**Adapting to the High Mountains: A Socio-Economic Study of Sheep Farming Communities in the High-Altitude Cold Arid Region of Sankoo, Kargil District, Ladakh, India**

**Abstract**

Sheep can climb mountains easily and can bear the cold temperature of the place, and also contribute in multiple ways to help the rearer. A survey was conducted across seven villages in the Sankoo region of Kargil district—Achamaboor, Chooskore, Kargee, Kochick, Namsuru, Prentee, and Taisuru—to assess the socio-economic characteristics of sheep rearers. This particular area is characterised by a cold, arid, and high-altitude climate. A total of 140 individuals were interviewed using a pre-designed questionnaire. The findings indicated that the vast majority (75.71%) of respondents lived in nuclear families, with most (75.71%) households being small, consisting of fewer than six members. While roughly a quarter (23.57%) of respondents identified agriculture as their primary livelihood, a notable proportion (31.42%) engaged in sheep farming as a secondary occupation. Landholdings among the respondents were typically marginal, averaging about 4.81 ± 0.16 kanals (0.60 acres). Over seventy per cent (74.28%) of those surveyed reported a monthly income between Rs. 11,000 and Rs. 20,000, with the average income being approximately Rs. 20,552.47 ± 1,236.08. Nearly half (44.28%) of the sheep rearers fell within the 21-40 age bracket, and 35.00% had completed middle school. Approximately a quarter (25.00%) of the respondents possessed 5-10 years of experience in sheep rearing. Significantly, women played a substantial role, with 91.00% actively participating in various sheep farming activities. The average flock size per household was relatively modest at 11.23 ± 0.10 sheep. Beyond sheep, other livestock were also commonly kept; 52.17% of households had goats, typically ranging from 1-5 animals (averaging 2.71 ± 0.19), and 70.00% owned 0-2 cattle (averaging 2.30 ± 0.43). In light of these findings, it is recommended that government policies be revised to emphasise commercial livestock farming, thereby enhancing employment opportunities, nutritional well-being, and overall livelihood security for the residents of the Sankoo region.

**Keywords:** Socio-economic, agriculture, sheep, sheep rearers, Sankoo region

**Introduction**

Animal Husbandry plays a very crucial role in the rural economy. Particularly, in the Sheep population, India ranks third in the world, and it has increased by 14.1% over the 19th census, and it is the highest increase among all other livestock (Anonymous, 2019). Sheep is one such animal which can adapt itself to any conditions, and it is very suitable to rear in the mountainous regions too. Sheep can climb mountains easily and can bear the cold temperature of the place, and also contribute in multiple ways to help the rearer (Rawat & Kumar, 2021; Vaintrub et al., 2021). The Sankoo sub-division, a vital part of India's Kargil district in Ladakh, serves as the focus of this foundational overview. Nestled in the fertile Suru Valley, Sankoo is often called "Ladakh's Gulmarg" due to its lush scenery and important location. This paper integrates existing knowledge to highlight Sankoo's unique geographical characteristics, its historical significance as a trade hub, its distinct **socio-**cultural identity shaped by Shia Muslim traditions and the Purgi language, its evolving administrative structure, its expanding socio-economic activities, and the ongoing environmental challenges and conservation efforts (Bharat, 2025).

Sankoo's verdant landscapes, featuring abundant green barley fields and striking beauty, truly set it apart from Ladakh's typically arid terrain, earning it the nickname "Ladakh's Own Gulmarg." This designation underscores a unique local identity within the broader Kargil and Ladakh context; while politically connected to Kargil's strategic importance, Sankoo also boasts a distinct positive identity rooted in its natural surroundings (Shefali Joshi, 2024).

The region's hilly terrain severely restricts the availability of arable land for farming. Key geographical features include the Kartsey Khar valley, home to the historic Chamba monastery, recognised as one of Asia's largest Buddhist monasteries. Additionally, the Drang-Drung Glacier, Ladakh's second-largest glacier, significantly contributes to the Suru River's flow within the Suru Valley. Consistent descriptions of Sankoo's geography, noting "little or no vegetation," "meagre" agricultural land, and a "cold desert" climate, point to an inherent scarcity of natural resources, particularly arable land and water (<https://en.wikipedia.org/wiki/Sankoo>). This harsh environment has necessitated specific adaptive strategies for human settlement and economic activities, such as concentrating communities along river valleys and cultivating only one crop during the brief summer. This emphasises the fundamental relationship between environmental constraints and human adaptation (Goi MSME 2012).

