

Social and institutional determinants of small ruminant herd production in the Littoral Region of Cameroon: a descriptive sociological analysis

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Abstract: Small ruminant production constitutes an important livelihood activity for rural households in sub-Saharan Africa, particularly in contexts characterized by economic vulnerability and limited access to formal employment. In Cameroon, sheep and goat production contributes to household income generation, food security, cultural practices, and social resilience. However, the sector continues to face multiple sociological and structural constraints that affect productivity and sustainability. This study examined the sociological determinants of small ruminant herd production in the Littoral Region of Cameroon using a descriptive cross-sectional survey conducted in 2024 among 151 farmers. Data were collected using structured questionnaires and analyzed using descriptive statistics in SPSS version 26. The findings revealed that small ruminant production was predominantly male dominated, with men representing 90.1% (136/151) of producers. Most respondents had attained secondary education, while 56.9% (62/109) had less than five years of farming experience. Goat production was largely characterized by small herd ownership, whereas sheep production exhibited relatively balanced herd-size distribution. Only 13.9% (21/151) of farmers belonged to producer associations, reflecting weak institutional organization within the sector. Commercialization was highly seasonal, with 66.9% (87/130) of farmers reporting increased sales during the Tabaski period. Feeding constraints (41.1%; 62/151), health problems (35.8%; 54/151), and theft (26.5%; 40/151) emerged as the principal production challenges. The study concludes that small ruminant production in the Littoral Region remains largely smallholder-based, weakly institutionalized, and constrained by structural vulnerabilities. Strengthening producer organizations, improving veterinary extension systems, and enhancing feed accessibility are essential for sustainable livestock development in the region.

Keywords: Small ruminants; sociological determinants; herd production; rural livelihoods; livestock systems; Cameroon; goat production; sheep production; commercialization; production constraints.

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1. Introduction

Livestock production plays an essential role in the socioeconomic organization of rural households in sub-Saharan Africa. Beyond their nutritional contributions, livestock species constitute strategic livelihood assets that support income diversification, social security, savings accumulation, and cultural obligations (Randolph et al., 2007). Among livestock species, small ruminants occupy a particularly important place because of their adaptability to diverse

agroecological conditions, low capital requirements, and rapid reproductive capacity (Kosgey et al., 2008).

In many African rural communities, sheep and goats represent an accessible form of household capital that can easily be mobilized during periods of economic stress, food insecurity, or social ceremonies (Lebbie, 2004). Small ruminant production also contributes significantly to women's and youth livelihoods, although access to livestock resources often remains socially

differentiated according to gender, age, and ownership structures (FAO, 2019).

In Cameroon, the livestock sector contributes significantly to rural livelihoods and national food security. Small ruminant production, particularly sheep and goat farming, constitutes an important economic activity among rural households because of its relatively low investment requirements and rapid reproductive potential. Previous studies conducted in different regions of Cameroon have shown that small ruminants are frequently integrated into diversified livelihood systems where they serve as sources of income, savings, sociocultural prestige, and emergency household expenditure management (Tchouamo et al., 2005; Tendongkeng et al., 2013; Fouepe et al., 2020).

Despite its socioeconomic importance, the small ruminant sector in Cameroon continues to experience several structural and institutional challenges. Previous studies conducted in Cameroon have identified feeding constraints, inadequate veterinary coverage, mortality, theft, and poor housing conditions as major limitations affecting small ruminant productivity (Tchouamo et al., 2005; Fouepe et al., 2020). These challenges often reduce productivity and reinforce the vulnerability of rural livestock-dependent households.

Furthermore, the organization of livestock production systems is strongly influenced by sociological factors such as educational level, farming experience, institutional participation, access to markets, and livelihood strategies (Aklilu et al., 2013). Understanding these determinants is essential for designing context-specific livestock policies capable of improving rural livelihoods and strengthening production sustainability.

Although several studies have investigated animal health and technical production aspects of small ruminant farming in Cameroon, limited attention has been paid to the sociological dimensions shaping herd production systems in the Littoral Region. Yet, sociological analysis remains indispensable for understanding how rural actors organize production activities, respond to structural constraints, and integrate livestock into broader livelihood systems.

This study therefore aimed to examine the social and institutional determinants of small ruminant herd production in the Littoral Region of Cameroon. Specifically, the study sought to:

1. characterize the sociodemographic and production profiles of small ruminant farmers;
2. examine institutional and commercialization dynamics influencing herd production; and
3. identify the principal production constraints affecting small ruminant farming systems in the study area.

