be supported by local or central governments, and producers should be encouraged to unite. Producers who have a lack of knowledge in this area should be informed through informational meetings.

One of the important findings of the study is that regional producers are aware of the high quality of the beef carcasses they obtain at the end of the fattening process. This is because the product is demanded as “Kirsehir meat” in both regional and outside-region markets. To ensure the continuity of this production and increase the income levels of producers, obtaining a geographical indication for red meat under the name “Kirsehir Meat” is seen as an opportunity. Geographical indications are an important tool for protecting the quality and authenticity of products from a specific geographical region and presenting it as an indicator ([Kan and Gulcubuk, 2008](#)). These indications provide economic benefits to local producers, supporting rural development. Emphasizing the local and geographical identity of products and associating them with human-made structures draws consumers’ attention and, in addition to revitalizing the local economy, ensures the continuity of production in the region without deteriorating the product’s quality ([Altuntas and Kurt, 2023](#)). Geographical indications, by promoting sustainable practices in agriculture and the food sector, have the potential to protect the environment. Furthermore, these signs help preserve local traditions and cultural heritage, making important contributions to rural tourism. In this context, the positive effects of geographical indications on local and rural development are not only limited to economic gains but also strengthen social solidarity and cultural identity ([Kan et al., 2012](#)). Therefore, encouraging geographical indications is critical for the sustainable development of rural areas. A geographical indication for red meat in Kirsehir will contribute significantly to both the region’s recognition and its development. Through advertising and public relations activities connected to the geographical indication process, effective social media management, and local festivals, brand awareness and recognition can be increased. Moreover, by creating various sales points and implementing a premium pricing strategy, the product can be positioned in high-end restaurants, creating a “high quality” perception among consumers.

Under the framework of agricultural policies, government grants, incentives, and support programs can be used to develop infrastructure for water scarcity and environmental pollution. For example, rainwater harvesting, biogas facilities using renewable energy, or a circular economy model where the waste produced from one unit of production is reorganized to become an input for another production process, can be utilized. In this way, risks arising from external environmental conditions can be minimized.



To address the threats perceived in meat production, stakeholders must promptly generate ideas and develop policies. The most significant perceived threats are related to foreign policy and import risks. None of the producers engaged in livestock farming in Kirsehir conduct foreign trade. However, the prevailing opinion is that the government's policies on live animal and raw meat imports negatively affect price stability in the domestic market. It is believed that the local resources and funds being exported could be more effectively used if local producers were supported, leading to an increase in the number of fattening cattle and ultimately an increase in meat supply. When supply increases, price stability will be achieved, allowing consumers to access meat products at more affordable prices. Furthermore, the instability in foreign policy is seen to cause an increase in input costs in an economy dependent on imports. This instability not only leads to fluctuations in foreign exchange rates but also creates a significant risk in the importation of critical products like seeds, fertilizers, and feeding materials due to quotas imposed by the country of origin.

Another significant threat is the emergence of climate change-related disasters. Recently, in Kirsehir province, due to excessive and intense winds, "mil" soil accumulated in agricultural fields, preventing crops from emerging from the soil, leading to very low yields in that production year. In the same region, strong "desert winds" caused the crops to dry out while they were still in their growing phase, resulting in low production that year. Consequently, the required feed for fattening cattle could not be sourced locally, and the feed raw materials had to be supplied at high costs. Therefore, this threat, which could cause fluctuations in product supply, should be noted as it may negatively affect the reliability of the supply chain.

Economic instability will negatively impact consumers' purchasing power, which in turn will affect demand for agricultural products. This situation could have a detrimental effect on pricing, product, distribution decisions, and overall strategies of businesses.

Another significant threat is the dominance of foreign workers in the market. While it may seem advantageous for reducing costs, discussions about sending foreigners, refugees, migrants, or illegal workers back to their home countries (especially Afghanistan and Syria, etc.) in the political context, changes in their work permits and employment conditions within the country, have the potential to disrupt production processes. This situation could also potentially disrupt marketing processes.