Located in the Himalayas' rain shadow zone, the region experiences dry monsoons and negligible rainfall. This unique climate creates a blend of arctic and desert-like conditions, with winters bringing heavy snowfall and significantly plummeting temperatures. Significant historical sites in and around Sankoo include the Kartsey Khar Rock Statue, a 7-meter, 7th-century rock-cut Maitreya Buddha statue, which exemplifies ancient Buddhist art and signifies the region's historical ties to Buddhist traditions. The Chamba Monastery in the Kartsey Khar valley also indicates a deep and lasting historical Buddhist presence (Shefali Joshi, 2024). Furthermore, the Shrine of Sayed Mir Hashim, located in Karpo-Kharon near Sankoo, is an important pilgrimage site commemorating the historical arrival and widespread adoption of Islam in the region.

Perched in the formidable heights of Ladakh's Kargil district, Sankoo is a unique and challenging agro-climatic zone within India. This valley town, averaging 3300 meters above mean sea level, presents a severe environment with extremely low winter temperatures, often falling below -23°C. Despite these demanding conditions, the region sustains a population of 21,988 individuals (Census, 2011) and boasts a remarkable literacy rate of 74.49%. The community is predominantly Muslim, comprising a majority of Sunni Shina people (65-75%) and a substantial Shia Purgi/Balti population (25-35%), a demographic influenced historically by Kashmiri merchants (Rambirpur, 2012).

In this freezing desert landscape, where vast uncultivated areas limit agricultural practices, the local population heavily depends on animal resources for both sustenance and economic stability. Blessed with rich natural animal wealth, Sankoo's native livestock breeds have evolved distinct genetic traits, allowing them to thrive in this cold, dry, high-altitude, and barren environment (Aabedi et al., 2009). These adaptations include disease resistance and tolerance to extreme temperatures and limited feed, underscoring the vital role of livestock in generating income and reducing poverty for the region's inhabitants. While Sankoo's economic resources encompass agriculture, ecosystems, and a burgeoning tourism industry, livestock rearing, especially of sheep, remains fundamental to local livelihoods. It contributes through cattle sales, meat and milk production, employment opportunities, transportation, and the preservation of traditional knowledge.

Despite animal husbandry's significant socio-economic contribution in this unique setting, its remoteness, harsh climate, high altitude with low oxygen, and overall challenging conditions have led to a relative lack of comprehensive research in the region. To address this gap, this paper, for the first time, offers a detailed socio-economic profile of sheep rearers in the Sankoo subdivision of Kargil district. The findings from this investigation aim to provide valuable insights for policy planners and stakeholders, serving as a crucial guide for the future development and sustainable progress of this essential sector within the region.

**Materials and Methods**

A field survey was conducted between mid-June and mid-November 2022 to investigate the socio-economic status of sheep rearers in the Sankoo region of Kargil district. This study focused on seven villages: Achamaboor, Chooskore, Kargee, Kochick, Namsuru, Prentee, and Taisuru. These villages are situated within Sankoo, a sub-division of the Kargil district in Ladakh, known for its cold, arid, high-altitude climate. For the survey, 140 respondents were personally interviewed using a pre-structured questionnaire. A proportionate random sampling technique was employed, involving the selection of 20% of the region's villages. From each chosen village, 20 respondents were then selected for the survey. This direct contact method allowed for the collection of data on key socio-economic indicators of sheep farmers, including family size, family type, occupation, household income, land holding, and literacy levels.

Sources

**Statistical analysis:**

The data collected during the period of study were coded, compiled systematically, tabulated and subjected to statistical analysis (average and percentage) using the Statistical Package for Social Sciences (SPSS, 2020) computer programme.

**Results and Discussion**

**Family Size:** Most sheep rearers in Sankoo (71.42%) lived in small families with fewer than six members. Only 15.00% had large families (over nine members), and 13.57% had medium-sized families (six to nine members). We also saw variations across villages: Prentee had the highest percentage of small families (90%), followed by Namsuru (85%), Taisuru (75%), Kochick (70%), Kargee (65%), Achamaboor (60%), and Chooskore (55%) (Table 1).

