

Research Article

Study of Goat Production and Management Practices Adopted by Farmers in Bajura District, Nepal

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Abstract

Goat farming holds significant importance in Nepal due to goats' adaptability to diverse climatic zones, ease of rearing, and their contribution as a sustainable source of income. However, the sustainability of goat farming depends greatly on the production and management practices followed by farmers. This study was conducted in Budhiganga and Triveni Municipalities of Bajura district to assess the demographic characteristics of goat farmers and the production systems they follow. A door-to-door survey of 129 households was conducted to gather information on housing, feeding, breeding, health, and marketing practices. The results showed that agriculture was the main source of income for 75.2% of respondents. The average goat herd size was 8.98 ± 0.522 . Most farmers used a semi-intensive housing system with ground-level flooring, adequate ventilation, and drainage. Fodder availability throughout the year was found to be insufficient. Colostrum feeding to newborn kids was a common practice. Crossbreeding was preferred over inbreeding, and mating was generally done after estrus detection. Only 3.9% of farmers practiced isolation and quarantine for new or sick animals. Many farmers reported using deworming and vaccination, and 44.2% practiced dipping to control external parasites. Furthermore, 96.1% of farmers had knowledge of safe carcass disposal and usually buried dead animals in the field. In terms of marketing, goats were mostly sold directly to buyers at any time of the year, not specifically during festivals like Dashain. The study highlights the current farming practices and can inform policymakers in designing effective strategies to improve goat farming and farmer livelihoods

Introduction

Nepal is a developing country located in South Asia with a small geographical area where agriculture serves as the primary economic activity and livelihood source. There are around 66% of the population involved in agriculture and livestock sector (Bhatta *et al.*, 2018). The livestock sector plays a significant role in the country's socioeconomic advancement by offering nutrition and income for rural families. In Nepal, there are 7,466,841 cattle, 5,159,931 buffalo, 793,725 sheep, and 13,442,614 goats (DLS, 2020). Livestock and its products account for 6.25 % to the

national GDP and 23% to the agricultural GDP (Nepal, 2020).

Goat farming is a crucial element of rural agricultural practices worldwide, particularly in developing countries. Various studies have highlighted the significance of goat farming in alleviating poverty, enhancing nutritional security, and empowering women. Goats are highly versatile animals, capable of thriving in a range of agro-climatic environment, from dry areas to mountainous regions. They provide essential sources of meat, milk and fibre for smallholder farmers, which substantially

contributes to household income and nutrition (Morales-Jerrett *et al.*, 2020; R. Shrestha *et al.*, 2020). In Nepal, goats are mainly raised for meat purpose as chevon is accepted across many ethnic groups (Yoshiaki *et al.*, 2015). Moreover, goats are known for their resilience to harsh environmental conditions, making them suitable for areas prone to climate change. Their ability to efficiently convert low-quality forages into valuable products further highlights their importance in sustainable farming systems (Assan, 2014). Economic studies have repeatedly indicated that goat rearing is a profitable enterprise, especially for small-scale farmers. Papachristoforou & Markou, (2006) found that goats require lower initial investment and maintenance costs compared to other livestock, which makes them a good choice for farmers with few resources. Besides, the demand for goat meat and milk in the market has been on the rise globally due to cultural preferences and increased awareness of their nutritional value.

Despite the high value of goat farming, the majority of goat farming is under a subsistence level (Upadhyay *et al.*, 2017). Nepal is not self-sufficient enough to meet the increasing demand of meat and more than 500 thousand live goats are being imported annually from neighbouring countries (Aryal *et al.*, 2018). Lack of proper nutritional care, veterinary services, poor management practices and low technological adoptions limit the potential benefits that goat farming has on the rural economy (Nepali *et al.*, 1970). A study done by Panth *et al.*, (2021) showed an average Nepalese farmer earns only NRs. 16540 (approx. US \$122) per year. Das *et al.*, (2019) identified gastrointestinal parasites as a major cause of economic loss in Nepalese farmers and found a 67.92% prevalence of gastrointestinal parasites in goats. Similarly, 92.51% of farmers were found not vaccinating their goats and not aware of their importance in a study done by Dhakal *et al.*, (2021) in the Chitwan district. There are a lot of problems and constraints in goat farming which should be identified and should make effective strategies to improve this sector.