A series of recommendations have been developed for policy makers and marketing departments to create consumer awareness. Campaigns should be organized to inform consumers about the environmental, economic, and social benefits of sustainable meat production. Awareness can be raised by reaching a broad audience through platforms such

as social media, television, and public service announcements. Ensuring transparency in meat production processes, and demonstrating the conditions under which production occurs, should be considered an effective strategy. Products from businesses engaged in sustainable production can be labeled with distinctive markers, enhancing consumer awareness while fostering trust. Tax incentives, subsidies, and low-interest credit options should be provided to businesses adopting sustainable practices. Financial support programs could be designed to facilitate the adoption of environmentally friendly technologies. Additionally, research and development in sustainability should be encouraged through public-private sector collaborations. To promote sustainable production processes, strict regulations and environmental standards must be established.

**Conclusion:** Overall, the SWOT analysis conducted shows that for agricultural businesses, especially those involved in fattening cattle, developing direct sales channels is essential when creating a sustainable marketing and management strategy. Additionally, it would be beneficial for businesses to focus on differentiation and branding, implement water-saving and resource conservation practices, and develop projects utilizing state incentives. Environmental sustainability strategies, including reducing farms carbon footprints, encouraging biogas production, and improving waste management, should be integrated with marketing and management strategies. If the environmental impacts of farms are reduced and combined with consumer-focused and innovative marketing strategies, long-term success in the industry seems achievable.

This study aims to determine the current state of "meat" production, an essential sub-sector of agriculture that plays a significant role in the nutrition of the country's population. By identifying potential obstacles and opportunities in sustaining meat production, the study provides valuable insights to stakeholders, particularly during the strategy development process. It fills a crucial gap by analyzing the current situation and presenting findings that contribute to sustainable meat production.

There are some limitations to this study. As qualitative research, it was designed with a limited sample size, which means its generalizability is relatively low. Future spatial studies may yield different results. Another limitation is that business managers might have responded in a way that reflects common method bias due to concerns about the clarity of answers during the response phase. Therefore, collecting more data from a larger sample in the future could lead to more accurate results. The study focuses on producers, whereas agricultural marketing strategies are systems that also consider consumer expectations and market demand. Research and analysis on consumers' price perceptions, product preferences, and purchasing behaviors will yield important findings in the future.



In future research in this area, the aforementioned limitations should be considered. This study was conducted specifically in Kirsehir province. Conducting similar studies in major livestock regions such as Yozgat, Cankiri, Afyon, Sivas, Erzurum, and Kars will likely yield different results and provide important insights for forming a general livestock policy.

**CRedit author statement:** Basar Altuntas, writing this article, contributed to conceptualization, data curation, formal analysis, funding acquisition, project administration, and draft writing; Halil Ozcan Ozdemir contributed to conceptualization, provided resources, software, monitoring, and validation, as well as the writing of the review and editing. Therefore, all authors made equal contributions. The final manuscript underwent comprehensive review and approval by all authors.

**Consent to participate:** Informed consent was obtained from all individual participants included in the study.

**Ethical approval:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Consent for publication:** All individual participants agreed to be included in the study.

**Funding:** The authors did not receive funding support from any organization for this work. No funding was received to assist with the preparation of this manuscript. No funding was received for conducting this study. No funds, grants, or other support was received.

**Informed consent:** Written informed consent was obtained from all participants regarding publishing their data.

**Conflicts of Interest:** The authors declare that there is no conflict of interest in this work.

**Consent for publication:** All authors submitted consent to publish this research article in JGIAS.

**Availability of data:** All data used are within the manuscript.

**SDG's Addressed:** No Poverty, Zero Hunger, Responsible Production and Consumption, Decent Work and Economic Growth.

**Policy referred:** Environmental Sustainability Policies; Economic Support Policies; Social Sustainability Policies; Innovation and Technology Policies.

**Publisher's note:** All claims stated in this article are exclusively those of the authors and do not necessarily represent those of their affiliated organizations or those of the publisher, the editors, and the reviewers. Any product that

may be evaluated/assessed in this article or claimed by its manufacturer is not guaranteed or endorsed by the publisher/editors.

