**Role of Livestock Rearing in Supporting the Livelihoods in Challenging Mountainous Terrain of Kargil Region, Ladakh**

**Abstract**

The survey was conducted to study the socio-economic profile of Sheep rearers in 4 villages (Manzee, Karkichu, Gramthang, and Kannour) of kargil Sub-Division in Kargil district. A total of 80 respondents were interviewed through a pre-structured questionnaire. Results revealed that the majority of respondents had (68.75%) Elementary type families. About (68.75%) families were small sized (Less than 6 members). About (32.50%) respondents were having family business/daily labour as primary occupation, whereas (30.00%) respondents were having agriculture as secondary occupation. The land holdings of respondents were marginal type (4.6±0.12kanals/0.57 acre). Monthly income of 61.25% of respondents was in the range of Rs.11,000-20,000 with an average of Rs.14852±369.85. About 50.00% of sheep rearers were having age in the range of 21-40 years, with illiteracy rate of 28.75%. About (28.75%) of respondents had 5-10 years of Sheep rearing experiences. A very good number of (91.25%) of women were involved in different sheep rearing activities. The respondents have had an average flock strength of sheep (11.10±0.10). The Other animals reared by respondents along with sheep were **Goats** with a range of 1-5 goats (3.12 ± 0.27 numbers) in (66.25%) cases. Number of **Cattle** per household were (2.03±0.27) with 0-2 cattle in (81.25%) cases. Thus, it can be concluded that government policies need to be reoriented with focus on commercial livestock farming for employment, nutritional and livelihood security of the residents of the Kargil region.

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

**Introduction**

Kargil with a population of 1.40 lacks is an important district in Ladakh UT with an independent Autonomous Hill Development Council (LAHDC Kargil). It spans over an area of 14086, km2 lies north-west of the Great Himalayan Range, Mountain specificities viz inaccessibility, fragility and marginality further aggravate the conditions wherein areas available for cultivation and other utilizable land uses are not much and farmers under such circumstances rely on mixed farming (Shah and Akhone, 2021) to cater to their day-to-day requirements. The importance and dependence on livestock sector can be assessed from the fact that the ratio of human to livestock is 1:3 in the region (Shah and Akhone, 2021) than elsewhere in the country. Sheep rearing represents an important component of human living owing to their better survival and sustainability in the region (Hussain et. al., 2020). Sheep rearing has remained an age-old tradition in the region with a large chunk of population associated with it Point 5353 (also called Point 17561, and Marpo La Peak) is a mountain peak on the [Line of Control](https://en.wikipedia.org/wiki/Line_of_Control) dividing the [Indian-](https://en.wikipedia.org/wiki/Indian-administered_Kashmir) and [Pakistani-administered](https://en.wikipedia.org/wiki/Gilgit-Baltistan) portions of [Kashmir](https://en.wikipedia.org/wiki/Kashmir) in the vicinity of [Drass](https://en.wikipedia.org/wiki/Dras) in the [Kargil district](https://en.wikipedia.org/wiki/Kargil_district).this mountainous terrain, averaging with peaks Kargil has an average elevation of 2,676 metres (8,780 feet), and is situated along the banks of the [Suru River (Indus)](https://en.wikipedia.org/wiki/Suru_River_(Indus)). The mean sea level, presents a harsh environment characterized by extremely low temperatures, (Sukhadeve *et al.,* 2023). particularly plummeting Wide diurnal and seasonal fluctuations in acing the Northern Areas across the LOC. Like other areas in the Himalayas, Kargil has a temperate climate. Summers are hot with cool nights, while winters are long and chilly with temperatures often dropping below −20 °C (−4 °F) supports a distinct population of 25174 individuals (Census, 2011censusindia.gov.in.) with a notable literacy rate of 75.74%. Predominantly Muslim, the community comprises a majority of Sunni Shina 77.75 %) people demographic configuration influenced historically by Kashmiri merchants(Ram birpur, 2012) (Census, 2011censusindia.gov.in.). In this freezing desert landscape, where vast uncultivated areas limit agricultural practices, the local population relies heavily on animal resources for sustenance and economic stability. Endowed with a rich natural animal wealth, the native livestock breeds of kargil have developed distinctive genetic characteristics that enable them to thrive in this cold, dry, high-altitude, and barren environment (Aabedi *et al.,* 2009). These adaptations include resistance to certain diseases, tolerance to extreme temperatures and limited feed resources, highlighting the crucial role of livestock in generating income and alleviating poverty for the region's residents. While the economic resources of kargil encompass agriculture, ecosystems, and a burgeoning tourism industry, livestock rearing, particularly of sheep, remains a cornerstone of the local livelihood, contributing through cattle sales, meat and milk production, employment opportunities, transportation, and the transmission of traditional knowledge. Despite the significant socio-economic contribution of animal husbandry in this unique setting, the remoteness, harsh climate, high altitude with low oxygen availability, and overall challenging conditions have resulted in a relative lack of comprehensive research in the region. To address this gap, this research paper presents, for the first time, a detailed study of the socio-economic profile of sheep Sheep rearers in the kargil subdivision of the Kargil district. The findings of this investigation were intended to provide valuable insights for policy planners and stakeholders, serving as a crucial guide for the future development and sustainable progress of this vital sector within the region.

