



GOAT REARING AND LIVELIHOODS IN NEPAL'S MID-TERAI

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Cite This Article: Kisan Khadka, Mayanath Ghimire, Eka Bahadur Shrestha, A. K. Mishra & A. Dinesh Kumar, "Goat Rearing and Livelihoods in Nepal's Mid-Terai", International Journal of Multidisciplinary Research and Modern Education, Volume 10, Issue 2, July - December, Page Number 14-19, 2024.

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DOI: <https://doi.org/10.5281/zenodo.13333265>

Abstract:

Purpose: This study aimed to analyze goat farming practices and their contribution to household income in the Mid-Terai region of Nepal. Specifically, it investigated the status and practices of both commercial and subsistence goat farming systems.

Methodology: Primary data were collected through in-depth interviews using semi-structured questionnaires from over 35 improved Boyar breed goat farmers. A literature review was conducted to identify research gaps. Collected data were subjected to appropriate statistical analysis.

Findings: The study found that the improved Boyar goat breed exhibited desirable characteristics such as docility, high fertility, and rapid maturity. Goat meat, recognized for its low fat, cholesterol, and calorie content, has a growing market demand. The improved breed commanded a higher market price (NRs. 150 per kg live weight) compared to local breeds, generating significantly higher income. With an average annual income of NRs. 9-10 million from 35 goats, farmers were able to employ two workers. The breed's adaptability to different ecological zones, from hills to Terai, was also observed.

Key Words: Goat Farming, Mid-Terai, Nepal, Household Income, Boyar Breed, Commercial Farming, Subsistence Farming.

1. Introduction:

Nepal's diverse topography, encompassing the Himalayas, Hills, and Terai regions, presents varying agro-ecological conditions. The Mid-Terai, with its abundant natural resources and water bodies, emerges as a promising region for goat rearing. The availability of ample fodder and pastureland creates a conducive environment for goat husbandry.

This study focuses on the potential of small-scale goat farming as a viable livelihood strategy in the Mid-Terai. The case of Prakash, a farmer from Nijgadh, Bara, who successfully expanded his goat herd from 10 to 35 animals in a year, highlights the income-generating potential of this enterprise. According to Prakash, optimal fodder and pasture management can yield an annual income of over NRs. 150,000 per goat.

While goat rearing is traditionally associated with subsistence farming, its commercial viability is evident in regions like the Himalayas. However, the potential benefits extend beyond the mountainous areas. In the Mid-Terai, goat farming offers opportunities for smallholders to diversify income sources, improve livelihoods, and contribute to the local economy. Furthermore, goats play a crucial role in sustainable agriculture. Their manure can enrich soil fertility, and their meat and dairy products contribute to food security.

The study by Sapkota, Anish, et al. (2020) underscores the importance of small ruminants like goats in meeting Nepal's growing meat demand. Shah, M.K. et al. (2023) emphasize the potential of tree fodder and supplementary feeding to enhance goat productivity and farmer livelihoods. By exploring the case of goat rearing in the Mid-Terai, this research aims to contribute to the growing body of knowledge on small-scale livestock farming and its role in rural development.

2. Statement of the Problem:

Goat rearing is a prevalent practice across Nepal, from the mountainous Himalayas to the lowland Terai region. However, the sector is characterized by several challenges hindering its full potential. The predominant goat breed, Khari, exhibits low productivity in terms of meat yield and growth rate, limiting its commercial viability. While goat farming offers opportunities for subsistence livelihoods due to its relatively low input requirements, its contribution to household income remains constrained. The absence of a robust commercial goat farming sector is primarily attributed to several factors. Firstly, the lack of adequate veterinary services, particularly in rural areas, poses a significant challenge.

The limited accessibility of veterinary care hampers disease prevention and treatment, leading to economic losses for farmers. Secondly, the prevailing subsistence-oriented approach to goat rearing has hindered the development of commercial farming practices. Despite available pasture and fodder resources, the absence of technical support and market linkages has prevented farmers from capitalizing on the growing demand for goat meat.