## REFERENCES

- Altuntas, B. 2021. Tarimsal kooperatifciliginin gelismisi ve Kirsehir ilinin tarimsal kooperatifcilik potansiyelinin swot analizi ile degerlendirilmesi. in Ahi Evran International Conference on Scientific Research 30:938-949.
- Altuntas, B. and H. Kurt. 2023. Cografi (mense) isaretili İspir kuru fasulyesinin uretim, pazarlama imkânlarının tespiti ve ulke ekonomisine katkisinin artirilmasina yonelik oneriler, Ahi Evran Akademi 4:39-48
- Altuntas, B., H.O. Ozdemir and S. Atug. 2024. Sut isletmelerinin pazarlama stratejileri ve isletme yoneticilerinin orgutsel davranislarini uzerine bir alan arastirmasi. 2. Bilsel International Sur Scientific Research Congress 15-16 June Diyarbakir.
- Anonymous. 2011. AB uyum surecinde Red Meat Commission Study Results Report.
- Aydin, N. 2018. Nitel arastirma yontemleri: Etnoloji. Uluslararası Beseri ve Sosyal Bilimler İnceleme Dergisi 2:60-71.
- Aygun, T., F. Karakus, A. Yilmaz and H. Ulker. 2004. Van ili merkez ilcede kirmizi et tuketimi aliskanligi, 4th National Animal Science Congress, 1-4 September 2004, Suleyman Demirel University Faculty of Agriculture Isparta.
- Baltacı, A. 2018. Nitel arastirmalarda ornekleme yontemleri ve ornek hacmi sorunsali uzerine kavramsal bir inceleme. Bitlis Eren Universitesi Sosyal Bilimler Dergisi 7:231-274.
- Basiago, A. 1995. Methods of defining 'sustainability'. Sustainable Development 3:109-119.
- Bayrac, H.N. and F. Cemrek. 2011. AB uyum surecinde Turkiye'de hayvancilik sektorunun yapisal analizi ve gelistirmeye yonelik politikalar, Economic Approach Congress Series Ankara.
- Binder, C. R., G. Feola and J.K. Steinberger. 2010. Considering the normative, systemic and procedural dimensions in indicator-based sustainability assessments in agriculture. Environmental Impact Assessment Review 80:71-81.
- Candogan, K., and G. Ozdemir. 2021. Sürdürülebilir et uretimi icin yenilikci yaklasimlar. Gıda 46:408-427.
- Chapin III, F.S., M.S. Torn and M. Tateno. 1996. Principles of ecosystem sustainability. American Naturalist 148:1016-1037.
- Creswell, J. W. and V.L.P. Clark. 2016. Designing and conducting mixed methods research. New York. Sage.