**Materials and Methods**

To study the socio-economic status of sheep rearers of Kargil in Kargil district, a field survey

was undertaken from **mid July 2022 to mid -September 2022** in 4 villages (Karkichu,

Gramthang, Kannour, and Manzee) of kargil sub division in Kargil district. This region is

having cold arid high-altitude climate. A total of 80 respondents were face to face interviewed

through a pre-structured questionnaire. Kargil is a sub-division in district Kargil of Ladakh.

Proportionate random sampling was followed wherein 20% of the villages of the region were

selected and from each village 20 respondents were considered for the survey. A total of 4

villages with 80 respondents were interviewed by contact method on key indicators of **socio-**

**economic profile of sheep farmers** (Family size, Family type, occupation, Household income,

land holding, literacy etc.).

**Statistical analysis:** The data collected during the period of study was coded, compiled systematically, tabulated and subjected to statistical analysis (average and percentage) using the data was tabulated, classified and analysed by drawing averages and percentages wherever required. The means between the groups were compared by using ANNOVA and the percentage data was subjected to the test of proportions for analysed the statistical significance, Statistical Package for Social Sciences (SPSS, 2020) computer programme.

**Results and Discussion**

**Family Size:** The results indicated that majority (67.50%) of sheep rearers in Kargil region were having small size families (<6 members). About 23.75% of families were that large size families (>9 members) and were only 8.75% of Medium size family of what ??. The results further indicated that family size of medium (6-9) varied between villages with higher values in Gramthang village (85%) followed by Kannour (70%), Manzee (60%), and 55 Karkichu village, respectively (Table 1).

The present study is in close agreement with surveys conducted in different parts of India (Patel and Rameshbhai, 2024; Nijanand *et al.,* 2021; Reddy *et al.* 2020) in Valsad district of Gujarat,Narayanapet district of Telangana state and Guntur, Prakasam, and Krishna districts of Andhra Pradesh, respectively Contrary to these findings small family size have been reported to be predominant family size among sheep rearers in different parts of the country. The hilly terrain of the Kargil Sub-Division restricts cultivation, resulting in small landholdings per household. This limitation, as found in the present study, may explain the tendency for larger families among the region's sheep-rearing communities.

**Table 1: Socio-economic profile of sheep rearers of Kargil**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Family size** | | **Family type** | | **Occupation** | **As Primary** | **As Sub** |
| **Variant** | **Number (%)** | **Variant** | **Number (%)** | **Variant** | **Number**  **(%)** | **Number**  **(%)** |
| Small (<6) | 55  (67.50) | Elementary | 54  (67.50) | Agriculture | 37  (26.43) | 24  (30) |
| Medium (6-9) | 7  (8.75) | Joint | 26  (31.50) | Sheep Farming | 1  (7.86) | 16  (20) |
| Large (>9) | 19  (23.75) |  |  | Agriculture +Sheep | 9  (6.43) | 18  (22.50) |
|  |  |  |  | Govt. Service | 21  (15.00) | 0 |
|  |  |  |  | Livestock | 11  (7.86) | 8  (10.00) |
|  |  |  |  | Agriculture  +livestock | 10  (7.14) | 9  (11.25) |
|  |  |  |  | Family business, daily labour | 41  (29.28) | 5  (6.25) |
| Total respondents | | | | 80 | | |
| *Figures in parenthesis indicate percentage within a Column* | | | | | | |