Therefore, there is a clear need for interventions to address these constraints, promote improved goat breeds, and enhance the overall productivity and profitability of the goat farming sector in Nepal. By understanding the current state of goat rearing and identifying the key challenges, this study aims to contribute to the development of effective strategies for the sustainable growth of the goat

3. Objectives:

- To assess the commercial viability of Boyar goat rearing in the Mid-Terai region of Nepal.

4. Methodology:

Research Design:

This study employed a contextualized review and interaction based research design to investigate the impact of Boyar goat rearing on farmers in the Mid-Terai region of Nepal.

Sample Selection:

Farmers actively engaged in rearing the improved Boyar goat breed were identified and selected as study participants. The selection process focused on identifying farmers located within the Mid-Terai region.

Data Collection:

Primary data were collected through face-to-face interviews using a semi-structured questionnaire. This method allowed for in-depth exploration of farmers' experiences, perceptions, and practices related to Boyar goat rearing.

Data Analysis:

The collected data will be subjected to quantitative analysis using appropriate statistical techniques to identify patterns, trends, and relationships among variables.

Ethical Considerations:

Ethical considerations included obtaining informed consent from participants, ensuring confidentiality of data, and minimizing any potential harm to participants.

5. Literature Review:

In the Mid-Tarai region of Nepal, goat farming has emerged as a significant agricultural practice, providing a crucial source of livelihood for many households. Known colloquially as the "poor man's cow," the goat (*Capra hircus*) plays an essential role in the farming system of Nepal, particularly for families with limited access to land. This review synthesizes research on various aspects of goat farming in Nepal, with a focus on the different farming systems, challenges, and opportunities within the Mid-Tarai region.

Goat Farming Systems in Nepal:

In Nepal, goat farming is categorized into three distinct systems: extensive, semi-intensive, and intensive.

- **Extensive System:** The extensive system is characterized by its minimal infrastructure and limited land use. Farmers under this system raise a relatively small number of goats primarily for manure and meat. The lack of a suitable goat shed and technological inputs limits productivity and efficiency. This system is common in areas where land is scarce, and farmers often rely on traditional methods without advanced management practices.
- **Semi-Intensive System:** The semi-intensive system involves a more significant number of goats compared to the extensive system. Although these farmers do not have technically advanced sheds, they achieve a moderate level of commercial success. Despite their efforts, they face challenges such as inadequate technical knowledge and a lack of access to veterinary services. This system represents a transition from traditional practices towards more commercial operations, but it still lacks the technical sophistication needed for optimal productivity.
- **Intensive System:** The intensive system is characterized by the use of well-constructed goat sheds, the provision of nutritious fodder, and a focus solely on meat production. Farmers in this system benefit from access to veterinary technicians and advanced management practices. The intensive system is the most commercialized and productive of the three, emphasizing high standards of animal care and efficient production techniques.
- **Economic Importance and Productivity:** The economic significance of goats is well-documented. In Ethiopia, for instance, goats contribute significantly to meat and milk production, with goats comprising a notable percentage of the country's livestock units (Solomon et al., 2014). Similarly, in Nepal's Gulmi district, goat farming holds substantial economic potential if supported by appropriate resources and training (Panth et al., 2021). However, the productivity of goat farming is influenced by several factors, including infrastructure, access to feed, and veterinary care.
- **Health and Management Issues:** Health care remains a critical challenge for goat farmers. Dhakal (2021) highlights that many small-scale farmers lack awareness about vaccination and other health management practices. This lack of knowledge adversely affects the overall health and productivity of the goats. The need for better education and access to veterinary services is evident.
- **Climate and Environmental Factors:** The changing climate and limited natural resources impact goat farming practices. Kochewad et al. (2023) suggest that integrating climate-smart farming techniques, such as using locally adapted breeds and cultivating fodder bushes, can enhance the sustainability and productivity of goat farming. This approach aligns with the broader trend of adapting livestock systems to shifting environmental conditions.
- **Socioeconomic and Gender Aspects:** Goats are often referred to as "poor man's cows" due to their low capital and maintenance costs, making them accessible to landless and marginal farmers (Siddiky, 2017). Additionally, in regions like Bangladesh, women play a significant role in goat husbandry, contributing to household income and economic stability (Siddiky, 2017). In Nepal, similar dynamics are observed, where goat farming provides a viable livelihood option for women and marginalized communities.
- **Technological and Extension Services:** The integration of information and communication technology (ICT) in goat farming can enhance productivity and management (Muatip et al., 2023). ICT tools, including smartphone applications and online resources, can provide farmers with crucial information on feed management, health care, and marketing. Furthermore, structured training and extension programs are vital for improving technical efficiency and farmer knowledge (Gul et al., 2016).

