

# Farmers' Willingness to Sustain Small Ruminant Production in Turkey

Sezen Ocak Yetişgin and Selime Canan

**Abstract**—This study investigates the factors influencing sheep and goat farmers' willingness to continue farming activities in Turkey, focusing on the drivers behind their decisions and the challenges they face. Data were collected through face-to-face surveys with 612 producers (328 sheep farmers and 284 goat farmers) across six major small ruminant-producing provinces in Turkey. The analysis reveals that 242 respondents (39.54%) expressed satisfaction with the prevailing production conditions, whereas 370 respondents (60.46%) reported an inclination to discontinue their farming enterprises. Key factors contributing to farmers' reluctance include exorbitant feed prices, inadequate subsidy mechanisms, restricted access to and poor quality of natural grasslands, escalating input costs, and a scarcity of skilled shepherd labor. These findings highlight critical areas requiring policy intervention to sustain small ruminant production in Turkey. Addressing economic and environmental challenges, alongside improving subsidy programs and grassland management, will be vital to enhancing farmers' willingness to continue these essential agricultural activities. This study offers actionable insights for policymakers to support small ruminant farmers and ensure the resilience of this sector in Turkey

**Keywords**— Farmers' willingness, small ruminant production, sustainability, Turkey.

## I. INTRODUCTION

Turkey plays a pivotal role in the global sheep and goat industry, ranking 8th worldwide in sheep population and 23rd in goat population [1]. The country accounts for 2.8% of the global sheep population and 1% of the global goat population [3]. Within the European Union context, Turkey emerges as a dominant leader, contributing 26% of the EU's total sheep population and an impressive 48% of its goat population among all 28 member states [2]. Regionally, the South-eastern Anatolia Region holds the largest sheep population, whereas the Mediterranean Region leads in goat population density.

Small ruminant production, particularly of sheep and goats, is integral to Turkey's agricultural sector, underpinning food security, rural employment, and cultural heritage. These animals provide essential products such as meat, milk, wool, and hides while also serving significant cultural and traditional functions, making them indispensable to rural livelihoods. Despite their critical importance, Turkey's small ruminant sector has faced notable challenges over the past decade, leading to a decline in profitability and sustainability.

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The sector's struggles can be attributed to various systemic issues, including the low productivity of indigenous breeds, escalating input costs, degradation of natural grasslands, and persistent labor shortages. These challenges have collectively diminished the sector's attractiveness and economic viability for farmers. Revitalizing small ruminant farming requires addressing these multifaceted challenges and understanding the factors influencing farmers' decisions to persist in or exit the industry.

Existing research has primarily focused on topics such as livestock manure management [4], sustainable agricultural practices [5], organic farming [6], behavioral factors influencing farmers [7], agricultural insurance [8], and the role of digitalization and technology in agriculture [9, 10]. However, there remains a significant research gap regarding the specific factors that influence small ruminant farmers' decisions to continue or abandon sheep and goat production.

This study seeks to address this gap by investigating the determinants shaping farmers' decisions to sustain small ruminant farming activities. By identifying the drivers and barriers influencing their willingness to persist, this research aims to offer evidence-based recommendations for policymakers and stakeholders. These recommendations will help strengthen the resilience of the small ruminant sector and promote its long-term sustainability.

## II. MATERIALS AND METHODS

### A. Data Collection and Analyses

Data for this study were collected through face-to-face surveys conducted with 612 small ruminant producers across six major small ruminant-producing provinces in Turkey: Konya, Ankara, Antalya, Diyarbakır, Şanlıurfa, and Mersin. These provinces were selected based on their significant contribution to national sheep and goat production. The survey included questions on demographic characteristics, production practices, economic conditions, and farmers' perceptions of their willingness to continue small ruminant farming. Respondents were categorized into two groups: sheep farmers ( $n = 328$ ) and goat farmers ( $n = 284$ ). Descriptive statistics were employed to summarize the demographic and production-related characteristics of respondents. Thematic analysis was used to identify key factors influencing farmers' decisions. Chi-square tests and logistic regression models were applied to assess the relationships between independent variables (e.g., age, farm size) and farmers' willingness to sustain their enterprises.