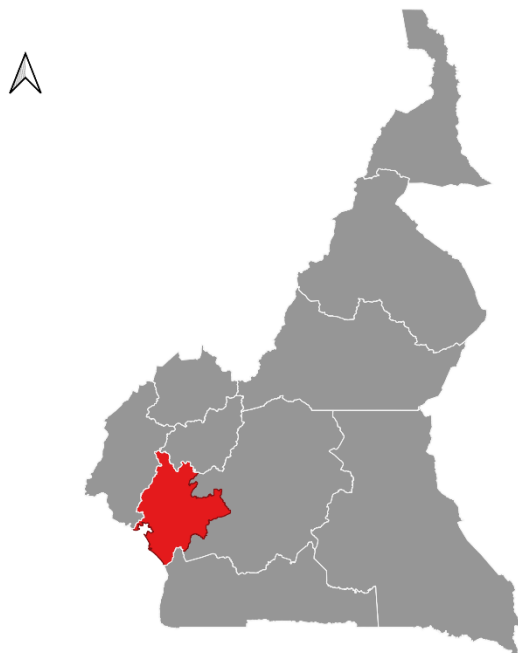
2. Materials and Methods

2.1. Study Area

The study was conducted in the Littoral Region of Cameroon in 2024. The region constitutes one of the country's major agroecological zones and is characterized by intense agricultural and commercial activities. Livestock production, particularly small ruminant farming, represents an important livelihood activity for rural households in several localities of the region.

The geographical location of the study area is presented in Figure 1.

Figure 1. Map of the study area showing the Littoral Region of Cameroon



Source: Bemo's construction using GADM shapefiles and field survey data (2024).

0 100 200 km

2.2. Study Design and Sampling

A descriptive cross-sectional survey design was adopted for the study. This design is widely used in livestock socioeconomic and sociological studies because it allows the collection of information on production systems, institutional characteristics, and livelihood dynamics within a defined population. A total of 151 small ruminant farmers participated in the survey. Respondents were selected from farming communities engaged in sheep and goat production.

2.3. Data Collection

Primary data were collected using a structured questionnaire administered directly to farmers. The questionnaire captured information related to: sociodemographic characteristics, farming experience, herd ownership, institutional participation, commercialization practices, and production constraints. The questionnaire also explored the socioeconomic importance of small ruminant production within household livelihood systems.

2.4. Data Analysis

Collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including frequencies, percentages, and proportions, were used to summarize the data. Results were

presented in tables and interpreted using sociological and rural livelihood perspectives.

3. Results

3.1. Sociodemographic and production profile of farmers

The sociodemographic characteristics of respondents are presented in Table 1. Small ruminant production in the study area was predominantly male-dominated, with men representing 90.1% (136/151) of respondents, while women accounted for only 9.9% (15/151). Regarding educational level, 32.5% (49/151) of respondents had attained first-cycle secondary education, followed by 21.9% (33/151) with second-cycle secondary education and 21.2% (32/151) with primary education. Farmers without formal education represented 9.3% (14/151) of respondents. Concerning farming experience, more than half of respondents (56.9%; 62/109) had between one and five years of experience in small ruminant production, whereas only 14.7% (16/109) had more than twenty years of experience. Goat production was predominantly characterized by small herd ownership, with 66.7% (76/114) of farmers owning small goat herds. In contrast, sheep production exhibited relatively balanced herd-size distribution across small, medium, and large herd categories.

Table 1. Sociodemographic and production characteristics of respondents.

Variable	Category	Number (n/N)	Percentage (%)
Sex	Male	136/151	90.1
	Female	15/151	9.9
Education level	No formal education	14/151	9.3
	primary	32/151	21.2
	Secondary first cycle	49/151	32.5
	Secondary second cycle	33/151	21.9
	University	12/151	7.9
	Koranic school	11/151	7.3
Farming experience	1-5 years	62/109	56.9
	6-10 years	21/109	19.3
	11-20 years	10/109	9.2
	>20 years	16/109	14.7
Sheep herd ownership	Small herd	30/90	33.3
	Medium herd	31/90	34.4
	Large herd	29/90	32.2
Goat herd ownership	Small herd	76/114	66.7
	Medium herd	24/114	21.9
	Large herd	13/114	11.4

3.2. institutional and commercial determinants of production

Table 2 presents institutional and commercialization characteristics of respondents. Only 13.9% (21/151) of farmers belonged to producer associations, while 86.1% (130/151) reported no membership in livestock organizations. Commercialization patterns

were highly seasonal. Most respondents (66.9%; 87/130) sold animals primarily during the Tabaski period, whereas only 5.4% (7/130) reported increased sales during traditional ceremonies. Most farmers sold animals within community markets, representing 76.1% (70/92) of respondents involved in local market sales.

Table 2. Institutional and commercialization determinants of production.