These findings align with other studies across India, such as those by Patel and Chhabhaya (2024) in Gujarat, Ajmeera (2022) in Telangana, Nijanand et al. (2021) in Telangana, and Shah et al. (2017) in Jammu and Kashmir and Tamil Nadu, all of which reported a prevalence of nuclear families among sheep rearers. However, some studies, like those by Kanakaraja et al. (2022) and Shashidhara et al. (2022), found that large family sizes were more common elsewhere. The hilly terrain in Sankoo restricts cultivation, leading to small landholdings per household. This limitation likely contributes to the prevalence of nuclear families in the region's sheep-rearing communities, as observed in our study.

**Table 1: Socio-economic profile of sheep rearers of Sankoo (Family size, Family type, and Occupation)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Family size** | **Family type** | **Occupation** | **As Primary** | **As Sub** |
| **Variant** | **Number (%)** | **Variant** | **Number (%)** | **Variant** | **Number (%)** | **Number (%)** |
| Small (<6) | 100(71.42) | Nuclear | 68(48.57) | Agriculture | 33(23.57) | 20(14.28) |
| Medium (6-9) | 19(13.57) | Joint | 72(51.42) | Sheep Farming | 15(10.71) | 44(31.42) |
| Large (>9) | 21(15.00) |  |  | Agriculture +Sheep | 12(8.57) | 27(18.57) |
|  |  |  |  | Govt. Service | 25(17.86) | 0(0.00) |
|  |  |  |  | Livestock | 13(9.28) | 14(10.00) |
|  |  |  |  | Agriculture+livestock | 18(12.86) | 29(20.71) |
|  |  |  |  | Family business, daily labour | 24(17.14) | 6(4.28) |
| Total respondents | 140 |
| *Figures in parentheses indicate percentage within a Column* |

**Source: Primary Data Collection**

**Family type:** Our survey in Sankoo revealed that the majority of families (51.42%) were of the nuclear-joint type, closely followed by nuclear families at 48.57%. We observed variations in nuclear family prevalence across villages (Table 1): Kargee and Taisuru had the highest rates (both 60%), with Achamaboor, Kochick, and Prentee close behind (all 55%). Namsuru village recorded 40% nuclear families, while Chooskore had 35%.

These findings generally align with studies conducted in other parts of India, where researchers like Ajmeera (2022) in Telangana, Hamadani (2023) in Jammu and Kashmir, Sundaramoorthy et al. (2021) in Tamil Nadu, and Patel and Chhabhaya (2024) in Gujarat also reported a majority of nuclear families among sheep rearers. However, it's worth noting that other research, such as by Mahe et al. (2023) in Tamil Nadu, Manzoor et al. (2022) in Jammu and Kashmir, and Kanakaraja et al. (2022) in Karnataka, found joint families to be predominant in their respective study areas. The hilly terrain in the Sankoo Sub-Division limits agricultural cultivation, leading to smaller landholdings per household. This constraint, as observed in our study, likely contributes to the predominance of nuclear family structures among the region's sheep-rearing communities.

**Primary occupation:** Our survey revealed that the primary occupation for the largest group of respondents (23.57%) in the Sankoo villages was family agriculture. Following this, government services accounted for 17.86% of primary occupations, and family business/daily labour for 17.14%. Livestock-related activities, either alone or combined with agriculture, were less common as primary occupations: agriculture combined with livestock farming (12.86%), sheep farming (10.71%), livestock farming alone (9.28%), and agriculture combined with sheep farming (8.57%).

A village-wise comparison showed that Taisuru had the highest proportion of sheep rearers (50%) whose primary occupation was family business or daily labour. This was notably higher than other villages; for instance, Achamaboor and Kochick both had 30% in this category, followed by Chooskore (25%), and Prentee, Taisuru, Kargee, and Namsuru all at 20%.

Our findings align with other studies conducted across India, such as those by Nishanth et al. (2023) in Tamil Nadu, Ajmeera (2022) in Telangana, and Manzoor et al. (2022) in Jammu and Kashmir, which reported a majority of sheep rearers engaging in a combination of agriculture and livestock as their primary occupation. However, it's worth noting that in Kargil, a significant border district in India, many residents work for the army, providing services like labour and porterage or running businesses that cater to the army's needs. This unique local context means that family businesses and daily labour often remain the primary occupations in the area.