### III. RESULTS

#### A. Demographic Characteristics of Respondents

The average age of respondents was 47.95 years in goat farmers and 45.57 sheep farmers, with the majority (68%) having primary-level education. Most farmers (72%) operated family-run farms with an average herd size of 53 animals. Sheep farming was more prevalent in provinces with extensive grasslands south East Anatolia, while goat farming was dominant in Mediterranean region.

#### B. Farmers' Willingness to Continue Farming

Among the 612 respondents, 242 (39.54%) expressed satisfaction with the current production conditions and indicated a willingness to continue farming. In contrast, 370 respondents (60.46%) reported a desire to discontinue their operations due to unfavorable circumstances. Additionally, 374 farmers (61.11%) stated that they would not recommend this business to others, whereas 240 farmers (38.89%) expressed a willingness to recommend livestock production. Furthermore, 3888 respondents (63.39%) revealed that they had no successors to continue small ruminant production, while 216 respondents (36.61%) indicated that family members were available and willing to sustain the operation.

The primary factors contributing to farmers' reluctance to continue small ruminant farming, as identified by the respondents, are economic challenges: elevated feed costs (13.39%) and high input costs (11.74%) stand as the main factors. Additionally, farmers highlighted the inefficiencies of pasture areas (12.56%), 8.93% expressed concerns over inadequate support and subsidies, 2.98% pointed to challenges related to shepherds, and 7.60% emphasized the impact of drought and climate change as significant obstacles. Other reasons cited included the lack of proper agricultural policies, live animal exports, and low farm gate prices for milk and meat, which further compound the difficulties faced by farmers.

#### C. Key Challenges Identified

Identified several key drivers behind farmers' decisions on willingness in small ruminant farming are:

##### - **Economic Pressures:**

Rising feed costs were identified as the primary concern, with 13.39% of respondents citing this issue as a significant barrier to profitability. Feed costs are a significant financial burden, directly affecting profitability. High input costs (11.74%) further cited strongly. The rising cost of inputs such as veterinary services, fuel, equipment, and feed compounds further strained farmers' financial stability.

##### - **Natural Resource Limitations:**

Inefficiencies of pasture areas (12.56%) were identified as a main challenge. Poorly managed or insufficient pastures reduce the availability of cost-effective feed, increasing dependency on expensive alternatives. Limited availability and poor quality of natural grasslands were reported by farmers, particularly in regions affected by overgrazing and urbanization. Drought and climate change further provides a

challenge for farmers by exacerbating resource scarcity, making small ruminant farming increasingly unsustainable.

##### - **Policy and Support Gaps:**

Inadequate Support and Subsidies (8.93%) were highly stated. Limited governmental and institutional support leaves farmers ill-equipped to manage economic and environmental challenges. Policies that do not prioritize the needs of small-scale farmers hinder the sector's growth and sustainability. Farmers mentioned especially the subsidies that were outdated.

##### - **Labor and Succession Issues:**

Labor shortages, particularly for skilled workers such as shepherds, pose significant operational challenges for farmers. While only 2.98% explicitly identified the lack of experienced shepherds as a major issue, the sentiment was echoed by a substantial proportion of respondents. This issue is exacerbated by the reluctance of rural populations to engage in shepherding, a profession increasingly undertaken by low-skilled immigrant workers from Afghanistan, Iraq, and Syria. Additionally, farmers highlighted a lack of successors, reflecting a broader trend of generational disengagement, likely influenced by the declining appeal of farming as a sustainable and attractive livelihood.

##### - **Market Dynamics and Genetic Potential of Local Breeds:**

Low farm gate prices for milk and meat further exacerbate the challenges faced by farmers, as poor financial returns discourage them from continuing in the industry or recommending it to others. The issue is compounded by live animal exports, which present significant competition that small-scale farmers—constituting the majority of Turkey's production system—cannot effectively withstand. These exports distort local markets, placing additional pressure on small-scale producers. Furthermore, the low performance of local breeds adversely impacts productivity, further undermining the sustainability of small-scale farming operations.