In the study area, goat farming is popular as Goat farming is becoming popular as the Veterinary Hospital and Livestock Expert Service Center prioritize goats and sheep and made a decision to develop the Bajura district as a goat pocket area (Oli, 2019). However, there is limited data on feeding, housing, breeding, health awareness, and marketing. Hence, there is a need for a comprehensive study to understand the socioeconomic characteristics of goat farmers, existing production systems, and constraints, and explore opportunities for improvement. Furthermore, this study would provide general insights into knowledge and technology gaps that exist among the farmers and provide useful suggestions for improving farming methods, productivity, and sustainable livelihood of the farmers. The objective of the study was to analyze socio-economic

profile of goat farmers and their impact on production and management decision.

Methodology

Study Area

This study was conducted in Budhiganga and Triveni Municipalities of Bajura district to assess the demographic characteristics of goat farmers and the production systems followed by them. Table 1 shows the overall profile of Bajura district. Location map of the study area is shown in Fig. 1.

Table 1: Overall Profile of Bajura District

Boarders	East: Mugu and Kalikot district
	West: Bajhang district
	North: Humla district
	South: Achham district
Coordinates	81°10'20'' to 81°48'27'' East
	29°16'21'' to 29°56'56'' North
Total Area	2,188,001 Hectare
Grass land	38,085 Hectare
Agriculture land	20,155 Hectare
Elevation	726 – 7036 meters
Total population	138,998
Temperature	-5.7°C to 35°C
Local levels	9

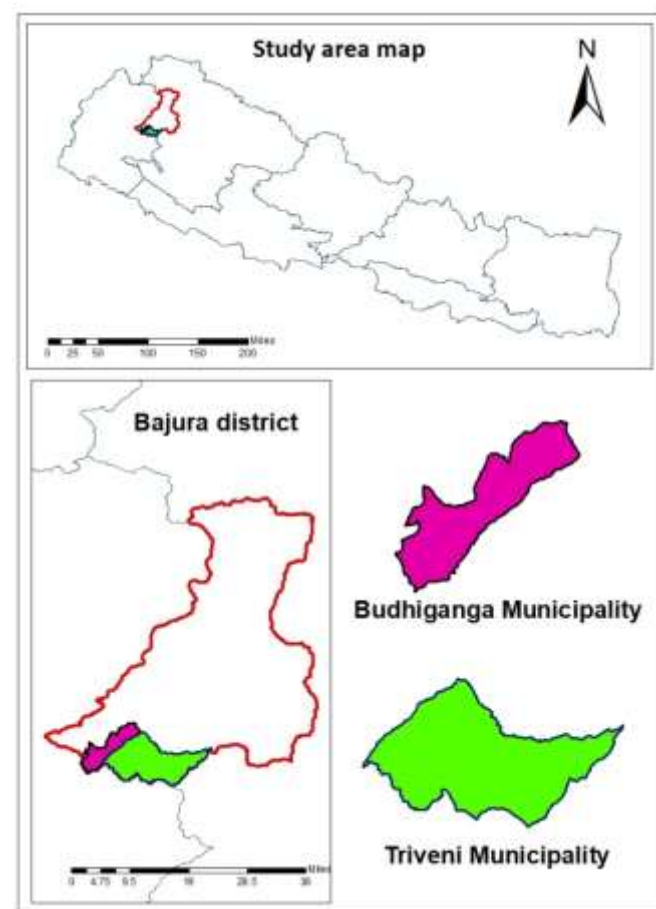


Fig. 1: Location map of the study area

Study Design

A quantitative descriptive study was done by purposive sampling methods. A pre-tested questionnaire consisting of both open and close-ended questions on farming practices, housing, feeding, breeding, and health management of goats were prepared and data were collected via door-to-door survey. A total of 129 households was taken for the study, of which 59 were from Budhiganga Municipality and 70 were from Triveni Municipality.

Data Analysis

Data collected from the survey were entered in MS Excel, 2021 version. Statistical analysis was performed using SPSS software, applying descriptive statistics such as frequencies, percentages, and means to interpret the findings.