**Sub occupation:** Sheep farming emerged as the most common secondary occupation, reported by 31.42% of respondents. Its prevalence varied across villages: Namsuru had the highest rate at 50%, followed by Chooskore (45%), Achamaboor (35%), Kargee (30%), Kochick (25%), and Taisuru (20%). Prentee village had the lowest proportion.

Following sheep farming, a combination of agriculture and livestock was the second most common sub-occupation (20.71%), while agriculture combined with sheep farming accounted for 18.57% of secondary roles among sheep rearers. Kargee village showed the highest concentration of agriculture and sheep farming as a sub-occupation (35%), with Achamaboor (30%), Prentee (25%), Taisuru (20%), Chooskore (15%), and Namsuru and Kochick (both 5%) following. Standalone agriculture was a secondary occupation for 14.28% of respondents, and other livestock-oriented activities represented 10%. Family business or daily labour was a secondary occupation for a smaller segment, at 4.28%.

These findings align with studies by Kanakaraja et al. (2022) in Karnataka and Vasanthi et al. (2022) in Telangana, both of which indicated that agriculture was the primary sub-occupation for most sheep rearers. Conversely, some research, such as by Nishanth et al. (2023) in Tamil Nadu and Giriraj et al. (2022) in Karnataka, found sheep farming itself to be the dominant sub-occupation.

Sankoo, being a landlocked region with inhabitants spread across diverse and often agriculturally unsuitable terrains, presents unique challenges. Despite the significant potential for sheep husbandry—given ample grazing land, favourable demand-supply dynamics, and its capacity for employment generation—this sector has not experienced substantial growth. Consequently, for the majority of respondents, sheep rearing currently serves only as an income supplement.

**Land holding (Kanals/household):** Table 2 provides the specifics of land holdings among sheep rearers in the Sankoo sub-division. On average, each sheep-rearing household owned 5.06 ± 0.14 kanals of land. While there was variation across villages, Prentee showed the highest average landholding at 5.50 ± 0.28 kanals. This was followed by Namsuru (5.40 ± 0.48 kanals), Kochick (5.15 ± 0.30 kanals), Achamaboor (4.85 ± 0.49 kanals), Taisuru (4.8 ± 0.38 kanals), and Chooskore (4.75 ± 0.40 kanals), with Kargee village having the lowest average at 3.65 ± 0.41 kanals. These findings are consistent with surveys from other parts of India, where researchers like Patel and Chhabhaya (2024) in Gujarat, Shashidhara et al. (2022) in Karnataka, Manzoor et al. (2022) in Jammu and Kashmir, and Reddy et al. (2020) in Andhra Pradesh also reported that most sheep rearers were marginal farmers. However, some studies, such as those by Siripurapu (2023) and Nijanand et al. (2021) in Telangana and Giriraj et al. (2022) in Karnataka, noted a predominance of larger landholdings among sheep rearers.

The marginal landholding size observed in our study points to the presence of farmers who heavily rely on Common Property Resources (CPRs). These include community pastures, vegetation near water bodies, barren and uncultivable lands, and alpine pastures in higher altitudes, all vital for meeting their livestock's needs. CPRs are crucial not only for providing livestock feed but also for ensuring the subsistence of poorer households. The widespread small landholdings among sheep rearers in this area can be directly attributed to the hilly terrain, barren landscapes, and cold, arid conditions that severely impede agricultural activities.

**Table 2: Land holding (Kanals/household) of respondents (Mean ± SE)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Average Land Holding (Kanals)** | Achamaboor(20) | Chooskore(20) | Kargee(20) | Kochick(20) | Namsuru(20) | Prentee(20) | Taisuru(20) | Overall(140) |
| 4.85±0.49 | 4.75±0.40 | 3.65±0.41 | 5.15±0.30 | 5.40±0.48 | 5.50±0.28 | 4.8±0.38 | 5.06±.14 |
| *No significant difference between villages within a row differs at p< 0.05* |

Source: Primary Data Collection

**Household income (Rs/Months):** able 3 details the household income of sheep rearers in the district. Our findings show that the majority of sheep rearers (56.42%) earned more than Rs. 10,000 per month. This income bracket was most prevalent in Namsuru, Kochick, and Kargee villages (all 60%), followed by Chooskore and Taisuru (both 55%), and then Achamaboor and Prentee (both 50%).