### IV. DISCUSSION

Small ruminant farming plays a critical role in rural livelihoods and food security. However, as evidenced by this study, economic, natural, and socio-political barriers significantly deter farmers from sustaining this livelihood. These challenges are consistent with global trends observed in small ruminant farming systems.

Economic pressures, particularly rising feed costs (13.39%) and high input costs (11.74%), are primary concerns for small ruminant farmers. Elevated feed costs, a global issue, have been highlighted in [11], where similar financial strains were reported as a significant barrier to profitability. Rising feed prices, which constitute the largest share of production costs, have made it increasingly difficult for farmers to maintain profitability. The high cost of supplementary feed, particularly in arid regions where natural grazing is insufficient, is a significant burden. Inadequate and poorly targeted subsidy mechanisms fail to offset these expenses, leaving many producers financially strained. Input

costs, including veterinary care and fuel, further erode financial stability, making small ruminant farming less viable for small-scale producers. These issues are compounded by low farm gate prices for milk and meat, which discourage market participation and investment. The inadequacy of support and subsidies (8.93%) is a recurring theme, as outdated policies fail to address the evolving needs of small-scale farmers. [13] emphasized the importance of tailored public policies that promote sustainability in small ruminant farming. Without adequate financial or infrastructural support, farmers are left vulnerable to economic and environmental shocks.

One of the other challenges in small ruminant production is the low productivity of local breeds, which are often adapted to harsh environmental conditions but yield less milk and meat compared to improved breeds. The genetic potential of local breeds, as highlighted in [15] limits productivity and market competitiveness, necessitating investments in genetic improvement and breeding programs. Traditional management practices, coupled with limited access to advanced breeding technologies, have hindered efforts to enhance productivity. Furthermore, genetic improvement programs have not been widely implemented or supported, leaving farmers reliant on less efficient production systems.

The inefficiency of pasture areas (12.56%) and climate-related challenges such as drought exacerbate resource scarcity, making farming unsustainable in regions with extensive grasslands. Degradation and overuse of natural pastures and grasslands, also contribute to low productivity. Many grazing areas suffer from overgrazing and lack effective management plans, reducing their capacity to support healthy and productive livestock. Poor pasture management and urbanization aggravate this issue. This finding aligns with [12] who highlighted resource management as a pivotal factor in sustaining small ruminant farming. Additionally, climate change has exacerbated these issues by increasing the frequency of droughts and reducing forage availability.

Labor shortages, pose yet another hurdle, remain a persistent issue (2.98%). The scarcity of skilled shepherds has made it difficult for farmers to efficiently manage their flocks, leading to suboptimal production outcomes. The reliance on low-skilled immigrant labor, as noted in the study, further complicates farm operations. The generational disengagement from farming reflects a broader societal shift, where younger populations are less inclined to pursue agriculture. [14] underscore the necessity of training programs and incentives to attract and retain skilled labor in the sector. This issue is compounded by rural depopulation, as younger generations migrate to urban areas in search of better opportunities.

## V. CONCLUSION

The findings of this study underscore the multifaceted challenges confronting small ruminant farmers in Turkey, encompassing economic, environmental, labor-related issues, and gaps in policy and institutional support. High feed prices, insufficient subsidies, restricted access to grasslands, and a lack of skilled labor significantly undermine the sustainability of small ruminant production. Comprehensive and targeted

policy interventions are essential to address these barriers and support farmers' resilience. To alleviate economic pressures, subsidies should be designed to reflect actual production costs, while alternative feed resources must be promoted to reduce dependency on costly inputs. Sustainable grassland management practices, such as preventing overgrazing, rehabilitating degraded pastures, and ensuring equitable access, are critical to addressing environmental constraints. These measures can improve productivity while preserving essential resources. Addressing labor shortages requires the establishment of vocational training programs to equip a new generation of skilled shepherds and make the sector more appealing to younger populations. Facilitating collaboration among farmers, cooperatives, and government agencies can also foster region-specific solutions and enhance farmers' willingness to continue production. By implementing these strategies, policymakers can create economically viable and sustainable systems that support the livelihoods of small ruminant farmers, encourage generational continuity, and strengthen the agricultural sector in Turkey.

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