**Source: Primary Data Collection,...... 2022**

**Family type:** The results of the survey indicated majority of the families were Elementary (68.75%) in Kargil, followed by joint type (31.25%). Elementary family type varied between villages with higher Gramthang village (80%) followed by Karkichu (70%), Manzee (65%), and 55 Kannour village, respectively (Table 1).

Contrary to the present findings sheep rearing/ agriculture has been reported as the Family type families were Elementary in surveys conducted Srinagar of J&K, Valsad district of Gujarat and in Narayanapet district of Telangana State (Hamadani, H. *et al.,* 2023; Patel and Rameshbhai, 2024 and Nijanand et al. 2021), sheep rearing along with agriculture in Yadgir district of Karnataka (Kanakaraja et al. 2022), respectively. The hilly terrain of the Kargil Sub-Division restricts cultivation, resulting in small landholdings per household. This limitation, as found in the present study, may explain the tendency for predominantly Elementary-type families among the region's sheep-rearing communities.

**Primary occupation:** Majority (29.28%) of the respondents in the villages were having family business/daily labour followed by agriculture (26.43%), and government services (15%) as their main occupations. Livestock and agriculture- oriented occupations i.e., followed by sheep farming (7.86%) and livestock farming (7.86%), agriculture + (%) Agriculture and 7.14 % Agriculture + livestock farming..... and Agriculture + Sheep 6.43%. were prevalent among considerably lesser proportion of as their primary occupation. Village-wise comparison revealed that their primary occupation in comparison to other Villages (Table 1). with proportion of such respondents being higher in Manzee (45%), followed by Gramthang village (40%) Kannour (25%), and 20% Karkichu village The present study is surveys conducted in different parts of India (Nishanth *et al.,* 2023; and Manzoor *et al.,* 2022) wherein they reported that majority of sheep rearers had primary occupation agriculture and livestock combined in Cauvery delta zone of Tamil Nadu, and south Kashmir of Jammu and Kashmir, respectively.

Contrary to these findings primary occupation has been reported to be predominant. In Kargil, an important border district of India, many residents are employed by the army, providing services such as labour and porterage, or engaging in businesses catering to the army's daily needs. Consequently, family businesses and labour remain primary occupations in the area.

**Sub occupation:** About 30% of the respondents in the villages were having agriculture as sub-occupation, with proportion of such respondents being higher in higher in Manzee (55.00%), followed by Kannour (30.00%), Gramthang village (25.00%) and 10.00% Karkichu village Sheep farming represented the second most prevalent (22.50%) sub occupation among Agriculture + sheep farming rearers in the Villages with proportion of such sheep rearers being higher in respondents Karkichu (35.00%), followed by Gramthang (30.00%) , Kannour (25.00%) and 0% Manzee village Among other livestock oriented occupations, sheep farming in most prevalent (20%) sub occupation followed by agriculture and livestock combined (11.25%) and livestock (10.00%) (Table 1).

The present study is in close agreement with surveys conducted in different parts of India (Kanakaraja *et al.,* 2022 and Vasanthi *et al.,* 2022), wherein they reported majority of sheep rearers had sub-occupation agriculture in Yadgir district of Karnataka, and Telangana respectively. Contrary to these findings sub -occupation has been reported to be predominant Sheep farming among sheep rearers in different parts of the country (Nishanth *et al.,* 2023 and Giriraj *et al.,* 2022), wherein they reported majority of sheep rearers had sub- occupation agriculture in Cauvery delta zone of Tamil Nadu, and Karnataka state, respectively. Kargil is a landlocked area where inhabitants occupy various terrains across diverse geographical locations, many of which are unsuitable for agriculture. Despite the potential for sheep husbandry, given the availability of grazing facilities, demand-supply dynamics, and its capacity for employment generation, this sector has not seen substantial growth. For most respondents, sheep rearing only supplements their income.

