



Original Research Paper

MANAGEMENT PRACTICES OF BACKYARD GOAT RAISERS IN SAN ESTEBAN, ILOCOS SUR, PHILIPPINES

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ABSTRACT

This study examined management practices, constraints, and factors influencing improved goat-raising practices among backyard goat raisers in San Esteban, Ilocos Sur, Philippines. Results showed that respondents were predominantly males, mostly married, and had primary to secondary education. Family members participated in daily routine operations, while formal training was limited, indicating gaps in technical knowledge and skills. Management practices remained largely traditional. Breed selection was based mainly on local availability, housing facilities were basic, and equipment was limited. Feeding relied heavily on natural forage, crop residues, and household kitchen scraps. Health management was inconsistent, particularly regarding deworming and veterinary services. Major challenges included recurrent diseases, inadequate quality feeds and breeding stock, limited capital, and insufficient technical support. Statistical analysis revealed significant positive relationships between educational attainment, years of experience, training exposure, household involvement, and selected management practices. Raisers with higher education, longer experience, and training were more likely to apply improved production, feeding, and health-care practices. Findings underscore the need for capacity-building, veterinary services, improved inputs and breeding resources, and infrastructure to strengthen productivity, sustainability, and resilience of backyard goat enterprises.

Keywords: Backyard goat raising, smallholder goat production, traditional goat farming, extensive goat system, farming goat experience

1 INTRODUCTION

Compared to pigs and poultry, goats require less expensive production inputs and easier management, making them a popular farm animal among rural residents. Crop wastes, agro-industrial by-products, or other locally accessible forage sources are the main sources of nutrition for goats. Despite being a backyard sector, its impact on rural residents' socioeconomic standing and the Philippine economy has been demonstrated in recent years (Alcedo et al., 2015). Goats are less expensive and easier to raise than other livestock, whether for commercial or household farming. Goats are browsers by nature and like consuming a wide range of vegetation. Goat raising is good in the uplands where leguminous forage and fodder crops, including grasses, abound (Cosadio et al., 2011). The above-mentioned characteristics of goats can help ensure food security for the family (The Philippines Recommends Series, 2011). Moreover, goats play significant socio-economic and cultural roles for the underprivileged rural farmers (Nayga et al., 2015).

According to Food and Agriculture Organization (FAO) statistics from 2012, there were 875.5 million goats worldwide. The largest number of goats was in 2011, in Asia, with over 539 million heads representing about 61.6%, followed by Africa with over 276 million heads representing 31.6%, while Europe is in 4th place with only 0.56% of the total number of goats raised. Over the last 50 years, global goat populations have increased by about 240%, while those of other livestock species have remained stable or declined. Currently, there are about 1 billion goats worldwide. More than 90% are located in Asia and Africa, and only 1.8% in Europe. The development potential of goats in ASEAN countries is examined from the standpoint of current status and future contribution. The relative contributions of goats to total meat production in the Philippines, Malaysia, and Indonesia were 4.5, 5.3, and 16.5%, respectively (Cruz et al, 2025).

As of July 1, 2021, the Philippines' goat inventory was projected at 3.94 million heads, 1.3% fewer than the 3.99 million counted during the same period the year before. Goat populations on private farms accounted for 98.8%

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of all stocks, whereas those on commercial farms decreased by -1.2% and -8.7%, respectively. The remaining 1.2 % comprised the inventory for commercial farms. In terms of inventory, Central Visayas recorded the highest goat population with 577.15 thousand heads. This was followed by Western Visayas with 516.70 thousand heads and Ilocos Region with 494.69 thousand heads. These three regions accounted for 40.4% of the country's total goat population (Philippine Statistic Authority, 2023).

Goat production in the Philippines is currently a sunrise industry, dominated by backyard goat raisers, accounting for 98.62% of the overall production volume (Philippine Statistic Authority, 2023). A backyard farm consists of raising a few goats in a small area, with at least 25 does, in a rural or suburban area (Cosadio et al., 2011). In Region I, goat raising is fast becoming an important component of the agricultural production system. In the Ilocos region, small farmers in the rainfed and upland areas of Pangasinan, Ilocos Sur, and Ilocos Norte are venturing into goat raising. The province of Ilocos Sur is located in the Ilocos Region in Luzon. Its capital is the city of Vigan, located at the mouth of the Mestizo River. Ilocos Sur is bordered by Ilocos Norte and Abra to the north, Mountain Province to the east, La Union and Benguet to the south, and the South China Sea to the west. It consists of two districts, wherein the town of San Esteban belongs to the 2nd district of the province. The people in the said province are engaged in crop farming and livestock, which includes goat raising. Goats have always had a place in most farming systems because goats are considered a vital livelihood component among smallholder and landless or marginal farmers in the Philippines.

1.1. Objectives of the Study

The study was conducted to document the current management practices of goat backyard raisers in San Esteban, Ilocos Sur, Philippines. It specially addressed the following: (1) Determine the profile of the backyard goat raisers in San Esteban, Ilocos Sur in terms of age, sex, civil status, educational attainment, number of years in goat raising, purpose of goat raising, relevant training or seminars attended on goat raising, and involvement of other family members in goat raising; (2) Determine the management practices of backyard goat raisers in San Esteban, Ilocos Sur in terms of production system, selection of breeds and breeding, facilities and equipment, feeds and feeding, health management, and best management practices; (3) Identify the problems encountered by backyard goat raisers in managing their goat production; (4) Determine the relationship between the respondents' profiles and their management practices in backyard goat production.

2. REVIEW OF RELATED LITERATURE

2.1. Goat Management Practices

In a study on the status, problems, and prospects of the animal industry in the Philippines, he found that one of the problems hindering the growth of the livestock industry in the country is the prevalence of poor management practices. This finding includes the goat industry (Domingo & Olaguera, 2017). Management practices refer to the different factors being considered in raising animals to improve their productivity or performance. This includes the production system, selection of stocks, the breeding system applied, the provision of proper housing facilities, and the availability of equipment for use, especially for the production of forages for feeding, adequate nutrition, and health. Management practices could also include other activities of goat raisers that seem to be effective in improving the performance of their animals, which others do not practice. Nayga et al. (2015) noted that goats' performance and product quality in smallholder farms are major deterrents due to the low productivity of existing stocks and the low adoption of improved goat production technologies by farmer-raisers. Low output and high slaughter weight are two factors that lead to goats' low productivity. It was noted that a lack of access to high-quality goat breeders and insufficient information about better management techniques are the main causes of low productivity.

Additionally, Alcedo et al. (2015) noted that the socio-economic contribution of goat-keeping may depend on how it is managed by its owner. She also stated that past scientific studies show that the way owners treat their animals can directly affect their health, productivity, and welfare. Based on the results conducted by Sanchez et al. (2020), it was mentioned that there were at least ten (10) challenges that have been enumerated by goat raisers. These are diseases, lack of veterinary services, shortage of land, inadequate pasture, predators, theft, poor breeds, no fences, shortage of water, and labor-intensive farming. Among these challenges, disease was the most common (65%), followed by a lack of vet services (8%) and shortages of land, pasture, and the presence of predators (5%). Common goat diseases encountered by the respondents include diarrhea (57%), cold (13%), cough (11%), bloat (8%), and parasitic infection (7%).

Regarding mortality rate, as Alcedo and Maeda (2015) noted, results showed that housing and health/husbandry competence index scores significantly influence it, with the housing index score exerting the strongest effect among the four parameters, with a -0.453 coefficient. This means that a one-point increase in the housing competence index score would decrease the mortality rate by 0.453. The regression analysis also shows that both housing and health have a significant influence on mature weight and mortality rate, while the breeding competence index score shows no influence on either.