Result

Demographic Characteristics

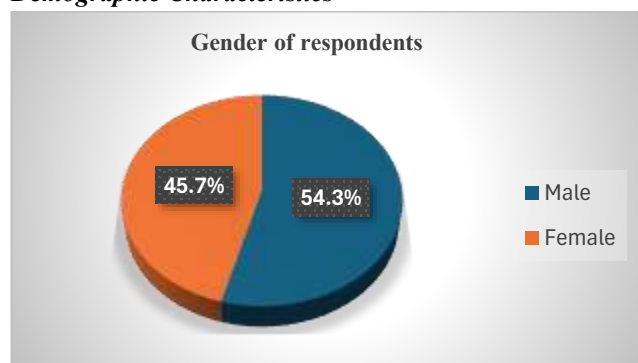


Fig 2: Gender of the respondents

Among the sampled farmers, 70(54.3%) were male and 59(45.7%) were female. The average age of the respondent was 42.73 ± 0.831 years. The literacy rate was found to be 86.8% & 13.2% were illiterate. Among literate, 74(57.4%) can read and write, 31(24%) have secondary level education and 7(5.4%) have higher secondary education. Agriculture is the primary source of income for 97(75.2%) farmers followed by remittance (19, 14.7%) and others (13, 10.1%). The average family size was found to be 6.16 ± 0.218 ranging from 2 to 22. The 11(8.5%) farmers received goat farming training and 118(91.5%) farmers did not have any training in goat farming. The details of demographic characteristics of the respondents are shown in Table 2.

Flock and Housing Characteristics

In the present study, the average herd size was found to be 8.98 ± 0.522 goats, with the herd size ranging from a minimum of 2 to a maximum of 53 goats. Regarding the management system, the majority of farmers (95.3%) practiced a semi-intensive system of goat rearing, while a small proportion (4.7%) adopted an intensive system. No farmers were found to practice a completely extensive system of management. In terms of housing characteristics, 64.3% of the goat houses had floors at ground level, whereas 35.7% had raised floors. Adequate ventilation was

present in 64.3% of the farms, while 35.7% of farms had insufficient ventilation facilities. Similarly, 89.9% of the farms had a good drainage system, whereas 10.1% suffered from poor drainage. Sanitation practices showed that only 9.3% of the farmers cleaned the goat house daily, 31.8% cleaned twice a week, and the majority, 58.9%, cleaned once a week. Regarding housing arrangement for different age groups, 96.1% of farmers did not maintain a separate housing system for kids and adults, while only 3.9% had a separate pen for males and females (Table 3).

Table 2: Demographic characteristics of respondents

Descriptions	Variables	Numbers*
Gender	Male	70 (54.3%)
	Female	59 (45.7%)
Education	Illiterate	17 (13.2%)
	Only can read and write	74 (57.4%)
	Secondary level education	31 (24%)
	High school	07 (05.4%)
Source of income	Agriculture	97 (75.2%)
	Remittance	19 (14.7%)
	Government jobs	13 (10.1%)
Age	Mean \pm SE	42.73 ± 0.831
Size of family	Mean \pm SE	6.16 ± 0.218

*Figures in the parentheses indicate percentage of number

Table 3: Flock and housing characteristics

Descriptions	Variables	Numbers*
Herd average	Mean \pm SE	8.98 ± 0.522
House	Intensive	06 (04.7%)
	Semi-intensive	123 (95.3%)
Floor level	Equal to ground level	83 (64.3%)
	Raised from ground	46 (35.7%)
Ventilation	Sufficient	83 (64.3%)
	Insufficient	46 (35.7%)
Drainage	good	116 (89.9%)
	poor	13 (10.1%)
Farm sanitation interval	daily	12 (09.3%)
	Twice a week	41 (31.8%)
	Once a week	76 (58.9%)
Separate pen for kid	Yes	5 (3.9%)
	No	124 (96.1%)

*Figures in the parentheses indicate percentage of number

Feeding Management

Regarding fodder availability, 65.1% of farmers reported having sufficient fodder throughout the year, whereas 34.9% experienced fodder scarcity during the dry months. In terms of nutritional management practices, only 13.2% of farmers practiced flushing – a feeding strategy intended to improve reproductive efficiency by increasing body condition prior to breeding, while the majority (86.8%) did not adopt this practice. Notably, 94.6% of farmers ensured that newborn kids were fed colostrum, whereas 5.4% did not provide colostrum to their newly born kids (Fig. 3).