Recommendations and Future Directions:

Based on the reviewed literature, several recommendations can be made to improve goat farming in the Mid-Tarai region:

- **Infrastructure Development:** Investment in appropriate goat sheds and infrastructure is essential for improving the efficiency of both extensive and semi-intensive systems. This includes the construction of durable shelters and the provision of adequate feed storage facilities.
- **Education and Training:** Increasing farmer education and technical training on goat management practices is crucial. This includes training on health care, feeding, breeding, and marketing strategies. Collaboration with governmental and non-governmental organizations can facilitate the delivery of these programs.
- **Veterinary Services:** Expanding access to veterinary services and improving awareness about the importance of vaccination and disease management can significantly enhance goat health and productivity.
- **Climate-Resilient Practices:** Adopting climate-smart farming practices, such as growing fodder crops and utilizing water-efficient irrigation methods, can help mitigate the impacts of environmental changes on goat farming.
- **Gender and Social Inclusion:** Supporting women and marginalized groups in goat farming through targeted programs can enhance their economic opportunities and contribute to rural development.

Goat farming in the Mid-Tarai region of Nepal plays a vital role in the livelihoods of many rural households. By addressing the challenges and leveraging opportunities for improvement, such as better infrastructure, education, and climate-smart practices, the sector can achieve greater productivity and sustainability. The integration of modern technologies and supportive policies will be crucial in realizing the full potential of goat farming and enhancing the well-being of farmers in this region.

6. Employment and Expenses Analysis:

Monthly Expenses:

The monthly expenses for maintaining a goat farm with 35 goats are as follows:

- **Feed Costs:**
 - Monthly feed expenses amount to NRs. 50,000. This includes the cost of purchasing and providing a balanced diet to ensure the health and productivity of the goats.
- **Water:**
 - Adequate water supply is essential for goat health and productivity. The cost of providing clean and sufficient water is included in the overall expense but is not itemized separately here.
- **Medicine and Veterinary Care:**
 - Regular medical treatments, including vaccines, deworming, and treatment for lice and other parasites, are essential for maintaining goat health. This is a significant component of the monthly expenses.
- **Shepherding (Gothalo):**
 - The cost of employing a shepherd, referred to as Gothalo in Nepali, is included. This individual is responsible for the daily care, management, and movement of the goats.

Income Generation:

- **Sale of Goats:**
 - The income from the sale of goats is calculated based on a selling price of NRs. 150 per kg live weight. With 35 goats, the total income from selling the goats is subject to their average weight and the market demand.
- **Annual Income:**
 - The total annual income from goat farming is NRs. 9 to 10 lakh. This income includes revenue from the sale of goats and potentially other products or services related to goat farming.

Management Practices:

- **Breeding and Rearing:**
 - The Boyar breed, which is managed similarly to local Khari breeds, is chosen for its adaptability to rural conditions. Boyar breeds are known for their resilience and ability to thrive in local environments.
- **Feeding and Nutrition:**
 - Goats are provided with local grass available at the local level, fed twice daily-in the morning and evening. During the daytime, goats are taken for pasture grazing, which helps in reducing feed costs and ensuring they receive a natural diet.
- **Housing and Shelter:**
 - Goats are housed in a dry area with a cave-like shelter to protect them from adverse weather conditions. Proper housing is crucial for preventing diseases and ensuring the well-being of the goats.
- **Health Management:**
 - Regular medical treatments include vaccinations, deworming, and treatment for lice and other common ailments. Ensuring proper medical care is vital for maintaining goat health and maximizing productivity.