Alcedo et al. (2013) added that the most common diseases and symptoms observed by farmers on their goats were diarrhea, respiratory diseases, and bloat. The capacity evaluation score for farmers' production and management practices (PMP) was 48.02% out of 100.00%. This can imply that farmer's capacity for proper goat production and management is poor, with a score below the neutral 50.00%. In this case, it can be argued that goat's productivity in the Northern Philippines is linked to producer's limited capacity to adopt appropriate goat production and management practices.

2.2. Constraints

As many have mentioned, goats play a vital role in uplifting the Philippine economy for many reasons that cannot be ignored. Their growth, development, and potential remain low. The data show a decrease in production, with the volume of goats produced in the Philippines declining since 2016. From that year on, the annual growth rate of goats produced in the country has been negative, with 2019 recording the lowest figure at -0.8 percent. The above-mentioned drop in production corroborates the report issued in May 2019, which stated that goat production decreased by goat0%. Smaller amounts were disposed of in Central Luzon. Lower volume of stocks available for slaughter was recorded in CALABARZON and Zamboanga Peninsula. Moreover, PSA (2023) stated that from April to June, the Philippine Statistic Authority (PSA), said goat output fell slightly to 17,590 MT from last year's record of 17,690 MT. The Philippine Statistic Authority attributed this to production declines in eight regions across the country.

3. METHODOLOGY

3.1. Research Design

The survey research design was employed in this study. A structured questionnaire was used to collect the needed information for the study. A personal interview was carried out to gather data. A descriptive survey design was used to collect information from respondents on their profiles, management practices, and problems encountered in goat production.

3.2. Locale of the Study

This study considered all backyard goat raisers in the Municipality of San Esteban, Ilocos Sur. All barangays of this municipality were considered as study sites. A list of goat raisers was obtained from the Municipal Agriculturist's office. The research utilized the list of goat backyard raisers from the Agriculture Office of San Esteban, Ilocos Sur, to determine the number of respondents.

3.3. Population and Sampling

This study is limited to backyard goat raisers of San Esteban, Ilocos Sur. A total enumeration was conducted to collect the data needed for the study. Names from the list, classified as backyard goat raisers, were included in the study.

3.4. Data Gathering Tool

A validated questionnaire was used as the data collection tool. Pre-evaluation of the questionnaire was done to test the reliability and accuracy of the material. A personal interview was conducted using a question-and-answer format. Responses or information provided by respondents were written in the questionnaire to ensure the authenticity of the data. A face-to-face interview was employed, but the researchers must ensure compliance with IATF protocols to safeguard the health of both the researchers and the respondents. The questionnaire was divided into four parts as follows: I. Profile of a farmer. The farmer profile includes age, sex, civil status, educational attainment, years in goat raising, purpose of goat raising, and other members involved in goat raising. II. Management practices. Management practices include production systems, breed selection and breeding, facilities and equipment, feeds and feeding, and health management, including best management practices for the goat raiser. III. Problems encountered. A lot of possible answers were listed in this part. Using a scorecard sheet on the 5-point Likert Scale, respondents are asked to check their answers to gather data on the severity of problems encountered in raising goats. The severity of the problems encountered by the respondents was measured using a five-point Likert scale. The responses were interpreted using the following descriptive ratings: a mean score ranging from 4.21–5.00 was interpreted as *Very Much Serious*, 3.41–4.20 as *Very Serious*, 2.61–3.40 as *Serious*, 1.81–2.60 as *Moderately Serious*, and 1.00–1.80 as *Fair*. These descriptive categories served as the basis for analyzing and interpreting the respondents' perceptions regarding the severity of the problems encountered. IV. Perceived solutions/interventions to solve the problem. This part was based on the problems encountered by the respondents. The gathered data were collected by the researchers and subjected to tabulation, analysis, and interpretation.

3.5. Treatment of Data

The farmer's profile, including the various management techniques used in goat production, the challenges faced, and responses to the list of issues, was described using frequency counts and percentages. Correlation analysis will be used to determine the correlations between respondents' profiles on management production techniques. Statistical Procedures for Social Studies (SPSS) or statistical tools in Microsoft Excel were used to perform the analyses.

4. RESULTS AND DISCUSSION

4.1. Profile of Backyard Goat Raisers

The age groups of the backyard goat farmers were 20, 21–30, 31–40, 41–50, 51–60, and 61+ years old. The age group profile of farmers in the Municipality of San Esteban, Ilocos Sur, who raise goats in their backyards, is displayed in Table 1. Based on Table 1, an analysis of the age distribution of backyard goat farmers in San Esteban,

Ilocos Sur, reveals a demographic profile that is primarily young to middle-aged, with significant implications for community development, economic stability, and rural agricultural sustainability in the Philippines.

Table 1. Age Group of Farmers Engaged in Backyard Goat Raising

Age	Quantity
20 yrs old	0
21-30 yrs old	9
31-40 yrs old	9
41-50 yrs old	5
51-60 yrs old	1
61 yrs old and above	1

The data indicate no participation by individuals aged 20 or younger, with 9 farmers in each of the 21–30 and 31–40 age groups, 5 in the 41–50 group, and only 1 each in the 51–60 and 61+ categories (totalling just 2 in the oldest brackets). This pattern demonstrates significant engagement from younger and middle-aged farmers, particularly the strong presence of young adults (21–30 years), suggesting growing interest in goat raising driven by economic necessity in rural areas with limited employment options, family traditions, and enthusiasm for sustainable practices. Such youth involvement is viewed positively, as it promotes intergenerational knowledge transfer, integrates modern techniques with traditional methods, and supports long-term sector innovation and viability, consistent with the Food and Agriculture Organization (FAO) emphasis on younger generations' role in agricultural sustainability and innovation. The robust 31–40 and 41–50 groups represent a stable, experienced workforce with practical knowledge, physical capacity, and openness to new technologies, enhancing productivity, animal welfare, and potential innovation in goat farming. Participation declines markedly in older ages due to the physical demands of labor-intensive agriculture, age-related health and capacity limitations, shifting family responsibilities, transitions to advisory or managerial roles, and financial constraints such as reduced access to capital for modern equipment (International Labor Organization [ILO], 2015; Burton & Walford, 2005). This generational shift highlights the need for succession planning, mentoring from elders to youth, and effective knowledge transfer to bolster farm resilience and adaptability (Ingram & Kirwan, 2011). Youth inclination toward sustainability further aids environmental, social, and economic benefits in farming communities (Pretty, 2008). These trends offer opportunities for renewal through youth while underscoring challenges for older farmers and the value of targeted policies on training, resources, and support, as noted in studies from the Philippine Institute for Development Studies on diminishing financial access with age.

Table 2. Sex of the Farmers Engaged in Backyard Goat Raisers

Sex	Quantity
Male	16
Female	9

The demographic profile of goat raisers in San Esteban, Ilocos Sur, as depicted in Table 2, reveals a significant gender disparity of the total population surveyed, with 16 males and 9 females. The data suggest that male goat raisers outnumber female goat raisers by a considerable margin. The predominance of male goat raisers in San Esteban has several implications. Firstly, it suggests that women may face significant barriers to participating equally in agricultural activities. These barriers could include limited access to land, capital, and training, as well as societal expectations that prioritize men's involvement in agriculture. Secondly, the gender imbalance can impact the economic outcomes for women, as they may not have the same opportunities to generate income from goat raising as men. This disparity can perpetuate gender-based economic inequalities and limit the overall development of the community. According to Khachatryan et al. (2018), gender disparity in agriculture is a common phenomenon, often rooted in traditional gender roles and societal norms. Historically, men have been more involved in fieldwork and livestock management, while women have been relegated to household duties and less visible agricultural roles. This trend is reflected in the data from San Esteban, where male goat raisers dominate the demographic profile. Furthermore, gender differences in work performance across various tasks have been observed in agricultural settings across countries and cultures. Traditionally, men are expected to perform better in labor-intensive agricultural work. Moreover, Yisehak (2008) stated that men are largely the decision-makers in livestock production and oversee general herd management. Women contribute more labor inputs in areas of feeding, managing vulnerable animals (calves, small ruminants, and sick, injured, and pregnant animals), cleaning of barns, dairy-related activities (milking, butter and cheese making), transportation of farm manure, and the sale of milk and its products than men and children. This finding relates to the Philippine Statistic Authority (2009) statement that females dominate household membership among agricultural operators. The above statements are supporting that women play important roles in both cash crops and subsistence production and in small livestock raising. To feed their families, women cultivate kitchen gardens and subsistence crops, mainly root crops.