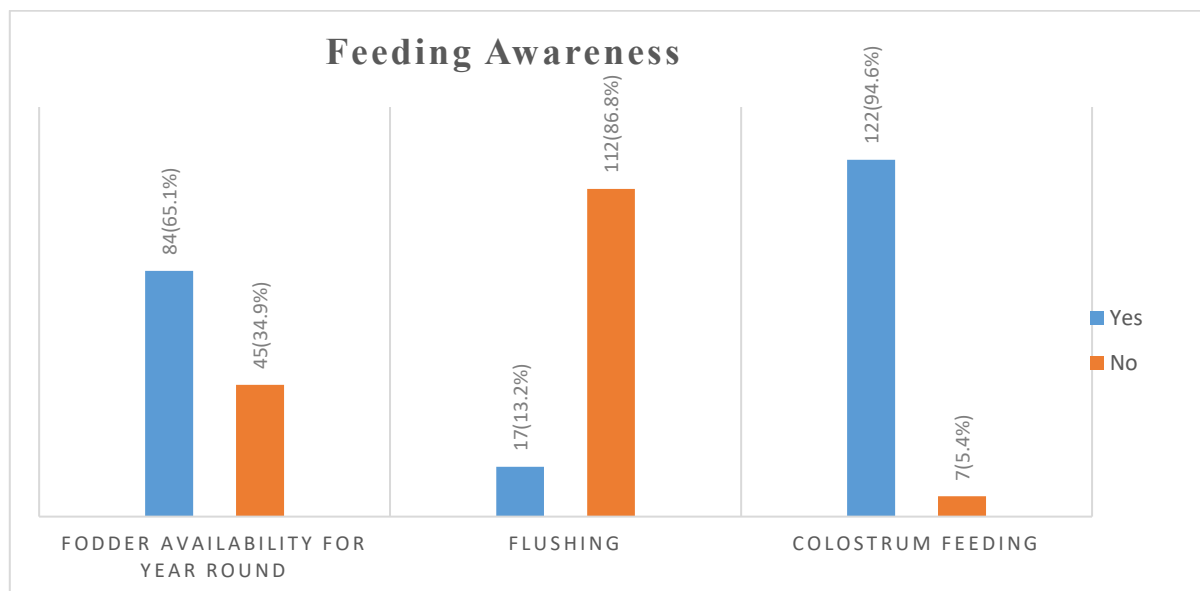


Fig. 3: Fodder availability and feeding awareness

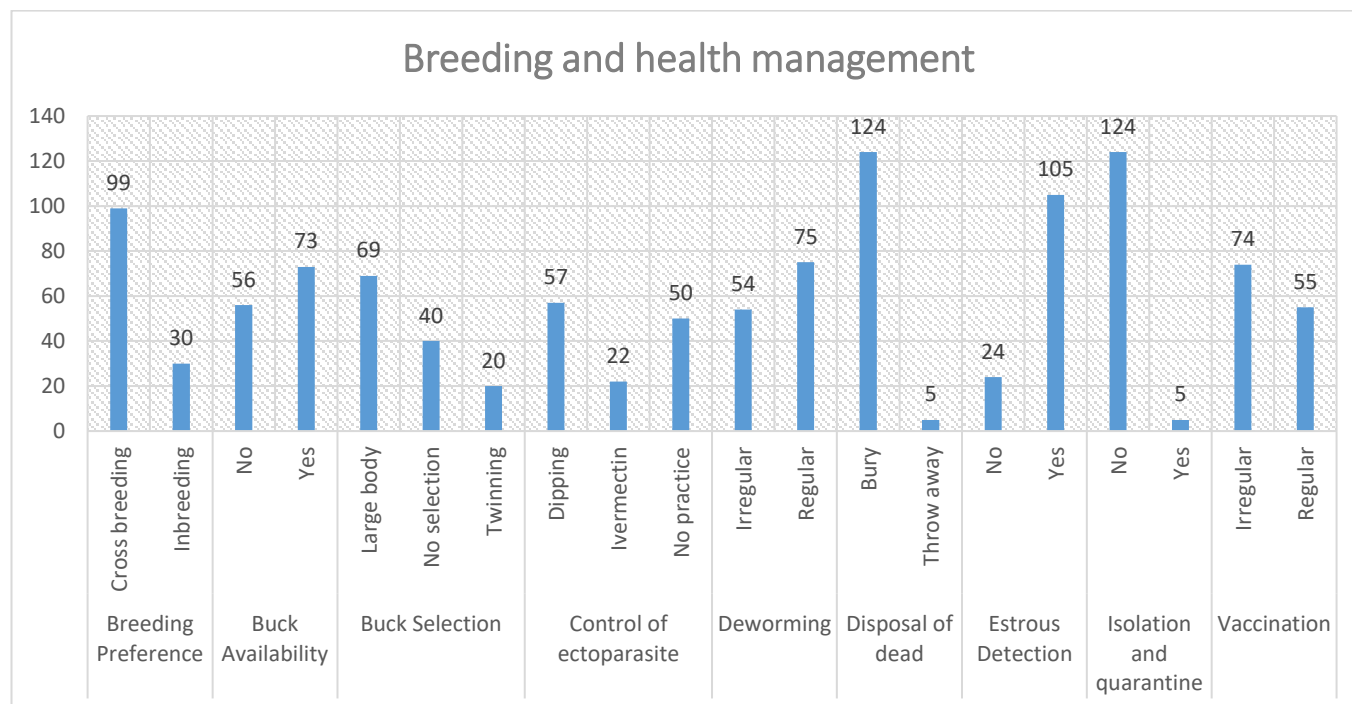


Fig. 4: Breeding and health management system adopted in the study area

Breeding and Health Management

In terms of breeding management, 76.7% of farmers reported actively avoiding inbreeding, while 23.3% lacked knowledge about inbreeding practices. Breeding bucks were readily available year-round for 56.6% of the farmers, whereas 43.4% reported difficulty in accessing breeding bucks. Regarding the criteria for buck selection, 15.5% of farmers selected bucks based on their high twinning potential, 53.5% based on body weight, and 31% did not apply any specific selection criteria. Additionally, 81.4% of the farmers practiced mating goats after observing signs of

estrus, whereas 18.6% did not rely on estrus detection before mating (Fig. 4).

Regarding health management practices, only 3.9% of farmers practiced quarantine and isolation of new or sick animals, while the majority (96.1%) did not follow such practices. A regular vaccination schedule was maintained by 42.6% of the farmers, whereas 57.4% did not follow consistent vaccination practices. Similarly, 58.1% of farmers carried out regular deworming, while 41.9% did not adhere to routine deworming schedules. For the control of ectoparasites, 44.2% of farmers practiced dipping goats in ectoparasiticide solutions, 17.1% used ivermectin, and

38.7% did not employ any method for ectoparasite control. Concerning carcass disposal, 96.1% of farmers practiced deep burial of dead animals, whereas 3.9% disposed of carcasses by throwing them into forests or rivers (Fig. 4).

Market Analysis

Regarding the marketing of goats, the majority of farmers (81.4%) sold their goats directly to buyers, while 6.2% sold through middlemen, and 12.4% sold to meat shops. In terms of the timing of sales, 80.6% of farmers sold their goats throughout the year, irrespective of special occasions, whereas 19.4% sold their goats specifically during festivals such as Dashain.

Discussion