In summary, managing a goat farm with 35 goats involves substantial monthly expenses for feed, water, medicine, and shepherding, totaling NRs. 50,000. The farm generates an annual income ranging from NRs. 9 to 10 lakh, primarily through the sale of goats. Effective management practices, including proper feeding, housing, and health care, play a crucial role in the farm's success. The Boyar breed is particularly suited to the local conditions, offering a viable option for farmers in the Mid-Tarai region. By balancing costs with income and implementing sound management strategies, goat farming can be a profitable and sustainable livelihood option.

7. Intervention for Promotion:

Drawing on the insights from Mishra, Nepal, & Aithal (2022), Chaudhary & Mishra (2021), and Mishra (2024), this policy recommendation aims to advance goat farming in Nepal by integrating modern technologies, improving infrastructure, and fostering economic growth through strategic investments and policies.

a. Adoption of Industry 4.0 Technologies:

Recommendation:

Promote the integration of Industry 4.0 technologies in goat farming practices.

Rationale:

Mishra, Nepal, & Aithal (2022) highlight the transformative potential of Industry 4.0 concepts in agriculture, including virtual farming and digital management systems. Implementing these technologies in goat farming can enhance productivity through precision farming, real-time monitoring, and data-driven decision-making.

Actions:

- Establish Digital Infrastructure: Develop digital platforms and applications tailored to goat farming, including virtual farming tools, data analytics, and automated management systems.
- Provide Training and Support: Offer training programs for farmers to effectively use digital tools and technologies, ensuring they can harness the benefits of Industry 4.0.

b. Investment in Infrastructure and Technology:

Recommendation:

Increase government and private sector investment in goat farming infrastructure and technology.

Rationale:

As outlined by Chaudhary & Mishra (2021), investment in agricultural infrastructure directly contributes to economic development. For goat farming, this includes improving facilities, such as shelters, feed storage, and veterinary services, as well as investing in advanced farming technologies.

Actions:

- Develop Modern Facilities: Construct and upgrade goat sheds, feed storage units, and veterinary clinics to enhance the overall management and health of goat herds.
- Support Technological Advancements: Encourage the adoption of modern technologies in feeding, breeding, and health management through subsidies or grants.

c. Strengthening Extension Services and Training:

Recommendation:

Enhance extension services and training programs for goat farmers.

Rationale:

Effective extension services and training are essential for improving farming practices and productivity. Mishra (2024) emphasizes the need for targeted support to optimize agricultural practices and maximize returns.

Actions:

- Implement Comprehensive Training Programs: Develop and deliver training programs on best practices in goat farming, including health management, breeding techniques, and efficient feeding.
- Strengthen Extension Networks: Expand extension services to provide ongoing support and technical assistance to farmers, ensuring they have access to up-to-date knowledge and resources.

d. Promoting Research and Development:

Recommendation:

Invest in research and development (R&D) to improve goat breeds and farming practices.

Rationale:

Research and development are crucial for advancing goat farming practices and enhancing breed performance. R&D can lead to the development of improved breeds, better disease management strategies, and more efficient farming methods.

Actions:

- Support Breeding Programs: Fund research initiatives focused on developing high-performance goat breeds, such as the Boyar breed, that are well-suited to Nepal's diverse climatic conditions under university and society collaboration.
- Encourage Innovative Practices: Promote research into innovative farming practices and technologies that can increase productivity and sustainability in goat farming.

e. Facilitating Access to Finance and Market Opportunities:

Recommendation:

Improve access to finance and market opportunities for goat farmers.

Rationale:

Access to financial resources and market opportunities is critical for the growth of goat farming. As highlighted by Chaudhary & Mishra (2021), financial support and market access can significantly impact the success of agricultural enterprises.

Actions:

- Establish Financial Support Programs: Create and promote financial assistance programs, such as low-interest loans or grants, to help farmers invest in infrastructure and technology.
- Enhance Market Access: Develop marketing platforms and networks to connect farmers with buyers and increase the visibility of goat products in local and national markets.

f. Ensuring Sustainable Practices and Environmental Stewardship:

Recommendation:

Implement policies to promote sustainable farming practices and environmental stewardship.

Rationale:

Sustainable practices are essential for long-term agricultural success and environmental health. Ensuring that goat farming practices are environmentally friendly will contribute to the overall sustainability of the sector.