Table 3. Civil Status of Goat Backyard Raisers in San Esteban, Ilocos Sur

Civil Status	Quantity
Single	11
Married	12
Widow	2

Table 3 provides an insightful look into the civil status of 25 backyard goat raisers in San Esteban, Ilocos Sur. The data indicate that, among the respondents, 12 are married, 11 are single, and 2 are widowed. This distribution highlights the varying levels of engagement in backyard goat raising among individuals with different civil statuses. The significant engagement of married individuals in backyard goat raising suggests that these households view it as a promising and sustainable economic activity. Regular income from goat raising can help cover household expenses, education, and healthcare costs. Furthermore, the involvement of both partners in goat raising can enhance productivity and improve enterprise management. This collaborative effort can lead to improved animal husbandry practices and higher profitability (World Bank, 2020). The predominance of married individuals among backyard goat raisers is noteworthy. Married individuals represent the largest group, which may be attributed to several factors. Traditionally, married couples have engaged in agricultural activities to supplement household income and ensure food security. Goat raising is recognized as a viable enterprise that can provide consistent income, even on a small scale. This aligns with studies that suggest small-scale livestock farming is often adopted by families to diversify their income sources and improve their livelihoods (FAO, 2012). Meanwhile, the large percentage of single goat raisers (44%) also warrants attention. The participation of individual goat raisers may reflect the attractiveness of this enterprise as an accessible and manageable source of income. Single individuals, particularly young and enterprising individuals, may find goat raising appealing due to its relatively low start-up costs and the potential for quick returns. Additionally, single individuals may engage in goat raising as a stepping stone towards achieving financial independence and stability. In addition, the presence of widowed individuals (8%) among the goat raisers indicates that goat raising can serve as a vital source of income and support for those who have lost their spouses. For widowed individuals, goat raising offers an opportunity to maintain their livelihoods and provide for their families, despite the challenges they may face. This highlights the role of small-scale livestock farming in fostering resilience and providing a safety net for vulnerable populations (ILO, 2019).

Table 4. Educational Attainment of Farmers Engaged in Backyard Goat Raising

Education	Quantity
College Graduate	14
High School Graduate	9
Others, please specify	2

Table 4 presents the educational attainment of 25 backyard goat raisers in San Esteban, Ilocos Sur. The data indicate that 14 individuals are college graduates, 9 individuals completed high school but did not pursue further education, and 2 individuals did not graduate

from high school. The fact that more than half of the goat raisers are college graduates is significant. It suggests that goat raising in San Esteban is not merely a last-resort livelihood for those with limited education, but a viable and attractive enterprise even for those with higher educational qualifications. This trend aligns with the growing recognition of the agricultural sector as a field with considerable opportunities for innovation, business development, and sustainable income generation (World Bank, 2020). FAO (2015) noted that college graduates are likely to bring a higher level of knowledge, skills, and innovative practices to goat raising. Their educational background can enable them to adopt and implement advanced techniques in animal husbandry, breeding, and disease management. This can lead to improved productivity, better-quality produce, and increased profitability. The involvement of college graduates in goat raising suggests that this enterprise is seen as a promising economic opportunity rather than a fallback option. Educated individuals may be better at navigating market dynamics, accessing credit, and leveraging technology to enhance their operations. This can contribute to the overall development of the agricultural sector in San Esteban (IFAD, 2016). Furthermore, educated growers can play a pivotal role in community development by sharing their knowledge and best practices with fellow farmers. They can act as leaders and change agents, promoting sustainable agricultural practices and encouraging others to adopt more efficient and environmentally friendly methods (ILRI, 2013). The data also reveals that a significant portion of goat raisers have not pursued education beyond high school, and a small number did not complete high school. To ensure equitable opportunities and support for all individuals engaged in goat raising, it is essential to address educational gaps. The level of education can be directly related to the technical level of the farm. People with higher levels of education have a greater ability to understand and assimilate new techniques, and therefore are more likely to adopt them.

Table 5. Number of Years in Goat Raising

Years in goat raising	(Support)
1-5 yrs	13
6-10 yrs	7
11-15 yrs	2
16-20 yrs	2
21 yrs and above	1

Table 5 provides a comprehensive overview of the number of years that backyard goat raisers in San Esteban, Ilocos Sur, have been engaged in the industry. The data reveal a diverse range of experience levels among goat raisers, with several implications for the community and the industry. Most goat raisers (13 individuals) have 1-5 years of experience, suggesting many are relatively new to the industry. Additionally, there are 7 raisers with 6-10 years of experience, 2 raisers with 11-15 years of experience, and 1 raiser with

over 20 years of experience. This distribution shows that while there are a significant number of newcomers, there is also substantial experience within the community. The presence of experienced goat raisers (those with 11-15 years and over 20 years of experience) provides an invaluable resource for knowledge sharing and mentorship. Experienced raisers can offer guidance, share best practices, and help newcomers navigate the challenges of goat raising. This mentorship can enhance the overall productivity and success of the industry (FAO, 2012). In addition, newer goat raisers are often more open to adopting innovative practices and technologies. Their willingness to learn and adapt can drive the modernization of goat-raising techniques, leading to greater efficiency and productivity. The combination of fresh perspectives from newcomers and the wisdom of experienced raisers can create a dynamic and progressive industry (World Bank, 2020). Clearly, the diversity of experience levels contributes to the resilience and sustainability of the goat-raising community. Experienced raisers have likely weathered various challenges and can offer insights on overcoming obstacles. Their resilience can serve as a foundation for the community, ensuring its stability and long-term success (ILRI, 2013). The data underscore the importance of capacity building and training programs tailored to different experience levels. For newcomers, foundational training on goat husbandry, health management, and business skills can be beneficial. For more experienced raisers, advanced training on specialized topics and new technologies can help them further refine their practices and stay competitive (IFAD, 2016).

Table 6. Purpose of Goat Raising

Purpose of goat raising	Quantity
Additional Income	22
Food	17
Others, Please Specify	1

The findings from Table 6 on the purposes of backyard goat raising among raisers in San Esteban, Ilocos Sur, Philippines, demonstrate the multifaceted socioeconomic contributions of this activity to rural livelihoods, household sustainability, and community development. Of the respondents, 22 engage in goat farming primarily to generate additional income, highlighting its economic viability as a key source of financial stability for rural households that often depend on agriculture for survival. This aligns with broader evidence that small ruminants like goats play a vital role in poverty alleviation and income enhancement in developing countries, enabling families to cover daily expenses, education, healthcare, and improved living standards (Food and Agriculture Organization, 2012).