Variable	Category	Number (n/N)	Percentage (%)
Cooperative membership	Yes	21/2151	13.9
	No	130/151	86.1
Main selling period	Tabaski	87/130	66.9
	Traditional ceremonies	7/130	5.4
	Other periods	36/130	27.7
Market destination	Community markets	70/92	76.1
	Other communities	4/68	5.9
	Other destinations	38/84	45.2

3.3. Mortality and production constraints

Regarding mortality patterns, 25.2% (38/151) of respondents reported experiencing high mortality before PPR vaccination campaigns, whereas 74.8% (113/151) did not report significant

mortality levels. The principal production constraints identified by farmers included feeding problems (41.1%; 62/151), health-related problems (35.8%; 54/151), animal theft (26.5%; 40/151), and habitat-related challenges (19.9%; 30/151).

Table 3. Mortality patterns and production constraints.

Constraint	Number (n/N)	Percentage (%)
Feeding problems	62/151	41.1
Health problems	54/151	35.8
Animal theft	40/151	26.5
Habit constraints	30/151	19.9
Commercialization problems	20/151	13.2
Mortality	11/151	7.3
Conflicts	11/151	7.3
Other constraints	4/151	2.6

4. Discussion

The predominance of male respondents in small ruminant production reflects the persistence of gendered livestock ownership systems in many African rural communities. Similar observations have been reported in other livestock production studies in sub-Saharan Africa where men generally control productive livestock resources and commercialization processes (FAO, 2019; Aklilu et al., 2013). Limited female participation may also reflect inequalities in access to land, capital, and institutional resources.

The relatively high proportion of farmers with secondary education suggests that literacy may facilitate livestock management and commercialization activities. Education has been shown to improve farmers' ability to adopt improved husbandry practices and market strategies (Kosgey et al., 2008).

The predominance of farmers with less than five years of experience may indicate increasing entry into small ruminant production as a livelihood diversification strategy. In contexts characterized by rural unemployment and economic instability, livestock production often serves as a coping mechanism for vulnerable households (Randolph et al., 2007).

The low level of cooperative membership observed in this study highlights weak institutional integration among producers. Farmer organizations are important mechanisms for improving market access, veterinary service delivery, and information exchange (FAO, 2019). Weak producer organization may therefore contribute to the persistence of structural production constraints in the study area. Weak institutional organization among livestock producers has also been reported in other Cameroonian studies where limited producer coordination reduced access to veterinary support, market information, and livestock extension services (Tendonkeng et al., 2013). In many rural livestock systems, insufficient institutional support contributes to persistent production vulnerabilities and low productivity among smallholder farmers (Fouepe et al., 2020).

Commercialization patterns strongly centered around the Tabaski period indicate the influence of religious and cultural demand on livestock markets. Tchouamo et al., (2005) also highlighted the important social and economic functions of small ruminants in Cameroon, noting that animals are frequently mobilized for ceremonies, sacrifices, savings, and emergency household expenditures. These observations reinforce the argument that small

ruminant production extends beyond commercial objectives and constitutes an important sociocultural livelihood asset in rural communities. Similar seasonal market dynamics have been documented in West and Central African small ruminant systems, where religious festivities significantly increase livestock demand and prices (Lebbie, 2004).

Production constraints identified in this study, particularly feeding problems and animal health challenges, remain common limitations in African smallholder livestock as Tchouamo et al., (2005) in western Cameroon, where feeding deficiencies, insufficient veterinary follow-up, theft, and mortality constituted major obstacles to small ruminant productivity. The authors notably observed that poor feeding practices and inadequate supplementation contributed to reduced reproductive performance and increased pre-weaning mortality among goats and sheep in traditional production systems.

Feed scarcity may result from limited pasture availability, seasonal fluctuations, and inadequate feed supplementation practices. Likewise, animal theft and habitat limitations reflect broader rural insecurity and infrastructural deficiencies affecting livestock sustainability.

The dominance of small goat herds further suggests that goat production remains largely subsistence-oriented and integrated into low-input livelihood systems. Goats are generally preferred by vulnerable households because they require lower investment and adapt more easily to resource-constrained environments (Lebbie, 2004).

5. Conclusions

Small ruminant production in the Littoral Region of Cameroon constitutes an important livelihood activity characterized by strong socioeconomic and cultural significance. The sector remains predominantly male-dominated, weakly institutionalized, and largely organized around smallholder production systems. The findings demonstrate that commercialization patterns are strongly influenced by seasonal religious demand, while feeding difficulties, health problems, and animal theft represent the principal production constraints affecting farmers. Despite the socioeconomic importance of the sector, weak cooperative participation and structural production challenges continue to limit productivity and sustainability. Strengthening institutional support systems and improving production conditions remain essential for enhancing small ruminant production and rural livelihoods in the region.

6. Policy Recommendations

1. Strengthen farmer cooperatives and producer organizations to improve institutional integration and market access;

2. Improve veterinary extension services and livestock health monitoring systems;
3. promote sustainable feed production and supplementary feeding strategies;
4. Develop rural security mechanisms to reduce animal theft;
5. Strengthen livestock commercialization infrastructure and market organization; and
6. Encourage inclusive livestock policies that improve women's participation in small ruminant production systems.

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