These results are consistent with previous studies by Nishanth et al. (2023) in Telangana, Giriraj et al. (2022) in Karnataka, and Manzoor et al. (2022) in Jammu and Kashmir.

While the income group of Rs. 10,000-20,000 per month represented the second largest income bracket among sheep rearing communities in the sub-division, a significantly smaller proportion of sheep rearers (16.42%) fell into this category. Within this higher income bracket, Kochick village showed a slightly greater percentage of sheep rearers (25%) compared to other villages, whereas Prentee had the lowest proportion (5.00%).

The notable involvement of older individuals in the Sankoo sub-division likely stems from factors such as illiteracy, limited employment options, and a scarcity of other lucrative opportunities. Furthermore, it appears that age isn't a primary determinant of work type in the Kargil district; instead, the main objective for residents is to secure livelihood and nutritional security for their families.

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**Table 3: Household income of respondents (Mean ± SE)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Income group (Rs/month)** | Achamaboor(20) | Chooskore(20) | Kargee(20) | Kochick(20) | Namsuru(20) | Prentee(20) | Taisuru(20) |
| **>10000** | 9087.49±321.71(50) | 8797.72±178.59(55) | 8695.83±136.16(60) | 8873.26±181.26(60) | 8800.32±156.60(60) | 8698.33±300.91(50) | 8896.59±235.02(55) |
| **10000-20000** | 11120.83±266.56(30) | 12385.00±571.90(25) | 12308.331±1112.81(15) | 14291.67±882.16(60) | 16879.17±173.50(60) | 12027.98±960.02(35) | 11497.92±637.86(30) |
| **21000-30000** | 26466.67±0.00(5) | 26283.33±0.00 (5) | 0.00±0.00(0) | 0.00±0.00(0) | 26466.67±0.00(5) | 26420.83±45.83(10) | 0.00±0.00(0) |
| **>30000 Rs** | 33069.44±1516.21(15) | 35293.06±2097.24(15) | 36225.83±1581.82(25) | 37595.83±2042.13(25) | 37769.44±1714.49(15) | 36466.67±0.00(5) | 31193.06±144.14(15) |
| **Average** | 14163.75±2027.51 | 14543.13±2207.84 | 16120.21±2707.76 | 16247.92±2924.55 | 15240.83±2415.72 | 13024.38±1739.19 | 13021.46±1784.52 |
| *No significant difference between villages within a row differs at p< 0.05**Figures in parentheses indicate percentage within a Column* |

**Source: Primary Data Collection**

**Age of Family head:** The overall data indicates that the majority of family heads (45.71%) in the Sankoo region are over 60 years old. Those aged 41-60 years comprise 31.42%, and 22.85% are in the 21-40 age group. The proportion of older sheep rearers (over 60) was particularly high in Namsuru village (65%), followed by Taisuru (55%), Prentee (50%), Kochick (45%), Achamaboor (40%), Chooskore (35%), and Kargee (25%).

Our findings align with similar surveys conducted across various parts of India. However, these results contrast with studies by Siripurapu (2023) in Telangana, Nishanth et al. (2023) in Tamil Nadu, and Giriraj et al. (2022) in Karnataka and Jammu & Kashmir, where middle-aged individuals were more commonly reported in sheep farming.

The significant presence of older individuals in sheep rearing in the Sankoo sub-division likely stems from factors such as illiteracy, limited employment opportunities, and fewer other lucrative avenues. It appears that in Kargil district, age isn't a primary determinant of the type of work undertaken. Instead, the main objective is to secure livelihood and nutritional security for families.

**Education of** **family head**: Our findings reveal that a significant proportion of sheep rearers in the Sankoo region, 44.28% to be precise, had no formal education, rendering them illiterate. This rate was highest in Kochick (45%), followed by Prentee (45%), Chooskore (40%), Kargee (35%), Achamaboor (30%), Namsuru (25%), and Taisuru (15%).