Average herd size (8.98 goats) indicates small-scale goat farming typical of rural Nepal. Upadhyay *et al.*, (2017) mentioned that most goat farming in Nepal remains small-scale and subsistence-based. Limited landholding, labor unavailability and resource constraints could be the reason for small herd sizes (Gentle & Thwaites, 2016). Poudel, (2015) indicated that traditional ground-level housing is common in Nepalese rural areas but increases disease risks such as foot rot and respiratory problems. Raised flooring is less common due to high cost and material unavailability. Adhikari *et al.*, (2022) and Sah *et al.*, (2021) observed that poor ventilation, muddy floor and poor drainage is a major risk factor for pneumonia and other respiratory problems in goats in Nepal. While drainage in our study area seems acceptable, ventilation still needs attention. Similarly, majority of the farmers clean the shed once a week. Das *et al.*, (2019) found that poor sanitation correlates with high parasite load and disease prevalence in Nepalese goats. Sanitation campaigns and provision of incentives for regular cleaning may help low risk of disease spread. 96.1% of the farmers didn't separate kids and adults, which was similar with the report of Dhakal *et al.*, (2021). Traditional practices, lack of awareness, and space constraints might contributed to this phenomenon.

The seasonal scarcity of fodder in the study area was similar to the findings of Shah *et al.*, (2023) and Rauniyar *et al.*, (2000), who reported serious feed deficit in Nepal's mid hills, particularly during dry season. Fodder scarcity during the lean periods remains a major bottleneck to maintaining goat productivity in Nepal. Strategies such as fodder conservation and promotion of perennial forage species could help address this gap. Availability of pelleted feed at an affordable cost would help to balance nutritional balance (Malla & Adhikari, 2024). The low adoption of flushing practice is consistent with observations by Aryal *et al.*, (2018), who noted that technical knowledge gap and limited resource inhibit the use of advanced feeding practice among smallholder farmers in Nepal. However, there was a good awareness of early kid management as a significant number of farmer fed colostrum to new born kids. Colostrum is vital

for passive immunity transfer and neonatal survival (Shah *et al.*, 2023).