**Land holding (Kanals/household):** The details of household income of sheep rearers have been presented in table 2. The results indicated that average land holding per household of sheep rearers was 4.63±0.13 kanals in the Sub division.

The average land holding/household was higher in Karkichu village (5.25±0.22 kanals) followed by Kannour (4.55±0.21 kanals) Gramthang (4.35±0.27 kanals), and lowest in (4.35±0.25 kanals) Manzee village.

The present study is in close agreement with surveys conducted in different parts of India (Patel and Rameshbhai, 2024; Shashidhara *et al.,* 2022; Manzoor *et al.,* 2022 and Reddy *et al.,* 2020) wherein they reported majority of sheep rearers had marginal farmers in Valsad district of Gujarat, north eastern dry zone of Karnataka, south Kashmir of Jammu and Kashmir, and Andhra Pradesh, respectively.

Contrary to these findings large land holding has been reported to be predominant among sheep rearers in different parts of the country (Siripurapu, 2023; Giriraj *et al.,* 2022 and Nijanand *et al.,* 2021) in Telangana, Karnataka state and Narayanapet district of Telangana State, respectively. Land holding size in the present study indicates marginality and the presence of marginal farmers who largely depend on common property resources (CPRs) such as community pastures, vegetation around water bodies, and barren and uncultivable lands, in addition to alpine pastures in highland areas, to meet their livestock requirements.

These CPRs are crucial for both livestock production inputs and subsistence for the poor. The prevalence of small landholdings among sheep rearers in the area can be attributed to the hilly terrain, barren lands, and cold arid conditions that hinder agricultural activities.

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Average Land Holding (Kanals)** | Karkichu  (20) | Gramthang  (20) | Kannour  (20) | Manzee  (20) | Overall  (80) |
| 5.25b±0.22 | 4.35a±0.27 | 4.55a±0.21 | 4.35a±0.25 | 4.63±0.13 |
| *significant different between village within a row differ at p< 0.05*  *Figures in parenthesis indicate percentage within a Column* | | | | | |

Source: Primary Data Collection

**Household income of respondents**

The details of household income of sheep rearers have been presented in table 3. The results indicated that majority (43.75%) of sheep rearers in the Kargil were in the income group of Rs 10,000-20,000/month with proportion of such respondents being highest in, Kannour (55.00%), followed by Karkichu (45.00%) and Gramthang (45.00%) and 25.00% Manzee village.

Similar findings were reported earlier by Nishanth *et al.,* 2023; Giriraj *et al.,* 2022 and Manzoor *et al.,* 2022, in Telangana, the Cauvery delta zone of Tamil Nadu, Karnataka state and south Kashmir of Jammu and Kashmir, respectively.

Although the higher income group (Rs. 20,000-30,000/month) represented the second major income group of sheep rearing community in the sub division, the proportion of such sheep rearers was very less (18.75%). Within the higher income group, Kannour village was having a slightly higher proportion of sheep rearers (30%) in comparison to all other village while as the Gramthang s was having lowest proportion of such sheep rearers (0.00%). Involvement of the old age group in Kargil sub- division may probably be because of illiteracy, less employment and less lucrative opportunities. Further, it seemed age was not a factor in deciding the types of work in Kargil district wherein main aim was to earn livelihood and nutritional security for their families.

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Income group (Rs/month)** | Karkichu  (20) | Gramthang  (20) | Kannour  (20) | Manzee  (20) | Total  (80) |
| **>10000** | 5854.32±1049.90  (40) | 6695.69±974.67  (35) | 7458.45±873.88  (10) | 5565.22±821.21  (55) | 6073.50±494.45  (33.75) |
| **10000-20000** | 16674.86±982.45  (45) | 13031.56±1204.86  (45) | 14157.23±871.39  (55) | 15819.22±913.35  (25) | 15002.23±516.77  (43.75) |
| **20000-30000** | 11415.62±8946.04  (10) | 20555± 1424.82  (20) | 26647.52±945.49  (30) | 26357.91±1987.25  (15) | 22722.48±1588.38  (18.75) |
| **>30000 Rs** | 31980.86±0.00  (5) | (0) | 30017±0.00  (5) | 31782.14± 0.00  (5) | 31260.20±623.94  (3.75) |
| **Average** | 13127.05  ±1740.14 | 13071.04±  1434.87 | 17427.46±1538.59 | 12558.47±2081.56 | 14046.00±870.39 |
| *No significant different between village within a row differ at p< 0.05*  *Figures in parenthesis indicate percentage within a Column* | | | | | |