Additionally, 17 raisers use goats for food, underscoring their importance in bolstering household food security and nutrition. Goat meat and milk provide high-quality,

nutrient-rich protein sources-essential in areas with limited dietary diversity-supporting child growth, development, and overall health outcomes, as supported by research linking livestock production to improved household nutrition and food security. Only 1 raiser cited other purposes, reflecting the minor but present cultural and multifunctional roles of goats, such as use in ceremonies, as gifts, or as a form of savings in rural settings. These patterns underscore the adaptability of goat farming and the need for targeted rural development strategies-including training, market access improvements, veterinary services, and policy support-to maximize benefits like increased income, better nutrition, and enhanced livelihoods. The results affirm backyard goat production as a resilient, low-input enterprise that promotes economic diversification, food security, and cultural continuity in Philippine rural areas such as Ilocos Sur.

Table 7. Relevant Training/Seminars Attended on Goat Raising

Relevant Trainings/seminars attended	Quantity
Breeding and selection	4
Forage production and processing	1
Feeding	2
Housing	1
Meat production and processing	1
Disease Management	2
Marketing	0
Others, please specify	0

The findings from Table 7 on training and seminars attended by backyard goat raisers in San Esteban, Ilocos Sur, Philippines, reveal uneven participation across key aspects of goat farming, reflecting local priorities, knowledge gaps, and opportunities for targeted capacity building to enhance productivity and sustainability. A notable portion of raisers (4) attended training on breeding and selection, indicating strong community interest in genetic improvement to achieve healthier, more productive goats with better growth rates, disease resistance, and overall performance (Alcedo, 2015; likely referring to studies on stockmanship or goat production in Philippine contexts, such as Alcedo et al.'s work on animal welfare and management proxies). Fewer attended sessions on forage production and processing (1), feeding (2), housing (1), meat production and processing (1), and disease management (1). These lower numbers highlight the critical role of such training in improving feed quality and nutrition, balanced diets for growth and milk production, proper shelter to reduce stress and injuries, high-quality meat handling for market value, and effective disease prevention/treatment to minimize mortality and losses. The distribution suggests a primary focus on genetic enhancement for long-term industry benefits, alongside recognition of the importance of disease management for herd health. However, the relatively low attendance in forage,

housing, meat processing, and related areas suggests insufficient knowledge of these production areas, which are vital to overall efficiency, economic value, and income potential. Greater emphasis on comprehensive training across all facets is recommended to address these gaps, inform raisers on diverse topics, and boost livestock production and livelihoods (Singh et al., 2020). These patterns underscore the value of expanded, accessible. Training programs to bridge technical deficiencies optimize goat farming practices, and support rural development in similar smallholder settings.

Table 8. Involvement of Family Members in Goat Raising

Family involved in goat raising	Quantity
Wife	2
Children	6
Others, please specify	8

The findings from Table 8 on family member involvement in backyard goat raising in San Esteban, Ilocos Sur, Philippines, illustrate the family-oriented nature of this rural enterprise, with labor distributed primarily among children (6 participants, the highest), other family members (8), and wives (2, the lowest at approximately 15%). This distribution highlights goat farming as a collective household activity that fosters cooperation, skill transmission, and resilience while reflecting traditional gender roles and potential imbalances. Children's high involvement (6) indicates early exposure to animal husbandry, cultivating responsibility, practical skills, and a work ethic that benefits future livelihoods or career paths. Positively, it supports intergenerational learning and family unity; however, excessive duties risk interfering with education, personal development, and well-being, necessitating a balanced approach to prioritize schooling amid agricultural contributions. The participation of other family members (8, the largest group) underscores shared responsibility, distributes the workload, enhances manageability, preserves knowledge across generations, and strengthens family bonds and social support systems. This communal effort promotes sustainability and adaptability in rural farming (FAO, 2014). Wives' lower involvement (2) may stem from traditional gender divisions in rural households, where women often handle separate roles. This presents opportunities for empowerment: greater female participation in goat farming could improve control over resources and income, leading to prioritized spending on nutrition, healthcare, and education, thereby enhancing family welfare, gender equality, and socioeconomic outcomes (IFAD, 2016). The high engagement of children and other family members offers benefits like hands-on learning, improved practices, productivity gains, and stronger family cohesion, likely referencing local or agricultural studies on family dynamics in farming). The limited role of wives underscores the need for inclusive strategies, such as targeted education and training for

women, to balance workloads, optimize farm performance, and promote equitable participation. These patterns affirm backyard goat raising as a socially embedded livelihood in rural Philippine settings, with implications for policies promoting balanced family involvement, gender equity, and child protection.

4.2. Management Practices

This part covers various management practices of farmers venturing into backyard goat production. Table 9 presents the practices of backyard goat raisers regarding production aspects.

Table 9. Production Practices of Backyard Goat Raisers

Production	Quantity
Tethering	22
Extensive	1
Intensive	0
Others, please specify	0

The research findings on goat-raising management practices in Dan Esteban, Ilocos Sur, as presented in Table 9, shed light on the predominant production practices used by backyard goat raisers in the region. The data reveal that tethering is the most prevalent management practice, with 22 goat raisers using it. In contrast, only one (1) of the goat raisers practices extensive management, while none engage in intensive management practices. The high prevalence of tethering as a management practice among goat raisers in San Esteban, Ilocos Sur, indicates a strong reliance on the traditional method. Tethering involves tying a goat to a post or tree, restricting their movement to a particular area for grazing. While tethering may offer some control over the goats' movement and diet, it can also limit their access to food, water, and natural behaviors, potentially affecting their welfare.

Additionally, the low adoption of extensive and intensive management practices raises questions about the factors influencing goat raisers' choices in the region. The limited adoption of extensive management, which involves allowing goats to roam freely over a larger area, and the absence of intensive management, which typically involves confinement and controlled feeding, suggest a preference for more simplistic and possibly cost-effective management methods among goat raisers in San Esteban, Ilocos Sur. Interpreting these findings, several implications emerge for the goat-raising industry in the region. Firstly, there is a need to raise awareness among goat raisers of the welfare implications of tethering and to encourage the adoption of more sustainable, welfare-friendly management practices. Providing education and training on alternative management methods could improve goats' overall well-being and enhance productivity in the long run. Secondly, promoting the adoption of extensive and intensive management practices could improve the productivity and sustainability of goat-raising operations in San Esteban, Ilocos Sur. By diversifying goats' diets,

promoting natural behaviors, and improving access to resources, goat raisers may see benefits in animal health,

Table 10. Selection of Breeds and Breeding Practices of Backyard Goat Raisers

Selection of breeds and breeding	Quantity
Breed	16
Fast growing	15
Large body conformation	11
Resistance to diseases	18
Others, please specify	0

The research findings on goat raisers' breed selection criteria in San Esteban, Ilocos Sur, presented in Table 10, provide valuable insights into farmers' preferences and priorities when purchasing goats. The data reveal that disease resistance is the most important trait, with 18 respondents selecting it. This is followed by breed consideration (16), fast growth (15), and body configuration (11). The result indicates, therefore, that the most frequently used basis for selecting goats to raise was disease resistance, followed by breed and fast-growing characteristics. Large body conformation was listed as the least preferred to consider.

The result further indicates that disease prevention is a major concern for goat raisers in the area. It is well known that goats are very sensitive to disease, especially during the rainy season, when mortality is high. Having a little knowledge of disease management, it is only fair to invest in a goat breed with very high disease resistance. In the same manner, large body configuration is the least parameter they are considering because the majority of their livestock raised are natives and upgrades. For raisers with little knowledge of management practices, raising crossbred and purebred animals will just impose a new challenge due to their sensitive and delicate characteristics and nature. Based on the interview results of Sanchez et al. (2020), ten challenges were enumerated by their respondents. They mentioned that among the ten challenges, disease occurrence was the most common, comprising 65%, followed by a lack of veterinary services in the area, with 8%. Thus, this justifies why disease resistance is among the top factors goat backyard raisers consider in selecting stocks.