Breeding management plays a crucial role in improving productivity and genetic potential in goat farming. Farmers actively avoiding inbreeding were more suggesting a positive awareness about the negative effects of inbreeding. This finding is higher than that reported by Dhakal *et al.*, (2021) in Chitwan district, where many farmers were still practicing uncontrolled mating. However, there is still need for further education and introduction of artificial insemination technology to avoid inbreeding (Joshi & Khanal, 2021). Access to breeding bucks remain challenge, as 43.4% of farmers reported difficulty in finding a superior breeding bucks year-round. Similar constraints were noted by Upadhyay *et al.*, (2017), who highlighted that scarcity of quality breeding bucks limits genetic improvement efforts in smallholder goat farm. Community based breeding programs or buck sharing initiatives could offer practical solution in such contexts. Regarding buck selection criteria, there was high emphasis on body weight over genetic traits and this reflects traditional selection practices, which might not necessarily optimize reproduction or production traits, as also observed by Aryal *et al.*, (2018) in Nawalparasi district, Nepal. Estrous detection before mating was practiced by 81.4% of farmers, indicating a fairly good reproduction management awareness. Accurate estrus detection is crucial for improving conception rates and overall reproductive efficiency.

The findings of this study reveal considerable gaps in the adoption of recommended health management practices among goat farmers in the Bajura district. Only 3.9% of farmers practiced quarantine and isolation of sick or newly introduced animals, a result comparable to that of Dhakal *et al.*, (2021), who reported minimal quarantine practices among goat farmers in Chitwan. The lack of quarantine measures increases the risk of infectious disease outbreaks and highlights the urgent need for awareness program targeting basic biosecurity measures. Vaccination coverage was found to be relatively low, with only 42.6% of farmers following a regular vaccination schedule. This figure is slightly higher than that reported by Dhakal *et al.*, (2021). The poor adherence to vaccination practices exposes goat herds to preventable diseases such as Peste des Petits Ruminants (PPR) and Contagious Caprine Pleuropneumonia (CCPP) (Nath *et al.*, 2014). Strengthening vaccination campaigns and enhancing access to veterinary services are critical for disease prevention. Regarding internal parasite control, 58.1% of farmers reported regular deworming, which is an encouraging finding compared to previous studies. Adhikari *et al.*, (2023), Das *et al.*, (2019) and Khanal *et al.*, (2024) documented a high prevalence of gastrointestinal parasites in goats in Nepal, attributing significant economic losses to insufficient deworming practices. A highly positive finding was that 96.1% of

farmers practiced deep burial for carcass disposal, reflecting good awareness regarding disease control and environmental hygiene. This finding contrasts positively with earlier reports where improper disposal practices were common (Dhakal *et al.*, 2021). Overall, while some aspects of health management practices, such as deworming and carcass disposal, are commendable, major gaps exist in quarantine, vaccination, and ectoparasite control.

The study showed that most farmers (81.4%) sold goats directly to buyers, with fewer relying on middlemen (6.2%) or meat shops (12.4%). This reflects typical practices in rural Nepal, where direct selling is preferred to maximize profits and avoid intermediary costs (Regmi *et al.*, 2017). Limited use of middlemen suggests that access to organized markets remains underdeveloped in many areas. Regarding timing, 80.6% of farmers sold goats year-round, indicating that goat farming serves as a regular income source rather than a seasonal one. However, 19.4% sold goats specifically during festivals like Dashain, when demand and prices peak (Adhikari *et al.*, 2020). Strategic sale during festivals could enhance profitability, but requires careful herd management. Strengthening market access, forming cooperatives, and providing market information could further improve farmer's incomes (Neupane *et al.*, 2022; Shrestha *et al.*, 2019).

Conclusion

This study reveals that goat farming in Bajura district is predominantly small-scale and traditional, with notable gaps in housing, health management, feeding, and breeding practices. While positive practices like colostrum feeding, deworming, and proper carcass disposal were observed, challenges such as poor ventilation, low vaccination rates, and limited breeding resources persist. Strengthening farmer education, veterinary services, and market access is essential to enhance productivity and livelihoods. Targeted interventions and community support will be key to advancing sustainable goat farming in the region.

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