**Source: Primary Data Collection**

**Age of Family head:** The details of Age of Family head sheep rearers have been presented in table 4. The overall data indicated that majority (50.00%) of the family heads were in the age group of 21-40 years followed by more than 60 years (30.00%) and 41-60 years (35.00 The proportion of sheep rearers falling in the age group of years was higher in, Kannour (65.00%), followed by Manzee (50.00%), Karkichu (45.00%) and 40.00% Gramthang village

The present study is in close agreement with surveys conducted in different parts of India. Contrary to these findings large land holding has been reported to middle age group Sheep farming among sheep rearers in different parts of the country (Siripurapu, 2023; Nishanth *et al.,* 2023; Giriraj *et al.,* 2022) in Telangana, the Cauvery delta zone of Tamil Nadu, Karnataka state and south Kashmir of Jammu and Kashmir, respectively.

Involvement of old age group in Kargil sub- division may probably be because of illiteracy, less employment and less lucrative opportunities. Further, it seemed age was not a factor in deciding the types of work in Kargil district wherein main aim was to earn livelihood and nutritional security for their families.

**Table 4 Age of Family head of respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age groups** | Karkichu  (20) | Gramthang  (20) | Kannour  (20) | Manzee  (20) | Total  (80) |
| 21-40yrs | 9  (45.00) | 8  (40.00) | 13  (65.00) | 10  (50.00) | 40  (50.00) |
| 40-60yrs | 4  (20.00) | 3  (15.00) | 3  (15.00) | 6  (30.00) | 16  (20.00) |
| >60yrs | 7  (35.00) | 9  (45.00) | 4  (20.00) | 4  (20.00) | 24  (30.00) |
| *Figures in parenthesis indicate percentage within a Colum with respect to each*  *Parameter* | | | | | |

**Source: Primary Data Collection**

**Education of** **family head**:

The details of Age of Family head sheep rearers have been presented in table 5. It is evident that majority of the sheep rearers (28.75%) were having illiterate with no formal education such respondents being higher in, Kannour (50.00%), followed by Manzee and Karkichu both (25.00%) and 15.00% Gramthang village followed by education up to middle standard (26.25%) with proportion of such respondents being higher in Karkichu and Kannour both (40.00%), followed by Manzee (15.00%) and 10% Gramthang villages.

The results also indicated that there was a slightly lesser percentage (21.25%) of sheep rearers in the Sub-division who were up to Primary school proportion of such respondents being higher in Gramthang (55.00%) village followed by Karkichu (20.00%) and 5.00% Kannour Manzee and both villages.

The results also indicated that there was lower percentage (17.50%) of sheep rearers in the Sub division who those with education up to Graduate proportion of such respondents being higher in Manzee (45.00%) village followed by Gramthang (20.00%) Kannour (5.00%) and 0.00% Karkichu villages .

The results also indicated that there was lower percentage (6.25%) of sheep rearers in the Sub division who those with education up to High School proportion of such respondents being higher in Karkichu village (15.00%) followed by Manzee village (10.00%) and Gramthang and Kannour Both villages (0.00%) above was more or less similar. Contrary to these findings among sheep rearers in different parts of the country (Siripurapu, 2023; Nishanth *et al.,* 2023 and Mahe *et al.,* 2023) in Telangana, Cauvery delta zone of Tamil Nadu and Bidar district of Karnataka, respectively. he low level of literacy among sheep rearers could possibly be due to the fact that people with better education shift to services sector and other lucrative professions leaving sheep farming in the hands of the less educated people. This could further be potentiated by lesser avenues for education in certain areas of the sub division which remain inaccessible for a considerable part of the year owing to hilly nature and harsh winters therein.