A slightly smaller percentage, 33%, of sheep rearers in the sub-division had completed up to middle school. Namsuru and Taisuru villages showed the highest proportion of middle school graduates (both 45%), followed by Achamaboor (40%), Prentee (30%), Kargee (20%), Chooskore (15%), and Kochick (5%).

Furthermore, a lower percentage of sheep rearers (13.57%) had attained education up to high school. Those with a graduation level and above education were similarly low, at 17.85%.

These results contrast with findings from other parts of India, such as those by Siripurapu (2023) in Telangana, Nishanth et al. (2023) in Tamil Nadu, and Mahe et al. (2023) in Karnataka, where higher literacy rates among sheep rearers were reported.

The low literacy levels among sheep rearers in Sankoo can likely be attributed to a trend where more educated individuals tend to move into the service sector or other more profitable professions. This leaves sheep farming largely to those with less formal schooling. This situation is further exacerbated by the limited educational opportunities in certain remote areas of the sub-division, which often become inaccessible for significant portions of the year due to the mountainous terrain and harsh winters.

**Sheep rearing Experiences:** Our findings show that the majority of sheep rearing family heads in the Sankoo sub-division (35%) had between 6 and 10 years of experience. This experience level was particularly high in Namsuru village, where 55% of respondents fell into this category. Following this group, 24.28% of sheep rearers had over 20 years of experience, with Kargee village showing the highest proportion at 55%.

Similarly, 17.85% of sheep rearers had 16-20 years of experience, a proportion that was highest in Chooskore (25%). Those with less than 5 years of experience accounted for 17.14% of respondents, with Tasha recording the highest percentage (15%). The lowest percentage (15.71%) was found among those with 11-15 years of experience, with Prentee showing the highest concentration in this group (40%) compared to other areas in the sub-division.

These results are consistent with surveys from other parts of India, including those by Shashidhara et al. (2022) in the North Eastern dry zone of Karnataka, Channappa et al. (2021) in Raichur district of Kalyana Karnataka, and Sundaramoorthy et al. (2021) in Ramanathapuram Virudhunagar district of Tamil Nadu, all of which reported a high level of sheep rearing experience among the majority of respondents.

Traditionally, livestock has been kept in Sankoo for domestic use and to supplement income due to a scarcity of other income-generating opportunities. Beyond more lucrative employment sources, livestock provides essential nutritional and livelihood security across much of this region, especially given its marginality and inaccessibility due to the high mountains. This explains the varied levels of experience observed from one region to another. Furthermore, the initiation of some government initiatives a few years ago might explain the presence of some sheep rearers with less experience.

**Women's participation in sheep farming activities:** Our findings highlight the significant role women play in sheep farming activities in the region. The results indicate that the majority of sheep-rearing households (61.42%) had at least two women actively involved in various tasks. In contrast, only 29.29% of households reported the participation of just one woman in these activities. Overall, an impressive 90.71% of sheep-rearing households benefited from the involvement of women (either one or two per household) in sheep farming. Conversely, in a mere 9.29% of households, women's participation in these activities was negligible.

This strong involvement aligns with findings from other surveys across India, such as those by Manzoor et al. (2022) in South Kashmir, Jammu and Kashmir, and Shirsat et al. (2019) in Pune and Sangli districts of western Maharashtra.

In the Sankoo region, women typically carry out most of the labour-intensive tasks, including watering, feeding, and milking animals within the sheds, as well as harvesting grass. Their workload becomes especially demanding during the harsh winter months when livestock are kept indoors.

Livestock inventory: Table 4 details the livestock inventory maintained by sheep rearers in Sankoo. The average sheep flock size in the subdivision was 11.52 ± 0.18 heads. This average flock consisted of 8.80 ± 0.14 ewes, 1.00 ± 0.00 rams, 1.39 ± 0.80 female lambs, 3.90 ± 0.12 animals for sale, and 2.55 ± 0.12 animals for self-consumption.

A village-level comparison showed no significant difference (p < 0.05) in average flock size across the sub-division's villages. This finding aligns with surveys conducted in other regions of India and internationally, such as by Ale et al. (2023) in Oromia regional state and western Ethiopia, where sheep rearers reported similar flock sizes.