Table 11. Selection of Breeds

Breeds of goat raised	Quantity
Native	18
Upgrades	16
Crossbreeds	0
Purebred	0

Table 11 shows the goat breeds raised by respondents in San Esteban. Out of the four categories of goats raised (Native, Upgrades, Crossbreeds, and Purebreds), only Native and upgraded breeds of goats are reared. 18 respondents reported raising native goat breeds, while 16 reported raising upgrades. Although it was found during the seminars and trainings attended by the goat raisers

productivity, and overall profitability.

that most topics covered were about breeds and breeding, the results still indicate that goat raisers in San Esteban are not yet fully equipped with an understanding of the benefits of raising purebreds and upgrades. While purchasing natives is considerably more expensive due to their lower price and disease resistance, other benefits cannot compare to upgrades or crossbreeds.

The preference for native goat breeds among the 18 respondents can be attributed to several factors. Native goats are well-adapted to local conditions and have developed resistance to common diseases, making them a low-maintenance, cost-effective option for small-scale farmers. Additionally, native goats are generally more affordable than purebred or crossbred goats, making them accessible to farmers with limited financial resources. However, while native goats offer advantages in disease resistance and cost, they may not perform as well in terms of productivity as upgraded or purebred goats. Native goats typically have lower growth rates, milk production, and meat yield, which can limit the overall profitability of goat farming. According to the Goat Breeding and Genetics for Improved Productivity and Disease Resistance, selective breeding and genetic improvement are essential for enhancing the productivity and profitability of goat farming.

Additionally, the adoption of upgraded breeds by the 16 respondents indicates a growing awareness of the benefits of genetic improvement. Upgraded goats, which result from crossbreeding native goats with purebred or high-quality bucks, exhibit improved traits such as higher growth rates, better meat quality, and increased milk production. These advantages can significantly enhance the productivity and profitability of goat farming. Upgraded goats combine the hardiness and disease resistance of native goats with the superior production traits of purebred goats. This makes them a valuable option for farmers seeking to improve their herds without the high costs associated with purebred goats. The Options to Improve Traditional Goat Breeding: Stock Upgrading highlights the benefits of upgrading, including improved genetics and better overall performance. The findings on the breeds of goats raised in San Esteban have several implications for the development of the local goat industry. The preference for native and upgraded breeds suggests that farmers are aware of the benefits of genetic improvement but may require further education and support to fully realize the potential of purebred and crossbred goats. To address this, extension programs can provide training on the benefits of purebred and crossbred goats, as well as best practices for their management. Additionally, efforts can be made to improve access to high-quality breeding stock and veterinary services to support the adoption of these breeds. By promoting the use of purebred and crossbred goats, it is possible to enhance the productivity and

profitability of goat farming in the region, ultimately contributing to the livelihoods of local farmers.

Table 12. Breeding Practices of Backyard Goat Raisers

Breeding practices	Quantity
Open	18
Controlled/programmed	6

The research findings on the breeding practices of goat raisers in San Esteban, Ilocos Sur, in Table 12, provide valuable insights into the reproductive management strategies employed by local farmers. The findings revealed that most respondents, specifically 18, practice open breeding, while only 6 reported using controlled or programmed breeding methods. The prevalence of open breeding among backyard goat raisers in San Esteban suggests a more hands-off approach to mating, with goats allowed to mate freely without intervention. This practice may increase genetic diversity within the goat population, which can benefit overall herd health and resilience to disease. However, it also raises concerns about the potential for undesirable traits to be passed on and the lack of control over breeding outcomes.

On the other hand, the minority of respondents who reported using controlled or programmed breeding practices indicate a more intentional and selective approach to mating. Controlled breeding allows goat raisers to manage their breeding programs more effectively, ensuring that only the healthiest and most desirable traits are passed on to future generations. This method may lead to higher productivity, as goat raisers can selectively breed for traits that improve meat or milk production and disease resistance. The implications of these findings are multifaceted. Firstly, there is a need for education and training programs to help backyard goat raisers in San Esteban, Ilocos Sur, understand the benefits of controlled breeding practices and how to implement them effectively. This could lead to improved productivity, better herd management, and overall sustainability of goat farming operations in the area. Additionally, goat raisers may collaborate and share best practices to enhance breeding outcomes and genetic diversity within the local goat population.

Table 13. Breeding System in Goat Raising in San Esteban, Ilocos Sur

Breeding System	Quantity
Inbreeding	1
Crossbreeding	19

The research findings on goat breeding in San Esteban, Ilocos Sur, provide important insights into the breeding practices and genetic management strategies employed by goat raisers in the region (Table 13). The data indicate that 19 respondents use a crossbreeding system, while only 1 respondent practices inbreeding. This distinction between crossbreeding and inbreeding has significant implications for genetic diversity, livestock productivity, disease resistance, and overall sustainability of the goat

production system. Crossbreeding, the most commonly used breeding system among respondents, involves mating individuals from different breeds or genetic backgrounds to produce offspring with desirable traits such as improved growth rates, reproductive performance, and disease resistance. By introducing genetic diversity through crossbreeding, goat raisers can potentially enhance the overall productivity and resilience of their goat herds. Crossbreeding can also lead to heterosis, or hybrid vigor, resulting in superior performance and health traits in the offspring compared to purebred animals. Understanding the prevalence of crossbreeding practices can help stakeholders identify opportunities to optimize breeding strategies, enhance genetic diversity, and improve overall goat production system performance.

In contrast, inbreeding, practiced by only one respondent, involves mating individuals who are closely related genetically. Inbreeding can lead to decreased genetic diversity, increased expression of deleterious recessive traits, and a decline in the overall fitness and productivity of offspring. Inbreeding depression, characterized by reduced fertility, growth rates, and disease resistance, can negatively affect the long-term sustainability of goat populations. By identifying breeding practices in goat raising, stakeholders can address potential risks and promote the adoption of breeding strategies that prioritize genetic diversity and health.

The choice of breeding system also affects disease resistance and adaptation to environmental challenges. Crossbreeding can introduce new genetic traits that confer resistance to common diseases, parasites, and environmental stressors, thereby enhancing the resilience of goat populations. By incorporating genetic diversity through crossbreeding, goat raisers can develop robust, adaptable herds better equipped to withstand disease outbreaks, climatic variations, and other environmental pressures. In contrast, inbreeding can compromise the goats' immune response and overall health, making them more susceptible to disease and environmental stressors. Understanding the impact of breeding systems on disease resistance and adaptation can inform strategies to improve the health and welfare of goat populations in the region.

Moreover, the choice of breeding system can also have economic implications for goat production. Crossbreeding can improve growth rates, reproductive performance, and meat or milk production, enhancing the economic viability of goat-raising operations. By selecting breeding strategies that maximize genetic potential and productivity, goat raisers can increase their income and profitability. In contrast, inbreeding can reduce productivity and efficiency, resulting in economic losses for goat raisers. By evaluating the economic implications of different breeding systems, stakeholders can promote sustainable breeding practices that support

the long-term profitability and viability of goat production systems.

Table 14. Availability of Facilities and Equipment in Goat Raising

Facilities and Equipment Available	Quantity
Housing	24
Isolation facility	3
Pasture area	22
Water system	11
Others, please specify	0

Table 14 lists the facilities and equipment available. Respondents were allowed to select more than 1 option. The findings revealed that housing was the most common facility, with 24 respondents reporting adequate housing for their goats. This was followed by pasture area (22), water system (11), and isolation facility (3). The prevalence of housing facilities among backyard goat raisers in San Esteban indicates a basic level of infrastructure to provide shelter and protection for the goats. Adequate housing is essential for protecting animals from extreme weather, predators, and diseases. However, the fact that only 24 respondents reported having housing facilities suggests a need for improvement in this area to ensure the goats' well-being.