**Table** :5 **Education of** **family head** **of respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | Karkichu  (20) | Gramthang  (20) | Kannour  (20) | Manzee  (20) | Total  (80) |
| Illiterate | 5  (25.00) | 3  (15.00) | 10  (50.00) | 5  (25.00) | 23  (28.75) |
| Primary | 4  (20.00) | 11  (55.00) | 1  (5.00) | 1  (5.00) | 17  (21.25) |
| Middle | 8  (40.00) | 2  (10.00) | 8  (40.00) | 3  (15.00) | 21  (26.25) |
| High  School | 3  (15.00) | 0  (0.00) | 0  (0.00) | 2  (10.00) | 5  (6.25) |
| Graduate | 0  (0.00) | 4  (20.00) | 1  (5.00) | 9  (45.00) | 14  (17.50) |

**Source: Primary Data Collection**

**Sheep rearing Experiences:**

The details of Sheep rearing Experiences sheep rearers have been presented in table 6. It is evident that the results indicated that majority (28.75%) of sheep rearing family heads in the sub division had a sheep farming experience of 5-10 years was higher in Manzee (40.00%) Village followed by those with an experience of 10-15 years (26.25%) With higher in (55%) Village.

Similarly, the proportion of sheep rearers with an experience of less than 5 years was higher in Gramthang (40.00%) the proportion of sheep rearers with an experience of above 20 years (12.25 %) was higher in Kannour and Manzee are both (15.00%) than elsewhere in the sub division the proportion of sheep rearers with an experience of above 15-20 years was highest in (15.00%). Kannour, Karkichu Gramthang village Similarly hang elsewhere in the sub -division.

The present study is in close agreement with surveys conducted in different parts of India (Shashidhara *et al.,* 2022; Channappa *et al.,* 2021 and Sundaramoorthy *et al.,* 2021) wherein they reported majority of sheep rearers had more than higer Sheep rearing experience in North Eastern dry zone of Karnataka, Raichur district of Kalyana Karnataka and Ramanathapuram Virudhunagar district of Tamil Nadu, respectively.

Traditionally livestock is being kept in Kargil for domestic use and to substantiate the income as there used to be less income generating sources/avenues. Apart from having other lucrative employment generating sources livestock provides for nutritional and livelihood security in most parts of this region because of their marginality and inaccessibility due to high mountains. As such varied experiences are observed from region to region. Further, some government initiatives were started some years back which might be the reason for less experience of some of the sheep rearers.

**Table: 6 Sheep rearing Experiences of respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | Karkichu  (20) | Gramthang  (20) | Kannour  (20) | Manzee  (20) | Total  (80) |
| <5  Years | 3  (15.00) | 8  (40.00) | 4  (20.00) | 2  (10.00) | 17  (21.25) |
| 5 -10  Years | 5  (25.00) | 6  (30.00) | 4  (20.00) | 8  (40.00) | 23  (28.75) |
| 10-15  Years | 7  (35.00) | 1  (5.00) | 6  (30.00) | 7  (35.00) | 21  (26.25) |
| 15-20  Years | 3  (15.00) | 3  (15.00) | 3  (15.00) | 0  (0.00) | 9  (11.25) |
| >20 years | 2  (10.00) | 2  (10.00) | 3  (15.00) | 3  (15.00) | 10  (12.5) |
| *Figures in parenthesis indicate percentage within a Colum with respect to each*  *Parameter* | | | | | |

Source: Primary Data Collection

**Women participation in sheep farming activities:** The results indicate that majority (51.25%) of the sheep rearing households involved participation of at least two women in various sheep farming activities. Only 40.00% of sheep rearing households involved participation of one women/household in sheep rearing activities. The results also indicated that 91.25% of the sheep rearing households involved participation of women (either one or two/household) in sheep rearing activities whereas only in 8.85% of the sheep rearing households of this region women participation in sheep farming and related activities was negligible.

The present study is in close agreement with surveys conducted in different parts of India (Manzoor *et al.,* 2022 and Shirsat *et al.,* 2019) in south Kashmir of Jammu and Kashmir and Pune and Sangli district of western Maharashtra, respectively. Women in the region typically undertake most of the intensive tasks, including watering, feeding, and milking within the animal sheds, as well as grass harvesting. Their workload is particularly demanding during the harsh winter months when livestock are confined indoors.