However, these results contrast with studies by Manzoor et al. (2020) in Anantnag district of Jammu and Kashmir and Shivakumara et al. (2020) in Tumakuru, Chitradurga, Belagavi, and Kalaburagi districts of Karnataka, which reported significantly larger livestock sizes among sheep rearers.

**Table 4: Details of sheep flock composition (Mean ± SE)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category** | Achamaboor(20) | Chooskore(20) | Kargee(20) | Kochick(20) | Namsuru(20) | Prentee(20) | Taisuru(20) | Total |
| Ewe | 8.8±0.27 | 8.85±0.37 | 9.55±0.34 | 9.30±0.40 | 8.45±0.60 | 7.85±0.24 | 8.80±0.32 | 8.80±0.14 |
| Ram | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 |
| Female lambs | 0.75±0.17 | 0.90±0.12 | 1.40±0.35 | 1.66±0.16 | 1.85±0.16 | 1.80±0.15 | 1.40±0.15 | 1.39±0.80 |
| Sale | 3.85±0.22 | 4.30±0.26 | 3.50±0.25 | 3.65±0.19 | 4.20±0.63 | 3.95±0.13 | 3.90±0.26 | 3.90±0.12 |
| Self-consumption | 2.20±0.32 | 2.10±0.35 | 3.60±0.28 | 3.05±0.31 | 2.50±0.33 | 1.85±0.20 | 2.55±0.31 | 2.55±0.12 |
| Average flock size | 10.50±0.21 | 10.80±0.35 | 11.95±0.56 | 11.85±0.46 | 11.25±0.49 | 10.70±0.17 | 11.20±0.32 | 11.52±0.18 |
| *No significant difference between villages within a row differs at p< 0.05* |

**Source: Primary Data Collection**

**Other livestock species maintained:** Besides sheep, livestock rearers in the Sankoo sub-division also kept goats, cattle, and equines. All sheep rearers maintained cows, with the majority (70.00%) owning 1-2 cattle. Taisuru village showed the highest percentage of sheep rearers (95%) keeping cows.

Goats were also common, with 59.28% of sheep rearers raising them. This proportion was significantly higher in Chooskore, where 90% of sheep rearers kept goats. Additionally, equines were maintained by 39.28% of sheep rearers, with Namsuru having the highest percentage at 30%.

These findings are consistent with surveys conducted both in India and internationally, including those by Siripurapu (2023) in Telangana, Ale et al. (2023) in Oromia regional state and Western Ethiopia, and Manzoor et al. (2020) in the Anantnag district of Jammu and Kashmir.

In Sankoo, sheep rearers primarily keep cows for household milk consumption. Male cattle are mainly used for agricultural work, and pack animals similarly contribute to farming operations.

**Conclusion**

Sankoo's socio-economic landscape is currently undergoing a transformation, with its traditional mainstays of agriculture and animal husbandry now being supplemented by an emerging tourism sector. For the region to progress effectively, significant infrastructure development is essential, particularly in areas like healthcare, education, and connectivity. However, this progress is heavily hindered by considerable challenges, especially concerning road accessibility during the harsh winter months.

From an environmental standpoint, Sankoo faces a dual threat: its delicate cold desert ecosystem is vulnerable, and the region is experiencing the severe impacts of climate change, most notably the alarming rate at which its glaciers are shrinking. To ensure the long-term ecological balance and the socio-economic well-being of the community, conservation efforts are crucial. These initiatives should focus on promoting sustainable tourism and, importantly, integrating traditional ecological knowledge into modern practices.

In essence, Sankoo represents a dynamic region where historical legacies, unique cultural practices, and environmental vulnerabilities intersect with contemporary demands for self-determination and sustainable development. Understanding these interconnected dimensions is paramount for any comprehensive research aiming to explore the future prospects and challenges of this pivotal sub-division within the Kargil district.

Contributing to these patterns are factors such as limited educational infrastructure, harsh winters, and the prevalence of marginal farming practices reliant on common property resources (CPRs) for livestock sustenance. Traditionally, livestock rearing has been crucial for both domestic needs and income supplementation, supporting nutritional and economic security in this geographically challenging area.

**Disclaimer (Artificial intelligence)**

Option 1:

Dr. Manish Meshram declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.

2.

3.

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