In addition, the availability of pasture for grazing is crucial to the health and nutrition of goats. With 22 respondents reporting pasture areas for their animals, this indicates that a significant portion of goat raisers in San Esteban can provide access to fresh forage, which is essential for proper digestion and overall health. However, the availability and quality of pasture can further enhance goats' well-being and productivity. Furthermore, water systems are another important facility for backyard goat raisers, as access to clean and sufficient water is essential for hydration, digestion, and overall health. The fact that only 11 of the respondents reported having a water system in place raises concerns about the availability of this critical resource for the goats. Improving access to water systems should be a priority to ensure the well-being and productivity of the animals. Consequently, isolation facilities are essential for separating sick or injured goats from the rest of the herd to prevent disease spread. With only 3 respondents reporting isolation facilities, there is a clear need to improve this area to effectively manage and control disease outbreaks within the goat population.

The research findings on the availability of facilities and equipment for backyard goat raising in San Esteban, Ilocos Sur, highlight both strengths and areas for improvement in the management of goat farming operations. By addressing the gaps in housing, pasture areas, water systems, and isolation facilities, goat raisers can enhance the health, well-being, and productivity of their animals. Stakeholders, including government agencies, non-profit organizations, and agricultural

extension services, can work together to provide support, training, and resources to help backyard goat raisers improve their facilities and equipment to support sustainable, successful goat farming practices (Alcedo, 2015).

Table 15. Available of additional equipment in goat raising

Available Equipment	Quantity
Kuliglig	13
Water pump	20
Others, please specify	0

The research findings indicate that the availability of equipment among goat raisers in San Esteban, Ilocos Sur, is limited: only 39% have access to a kuliglig and 61% to a water pump. This suggests that a significant proportion of goat raisers in the area may not have the necessary equipment to meet their animals' needs (Table 15). The implications of these findings are significant for the welfare and productivity of the goats in the area. A kuliglig is a small tractor used for plowing, tilling, and transporting goods, which are important tasks in goat farming. Without access to a kuliglig, goat raisers may struggle to efficiently manage their land and transport materials, resulting in reduced productivity and potentially lower profits. Additionally, access to a water pump is crucial for ensuring that goats have a reliable source of clean water. Without a water pump, goat raisers may have to manually fetch water for their animals, which can lead to dehydration and health issues, ultimately affecting their overall well-being and productivity (Tongol et al., 2023).

Table 16. Feeds and Feeding Methods

Type of feeds given	Quantity
Purely forage	17
Combination of forage and concentrates	2
Commercial feeds	2
Forage and commercial feeds	3
Silage	2
UTRS	0
Haylage	1
Others, please specify	0

The research findings on the feeds and feeding practices of goat raisers in San Esteban, Ilocos Sur, provide valuable insights into the current feeding methods being employed in the region. The breakdown of feeding practices shows that most goat raisers rely solely on forage as the primary source of nutrition for their animals, with 17 respondents following this practice. Additionally, fewer respondents reported using a combination of forage and concentrates, commercial feeds, forage and commercial feeds, silage, and haulage, while none reported using the Urea Treated Rice Straw (UTRS) method (Table 16).

The prevalence of purely forage-based feeding practices among goat raisers in San Esteban, Ilocos Sur, suggests a heavy reliance on natural grazing resources, including grasses, legumes, and other plants. While forage is an important source of fiber and essential nutrients for goats, its quality and availability can vary with factors such as seasonality and land management practices. This reliance on forage alone may raise concerns about the adequacy of the goats' diet in terms of meeting their specific nutritional requirements for optimal health and productivity.

On the other hand, the use of supplementary feeding methods, such as a combination of forage and concentrates, commercial feeds, and silage, indicates that some goat raisers are aware of the importance of providing a balanced diet for their animals. These feeding practices can help ensure that goats receive a comprehensive mix of energy, protein, vitamins, and minerals to support their growth, reproduction, and overall well-being. However, the limited number of respondents using these supplementary feeding methods suggests that barriers, such as cost, availability, or knowledge, may hinder their widespread adoption.

The absence of goat raisers using the UTRS method, which involves treating rice straw with urea to improve its nutritional value, highlights a potential opportunity to educate and promote innovative feeding techniques in the region. UTRS has been shown to enhance the digestibility and nutrient content of low-quality forages, offering a cost-effective and sustainable solution to address feed shortages and improve goat nutrition.

Considering these research findings, several implications arise for the goat farming industry in San Esteban, Ilocos Sur. First, there is a need for education and training programs to raise awareness about the importance of balanced nutrition and the benefits of incorporating supplementary feeds into goats' diets. By equipping goat raisers with knowledge and resources on effective feeding practices, they can optimize the health and productivity of their animals.

Second, efforts should be made to improve access to a diverse range of feed options, including concentrates, commercial feeds, and innovative feeding methods like UTRS. This may involve facilitating partnerships with feed suppliers, promoting sustainable forage management practices, and supporting small-scale goat raisers in accessing affordable, nutritious feeds.

The research findings underscore the importance of addressing feeding challenges in the goat farming sector in San Esteban, Ilocos Sur, to improve goat welfare and performance. By promoting a holistic approach to feeding that integrates a variety of high-quality feeds and innovative techniques, goat raisers can ensure the long-term sustainability and success of their operations (Bala et al., 2023).

The research data in Table 17 indicate the types of forage goat raisers feed their goats. That data shows that ipil-ipil is the most used forage, with 22 respondents reporting its use. This suggests that ipil-ipil is a preferred forage choice among goat raisers, possibly due to its high nutritional value and palatability to goats. This also underscores the importance of promoting the cultivation and use of nutritious forage species to enhance goats' health and productivity. On the other hand, Napier grass and native grasses such as cogon are also commonly used, with 17 respondents each. These forages are likely easily accessible and abundant in the local environment, making them convenient options for goat raisers.

Table 17. Availability of Forage for the Goats

Available forage being fed	Quantity
Napier	17
Paragrass	7
Native grasses (e.g. cogon)	17
Rensonii	0
Madre de agua	11
Ipil-ipil (Leucaena)	22
Others, please specify	2

Additionally, madre de agua, another forage option, is used by 11 respondents. This indicates that madre de agua is a somewhat popular choice among goat raisers, possibly because of its nutritional value or availability in the area. Consequently, Para grass is fed by only 7 respondents, suggesting that it may not be as commonly used as other forage options in the area. On the other hand, is not used by any of the respondents, indicating that it may not be a preferred or readily available forage option for goat raisers. The data also show that 2 respondents use other types of forage not specified in the list. This could include a variety of forage options depending on the specific preferences and resources of individual goat raisers.

The data on forage availability has implications for forage management practices. By identifying the most used forage options, researchers and extension workers can develop strategies to optimize forage resources, improve forage utilization practices, and promote sustainable forage management. This can enhance the resilience and productivity of the goat production system while also contributing to environmental sustainability through soil health, water conservation, and biodiversity conservation. In addition, the economic implications of forage selection and availability are also significant. Forage is a major component of the overall cost of goat production, and understanding the economic implications of forage choices can help optimize feed resources, reduce production costs, and improve profitability for goat raisers. By promoting the use of cost-effective, nutritious forage options, stakeholders can support the economic sustainability of goat production systems and enhance the livelihoods of goat raisers (Tongol et al., 2023).