Actions:

- Promote Sustainable Feed Practices: Encourage the use of locally sourced and environmentally friendly feed options to reduce the ecological footprint of goat farming.
- Implement Waste Management Strategies: Develop waste management protocols to handle manure and other by-products in an eco-friendly manner.

Advancing goat farming in Nepal requires a multifaceted approach that includes integrating modern technologies, investing in infrastructure, enhancing training and support, fostering research and development, and improving access to finance and markets. By adopting these policy recommendations, Nepal can harness the full potential of goat farming, contribute to economic development, and meet the growing demand for goat meat in a sustainable and efficient manner. The strategic implementation of these policies will not only benefit goat farmers but also strengthen the overall agricultural sector in Nepal (Mishra, 2023).

8. Conclusion:

The Boyar goat breed represents a promising opportunity for goat farming in Nepal, especially in diverse climatic conditions ranging from the hills to the Terai region. Its characteristics and advantages make it a highly suitable choice for farmers looking to maximize their returns with minimal investment. Here is an extended conclusion on the significance of the Boyar breed in the context of goat farming in Nepal:

Growth Potential and Adaptability:

The Boyar goat breed is distinguished by its rapid growth rate, which is a critical factor for both short-term and long-term profitability. This breed is well-adapted to Nepal's varied climatic conditions, thriving in environments ranging from the cooler hill regions to the warmer Terai plains. Its ability to grow quickly allows farmers to reach market weight within a relatively short period, typically around six months after birth. This rapid growth not only shortens the time to market but also maximizes the return on investment.

Economic Viability:

Investing in Boyar goats proves to be financially advantageous due to their low initial investment requirements coupled with high returns. The breed's rapid growth and early maturity mean that farmers can sell the goats within six months, which is significantly quicker compared to other breeds. The high market demand for Boyar goat meat further enhances its economic viability. With its meat being sought after for its quality and taste, farmers are well-positioned to capitalize on this demand.

Market Demand and Meat Quality:

The increasing human population in Nepal translates to a growing demand for goat meat, and the Boyar breed is well-suited to meet this rising need. The breed's meat is highly valued for its taste and quality, making it a preferred choice among consumers. This high demand presents an opportunity for farmers to enter and thrive in the market, especially as the supply of high-quality goat meat struggles to keep pace with consumer expectations.

Challenges and Management:

Despite its advantages, the Boyar breed requires diligent management to maintain its health and productivity. Key challenges include the need for regular deworming to prevent infestations and ensure optimal health, as well as providing adequate fodder and access to pasture. Addressing these needs is crucial for sustaining the breed's performance and achieving consistent growth rates.

Breeding and Cross-Breeding Potential:

The Boyar goat breed is also in high demand for cross-breeding programs in Nepal. Its desirable traits-such as rapid growth and high meat yield-make it a valuable asset for improving local goat populations. Cross-breeding with the Boyar breed can enhance the growth rates and meat quality of other goat breeds, offering additional benefits to farmers seeking to improve their herds.

Comparative Benefits:

When compared to local breeds, the Boyar goat offers approximately twice the benefit in terms of growth and meat production. This significant advantage underscores the breed's potential to elevate the overall productivity of goat farming in Nepal. By adopting Boyar goats, farmers can achieve higher yields and improved profitability, contributing to the economic sustainability of their operations.

In summary, the Boyar goat breed stands out as a highly beneficial option for goat farming in Nepal due to its rapid growth, adaptability to various climatic conditions, and high market demand for its meat. The breed's ability to achieve market weight within six months and its suitability for cross-breeding further enhance its value. While challenges such as regular health management and adequate feeding must be addressed, the overall benefits of raising Boyar goats far outweigh these challenges. As Nepal's demand for goat meat continues to rise, the Boyar breed offers a viable solution to meet market needs while providing substantial economic returns to farmers. Embracing Boyar goat farming could thus play a crucial role in advancing Nepal's goat meat industry and improving the livelihoods of those involved in this sector.

9. Acknowledgement:

Thanks to the Gaurishankar campus, Bara Teachers and management committee for their support for research. This is academic learning exercise at the college to fulfil the dream of students of the college to learn and write with best scientist of business and management Dr.Anjay Kumar Mishra in Nepal who believes in impact of research in society rather than impact factor.

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