- DPT. 2007 Dokuzuncu kalkınma planı hayvancılık özel ihtisas komisyonu raporu. Kalkınma Bakanlığı Ankara.
- FAO. 2019. The State of Food and Agriculture. Available online at: <https://openknowledge.fao.org/items/ba08937f-4a41-4ff5-a4e7-e495e5f5f599>
- Gedik, Y. 2020. Sosyal, ekonomik ve çevresel boyutlarla sürdürülebilirlik ve sürdürülebilir kalkınma. Uluslararası Ekonomi Siyaset İnsan ve Toplum Bilimleri Dergisi 3:197-215.
- Grandin, T. 2019. Principles for commercial supply chain managers of livestock and poultry. In Sustainable meat production and processing Academic Press
- Gunduz, O., K. Esengun and Z.G. Goktolga. 2006. Ailelerin et tüketimleri üzerine bir araştırma: Tokat ili örneği, VII. Agricultural Economics Congress Antalya 2:1152-1160.
- Jiang, G., K. Ameer, H. Kim, E.J. Lee, K. Ramachandriah and G.P. Hong. 2020. Strategies for sustainable substitution of livestock meat Foods 9:1227.
- Kan M, and B. Gulcubuk. 2008. Kırsal Ekonominin canlanmasında ve yerel sahiplenmede coğrafi işaretler. Uludağ Üniversitesi Ziraat Fakültesi Dergisi 22:57-66.
- Kan, M., B. Gulcubuk and M. Kucukcongar. 2012. Coğrafi işaretlerin kırsal turizmde kullanılması olanakları. Karamanoglu Mehmetbey Üniversitesi Sosyal ve Ekonomik Araştırmalar Dergisi 1:93-101.
- Karagoz, H. 2009. Türkiye’de ve Konya’da hayvancılık sektörü, sektörün sorunları ve çözüm önerileri. Konya Chamber of Commerce Research Service Konya.
- Karatas, Z. 2017. Sosyal bilim araştırmalarında paradigma değişimi: Nitel yaklaşımın yükselişi. Türkiye Sosyal Hizmet Araştırmaları Dergisi 1: 68-86.
- Kumar, P., M.K. Chatli, N. Mehta, P. Singh, O.P. Malav and A.K. Verma. 2017. Meat analogues: health promising sustainable meat substitutes. Critical reviews in food science and nutrition 57:923-932.
- Kumm, K.I. 2002. Sustainability of organic meat production under Swedish conditions. Agriculture, Ecosystems & Environment 88: 95-101.
- Latruffe, L., A. Diazabakana, C. Bockstaller, Y. Desjeux, J. Finn, E. Kelly, M. Ryan and S. Uthes. 2016. Measurement of sustainability in agriculture: a review of indicators. Studies in Agricultural Economics 118:123-130.
- Miao, L., X. Liu and J. Wang. 2019. Theoretical research and practical enlightenment of ecological civilization construction. Advances in Social Science, Education and Humanities Research 392:32-35.
- OECD-FAO. 2019. Agricultural Outlook 2019-2028. Food and Agriculture Organization of the United Nations Rome.
- Ozdemir, H. O. 2024. Swot analizi. Tüketici Davranışlarında Kullanılan Teoriler (Ed. B. Armutcu, A. Tan) Eğitim Yayınevi Konya. pp.321-332.
- Ozkaya, P. T. and S. Kayaardı. 2018. Et ve et ürünlerinin kalitesini geliştirmede kullanılan yeni teknikler. Akademik Gıda 16: 323-331.
- Pamuk, S. 2017. Application of archival sampling methods on archive series/classes. The Journal of Information and Documentation Studies 8:1-41.
- Pintado, T. and G. Delgado-Pando. 2020. Towards more sustainable meat products: Extenders as a way of reducing meat content. Foods 9:1044.
- Rotz, A. and C.A. Rotz. 2020. Environmental sustainability of livestock production. Meat and Muscle Biology 4:1-18.
- Saygin, O. and N. Demirbas. 2017. Türkiye’de kırmızı et sektörünün mevcut durumu ve çözüm önerileri. Hayvansal Üretim 58:74-80.
- Schoenfeld, B.J. and A.A. Aragon. 2018. How much protein can the body use in a single meal for muscle-building? Implications for daily protein distribution. Journal of the International Society of Sports Nutrition 15:10.
- Sencer, M. and Y. Sencer. 1978. Toplumsal Araştırmalarda Yöntembilim. TODAİE yayıncılık Ankara
- Shreck, A., C. Getz and G. Feenstra. 2006. Social sustainability, farm labor, and organic agriculture: Findings from an exploratory analysis. Agriculture and Human Values 23: 439-449.
- Smith, N. 2023. Environmental sustainability in livestock production. International Journal of Livestock Policy 2:26-38.
- Streimikis, J. and T. Baležentis. 2020. Agricultural sustainability assessment framework integrating sustainable development goals and interlinked priorities of environmental, climate and agriculture policies. Sustainable Development 28:1702-1712.
- TÜİK, 2024a. Kırmızı et üretim istatistikleri Available online at: <https://data.tuik.gov.tr/Bulten/Index?p=Kirmizi-Et-Uretim-Istatistikleri-2023-53540>
- TÜİK, 2024b. Hayvancılık istatistikleri Available online at: <http://biruni.tuik.gov.tr/medas/?kn=101&locale=tr>
- Vallance, S., H.C. Perkins and J.E. Dixon. 2011. What is social sustainability? A clarification of concepts. Geoforum 42:342-348.
- Van Hertem, T., C. Bahr, A.S. Tello, S. Viazzi, M. Steensels, C.E.B. Romanini, C. Lokhorst, E. Maltz, I. Halachmi and D. Berckmans. 2016. Lameness detection in dairy cattle: Single predictor v. multivariate analysis of image-based posture processing and behaviour and performance sensing. Animal 10:1525-1532.
- Yavuz, V.A. 2010. Sürdürülebilirlik kavramı ve işletmeler açısından sürdürülebilir üretim stratejileri, Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi 7:63-86.