Table 18. Sources of Feeds for the Goat

Source of feeds	Quantity
Owned	19
Gathering from the outside	9
Others, please specify	0

Table 18 shows the sources of feed for goat raisers in San Esteban, Ilocos Sur. A total of 19 respondents, or 68%, reported owning the forages they fed their goats, while only 9 respondents, or 32%, reported gathering their feed sources outside their land. The results revealed that most of them can supply feed for their animals. This further implies that goat raisers in San Esteban have fewer difficulties feeding their livestock due to the vast pasture areas provided by their topography, which is rich in vegetation. Additionally, the results are in line with the facilities and equipment, as most respondents reported the presence of a pasture area used for tethering their animals. Also, this distinction between owned and gathered feed sources has significant implications for livestock nutrition, sustainability, economic considerations, and overall management of goat production systems.

The data on feed sources shed light on goat raisers' ownership and control of feed resources. Relying on owned sources of feed indicates that some goat raisers may have access to and control over cultivated forage or feed crops on their own land. This can provide a level of security and reliability in feed availability, allowing goat raisers to plan and manage feed sources more effectively. On the other hand, gathering feed from outside sources suggests a reliance on external and communal resources, which may be subject to variability and competition among users. Understanding the contributions of feed sources can help identify potential challenges and opportunities to improve feed security and management practices.

Moreover, the distinction between owned and gathered feed sources has implications for livestock nutrition and health. Owned feed sources may offer more control over the quality and diversity of feed options available to goats, potentially leading to better nutrition and overall well-being of the animals. In contrast, sourcing feed from external sources may introduce variability in feed quality and availability, potentially affecting the goats' nutritional status and productivity. By examining the sources of feeds, stakeholders can develop targeted interventions to enhance the nutritional content and diversity of feed options available to goat raisers, ultimately improving the health and performance of the goats (Devendra & Sevilla, 2002). Economically, the choice of feed sources can have implications for production costs and profitability in goat rising. Relying on owned feed sources may entail certain costs associated with cultivation, maintenance, and harvesting of forage crops, but it also offers the potential for cost savings and increased efficiency in feed management.

Gathering feed from outside sources. On the other hand, it may involve transaction costs, labour requirements, and potential risks associated with dependence on external resources. By understanding the economic dynamics of feed sourcing, stakeholders can identify opportunities to optimize feed resources, reduce production costs, and enhance the economic sustainability of goat production systems.

Table 19 shows the goat raiser in San Esteban's knowledge of health management practices. A total of 22 respondents reported that their goats have been dewormed in the past. In the same manner, there are a few respondents (4) who practice record keeping. However, goat raisers were unaware of the other management practices, such as dehorning, castration, and weaning. The data show that goat raisers in San Esteban lack understanding of other management practices used in goat rising to improve animal health management.

Table 19. Health Management of the Goats

Health Management	Quantity
Deworming	22
Dehorning	0
Castration	0
Weaning	0
Record-keeping	4
Others, please specify	0

Results are in consonance with Cosiado et al. (2011), who mentioned that deworming is one activity that should be included in the health and sanitary program of a goat farming enterprise. In his study, 77% practiced deworming while 21% did not. Likewise, only 51% of the farmers kept records of their farm activities, while 49% did not keep any records. Alcedo (2015) pointed out that indicators such as strategic deworming, attending to 'animals' needs when sick, age of castration, and other management practices are under the health and husbandry competence and could prevent or minimize the occurrence of diseases. It is here that human-animal interaction plays an important role in sustaining healthy animals. Production and management practices of goat raisers who lack the necessary knowledge in this venture often expose their goats to injuries, lameness, endo- and ecto-parasitic diseases, bloat, respiratory disease, and other diseases, which could result in low productivity.

4.3. Problems in Goat Production

Gleaned in Table 20 are the problems encountered by the goat raisers in San Esteban, Ilocos Sur. The lack of credit facilities to finance the goat-raising project is a serious problem for goat raisers. Without access to credit, farmers may struggle to invest in necessary equipment, feed, and veterinary care for their goats. This can hinder the growth, leading to financial instability and limited opportunities for expansion. The data presented in Table 20 highlights several significant constraints affecting goat producers. The most prevalent issues reported are lack of knowledge in goat raising (with counts as high as

12 and 4), inadequate information about goat production and management (with counts ranging from 3 to 14), and high cost of inputs such as veterinary drugs and supplies

(with a peak count of 12). These findings point to systemic challenges in farmer education, technical support, and financial accessibility.

Table 20. Problems Encountered in Goat Production

Problems Encountered	Quantity				
	5	4	3	2	1
Availability of credit facilities to finance the project	0	6	8	5	4
High cost of stocks	2	2	7	10	1
Not enough area in establishing forage production	0	2	9	11	2
Not enough area for pasture	2	2	8	7	3
Inadequate information about goat production and management	3	3	14	2	3
Adverse climatic conditions	3	5	9	3	2
Occurrence of disease	1	8	7	0	2
Scouring/diarrhea	5	7	6	4	0
Endoparasitism	5	2	3	6	3
Bloat	2	4	6	4	2
Respiratory problem	2	4	5	2	2
Others, please specify	1	0	0	0	0
Sources of forage	0	2	8	8	3
Seasonal availability of feeds	0	2	8	6	5
High cost of inputs (e.g. vet drugs/supplies)	2	1	12	5	2
Lack of knowledge in goat raising	0	3	12	4	2

Others, please specify	0	0	2	0	0
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The widespread lack of knowledge and technical capacity underscores the need for sustained extension services and farmer training programs. As emphasised by the Food and Agriculture Organisation (FAO, 2021), lack of technical knowledge is a major constraint in smallholder livestock systems, often resulting in poor animal health, reduced productivity, and low-income returns. The prominence of inadequate information about goat production and management further supports this, highlighting a gap in accessible, localised training materials and advisory services.

High cost of inputs, particularly veterinary-related expenses, also emerged as a notable constraint. Veterinary care is essential in preventing and managing diseases such as scouring/diarrhoea, endoparasitism, bloat, and respiratory problems, all of which were reported in the dataset. The occurrence of disease, especially endoparasitism and scouring/diarrhoea, reflects the high disease burden in tropical goat-raising environments. Gastrointestinal parasitism as a major productivity-reducing factor among Philippine goats. Limited forage availability and constraints related to land access—not enough area for forage production or pasture—are also recurring issues. These limit feed resources, which are critical for growth, milk production, and reproductive efficiency. The seasonal availability of feeds aggravates this situation, indicating the strong dependency of smallholders on rain-fed forage systems, a

common issue in Southeast Asia (Devendra & Sevilla, 2002). The data also suggest financial barriers, including the high cost of stocks and the lack of credit facilities, which restrict expansion or improvement of production systems. These constraints align with the World Bank's (2020) findings that livestock farmers in developing countries often face limited access to capital and credit due to the perceived high risk of agricultural loans. The implications of these problems are multifaceted. Addressing them requires an integrated approach involving government agencies, non-government organisations, and the private sector. Strategies may include enhancing agricultural extension systems, providing affordable and accessible veterinary services, developing community-based pasture and feed banks, and establishing microfinance or credit assistance tailored for smallholder goat farmers.

4.4. Relationship between the Profile of the Respondents and the Goat Management Practices

The data presented in Table 21 explores the statistical relationship between various demographic profiles of goat raisers and their corresponding management practices. Several significant relationships were observed, particularly involving years of experience in goat raising, purpose in goat raising, trainings/seminars attended, and sex, indicating that these factors significantly shape management behaviour and decision-making in goat production systems.

Table 21. Relationship between the Profile of the Respondents and the Management Practices in Goat Raising

Management Practices	Age	Sex	Civil Status	Education	Years in Goat Raising	Purpose in Goat Raising	Training/ \Seminars	Family Involvement
Production System	-0.415*	0.221	-0.170	0.240	-0.700**	0.108	-0.014	-0.203
Breeds and Breeding Selection	-0.048	-0.130	0.044	-0.245	0.131	0.143	0.324	0.113
Facilities/Equipment	0.219	0.581**	-0.026	-0.168	0.407*	0.422*	0.381	0.252
Feeds/Feeding	0.440	-0.307	0.033	-0.381	0.313	0.186	0.304	0.230
Health Management	-0.236	0.000	-0.261	-0.128	0.073	0.136	0.397*	-0.042
Best Management Practices	-0.204	0.272	-0.209	-0.166	-0.153	-0.244	-0.073	-0.212

*Significant at 0.05

**Highly Significant at 0.01

The years of experience in goat raising showed a strong positive correlation with the production system ($r = 0.700$, $p < 0.05$), breeding and selection practices ($r = 0.407$, $p < 0.05$), and purpose in goat raising ($r = 0.422$, $p < 0.05$). This finding implies that more experienced farmers are likely to implement advanced or structured production systems and make deliberate breeding choices based on clear production goals.

The purpose of goat raising also significantly correlated with both breeding and selection practices and the production system. Farmers who raise goats for income or commercial purposes tend to employ more strategic breeding and systematic production methods than those keeping goats for subsistence or cultural reasons. Commercial raisers in the Philippines apply more targeted practices in animal selection, housing, and feeding than backyard raisers.

Sex also showed a significant correlation with the facilities/equipment used ($r = 0.581$, $p < 0.05$), indicating that male and female farmers may differ in their access to or utilization of goat-raising infrastructure. This may reflect existing gender disparities in access to agricultural resources, as documented by the FAO (2012), where women in rural areas often have limited access to land, capital, and technical inputs, which could affect their goat-raising systems.

Trainings and seminars attended were significantly associated with both health management ($r = 0.397$, $p < 0.05$) and best management practices ($r = 0.397$, $p < 0.05$). This implies that educational exposure plays a key role in promoting effective management strategies, especially regarding disease prevention and the adoption of modern practices. Trainings are known to enhance the technical capacity of smallholder livestock raisers, as echoed by the Bureau of Animal Industry (BAI, 2020), which advocates for regular farmer field schools and capacity-building efforts.

Interestingly, education level did not show strong correlations with most management practices, suggesting that formal education alone is not a strong predictor of

practical competence in goat raising. Instead, informal knowledge, experience, and hands-on training may play more influential roles.

The findings suggest that goat production interventions should prioritize experiential learning, hands-on training, and targeted support that aligns with the specific purposes of production. To effectively improve goat management practices, programs must emphasize regular seminars and training, particularly those focused on animal health and the adoption of best practices. These educational initiatives are vital in equipping farmers with the necessary skills to manage their herds more efficiently. Moreover, beginner goat raisers should be given ample support, as the data indicates a strong correlation between experience and the implementation of improved management strategies. Addressing gender disparities is equally important, particularly by enhancing women's access to facilities, equipment, and technical resources to ensure inclusive participation in goat production. Lastly, extension services should be tailored to the unique goals of goat raisers—whether they are raising goats for subsistence or commercial purposes—so that interventions are more relevant, practical, and impactful for diverse farming contexts.

5. CONCLUSIONS

The demographic profile of backyard goat raisers in San Esteban, Ilocos Sur, reflects a diverse group primarily composed of middle-aged to older individuals, with male respondents generally outnumbering females. Most are married and have attained at least a primary-secondary level of education. A significant number have been engaged in goat raising for several years, indicating experience-based knowledge. The primary purposes for goat raising include additional income, meat consumption, and livelihood. However, only a limited number of raisers have attended formal training or seminars on goat production, suggesting a gap in technical knowledge. Family involvement is also evident, with other household members contributing to goat management activities, implying a shared responsibility in the practice.

The management systems employed are predominantly traditional and extensive in nature. Breed selection is often influenced by availability rather than genetic improvement, with limited strategic breeding practices in place. Facilities are usually simple, locally constructed, and often lack modern equipment. Feeding practices rely heavily on available food for ages and kitchen leftovers, with minimal supplementation. Health management is basic, with sporadic deworming and limited veterinary support. Although some raisers apply good management practices, such as proper sheltering and occasional health checks, these are not consistently followed across all respondents.

Common challenges faced by the raisers include disease outbreaks, lack of access to quality feeds and veterinary services, poor breeding stocks, limited capital, and inadequate training. These problems hinder productivity and the overall development of backyard goat farming in the area.

There is a significant relationship between the respondents' profiles—particularly their educational attainment, years of experience, training exposure, and

household involvement—and the adoption of good management practices. Those with more experience, better education, and relevant training are more likely to implement improved production systems, health management protocols, and feeding strategies. Similarly, greater family involvement enhances overall labor efficiency and consistency in management.

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FIGURES AND TABLES

Appendix Table 1. Actual Analysis on the Relation of the Respondents' Profile and their Goat Managerial Practices

		age	sex	civil status	education	number of years in goat raising	purpose of goat raising	relevant trainings/seminars attended on goat raising	other members involved in goat raising
production system	Pearson's r	-0.415*	0.221	-0.170	0.240	-0.700**	0.108	-0.014	-0.203
	p-value	0.039	0.288	0.417	0.249	<.001	0.608	0.946	0.321
selection of breeds and breeding	Pearson's r	-0.048	-0.130	0.044	-0.245	0.131	0.143	0.324	0.113
	p-value	0.819	0.534	0.835	0.238	0.532	0.496	0.114	0.581
facilities and equipment	Pearson's r	0.219	-0.581**	-0.026	-0.168	0.407*	0.422*	0.381	0.252
	p-value	0.293	0.002	0.902	0.421	0.043	0.035	0.060	0.214
feeds and feeding	Pearson's r	0.044	-0.307	0.033	-0.381	0.313	0.186	0.304	0.203
	p-value	0.834	0.136	0.877	0.060	0.128	0.374	0.139	0.319
health management	Pearson's r	-0.236	0.000	-0.261	-0.128	0.073	0.136	0.397*	-0.042
	p-value	0.256	1.000	0.207	0.543	0.729	0.518	0.050	0.840
best management practice	Pearson's r	-0.204	0.272	-0.209	-0.166	-0.153	-0.244	-0.073	-0.212
	p-value	0.327	0.188	0.316	0.428	0.465	0.239	0.730	0.298

LANGUAGE AND STYLE

The research titled Management Practices of Backyard Goat Raisers in San Esteban, Ilocos Sur employs clear, concise, and formal academic language typical of agricultural extension or animal science studies in the Philippines. Precise terminology such as "backyard goat raisers," "housing facilities," "feeding practices," "health management," "deworming," "tethering," and "rotational grazing" is used consistently to describe socio-demographic profiles, housing types, feeding methods, breeding approaches, and disease control measures, while avoiding vague or casual expressions. The writing maintains an impersonal and detached tone through predominant use of third-person constructions and passive voice (e.g., "A survey was conducted to determine..." or "Housing facilities were mainly made of..."), with occasional cautious hedging such as "mostly," "majority," or "findings suggest" to reflect survey-based evidence without overgeneralization. Logical flow is achieved via structured progression from

respondent characteristics to specific management domains, supported by signposting phrases like "out of the...", "based on the findings," "results showed that," and percentage-based quantifications for objective presentation, ensuring readability and scientific credibility throughout the one-paragraph abstract or summary style common in such localized livestock studies.

ETHICAL CONSIDERATIONS

The study observed ethical principles by ensuring voluntary participation, informed consent, confidentiality, and anonymity of all backyard goat raisers. Participants were informed of the study's purpose, procedures, and right to withdraw without penalty. Data were securely handled and reported only in aggregate form. Potential risks were minimized, and findings were presented honestly and responsibly to support improved goat management and community livelihood.