**Livestock inventory:** The details of the livestock inventory maintained by sheep rearers in the Kargil have been presented in Table 7. The results indicated that the average sheep flock size in the sub division was 11.10±0.10 heads of sheep comprising of 8.48±0.08 ewes, 1.00±0.00 rams, 1.91±0.09 female lambs, 3.40±0.05 sale and 2.70±0.08 self-consumption, respectively.

Village level comparison revealed that the average flock size was not significantly flock size different villages in the Kargil sub division. The present study is in close agreement with surveys conducted in different parts of India and abroad (Ale *et al*., 2023) in Oromia regional state and western Ethiopia wherein they reported that sheep rearers had similar sheep numbers. Contrary to these results there has been reported to large livestock sizes among sheep rearers in different parts of the country (Manzoor *et al.,* 2020 and Shivakumara *et al.,* 2020) in Anantnag district of Jammu and Kashmir, Tumakuru, Chitradurga, Belagavi and Kalaburagi districts of Karnataka, respectively.

**Table 7: Details of sheep flock composition of respondents (Mean ± SE)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Category** | Karkichu  (20) | Gramthang  (20) | Kannour  (20) | Manzee  (20) | Total | |
| Ewe | 8.55±0.19 | 8.65±0.15 | 8.50±0.15 | 8.20±0.20 | 8.48±0.08 | |
| Ram | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 | 1.00±0.0 | |
| Female lambs | 1.65±0.10 | 1.75±0.09 | 1.50±0.11 | 2.00±0.00 | 1.91±0.09 | |
| Sale | 3.35±0.11 | 3.3±0.10 | 3.85±0.08 | 3.10±0.06 | 3.40±0.05 | |
| Self-consumption | 2.28±0.17 | 2.80±0.15 | 3.10±0.20 | 2.95±0.16 | 2.70±0.08 | |
| Average flock size | 11.20.  ±0.55 | 11.40  ±0.21 | 11.00  ±0.16 | 11.2  ±0.20 | 11.10±0.10 | |
| *Figures with different not superscripts within a row differ at p< 0.05* | | | | | |

**Source: Primary Data Collection**

**Other livestock species maintained:** Sheep rearers in the sub division were rearing goat, cattle and equine in addition to sheep. All the sheep rearers were rearing cows with majority of them (86.25%) rearing 1-2 cows in the sub division. The proportion of such sheep rearers were higher in Manzee (93%). Sheep rearers (66.25%) in the sub division were also rearing goats.

However, the proportion of such sheep rearers were significantly higher Manzee village (91%). Equines were also kept by sheep rearers (52.50%) in the sub division, the proportion of such sheep rearers were higher in Karkichu (40%). The present study is in close agreement with surveys conducted in different parts of India and abroad (Siripurapu, 2023; Ale *et al*., 2023 and Manzoor, *et al.,* 2020) in Telangana, in Oromia regional state, Western Ethiopia and Anantnag district of Jammu and Kashmir, respectively. In the Kargil, sheep rearers primarily raise cows for household milk consumption, while male cattle are utilized for agricultural work. Similarly, pack animals are also employed in agricultural operations.

**Conclusion**

The Kargil Sub-Division, characterized by its challenging mountainous terrain, faces constraints on agricultural activities, leading to small landholdings and a reliance on supplementary livestock rearing, particularly sheep. This reliance is influenced by limited grazing resources and market dynamics. In the neighbouring border district of Kargil, army employment is a key income source. The region's demographic and livelihood patterns reveal that in Kargil, older individuals' involvement in labour may be linked to lower literacy and limited employment, while in Kargil, age is less critical to work roles, where securing family livelihoods is paramount. 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:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc have been used during 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.

**References:**

1. Ale AT, Oljira A, Daraje D, Abara F, Chimdesa K, Amsalu N, *et al*. Assessment of Sheep Production and Marketing System in Jimma Geneti Wereda, Horo Guduru Wollega Zone of Oromia Regional State, Western Ethiopia. Journal of Animal Research and Veterinary Science. 2023;7(2):100053.
2. Aabedi, Zain-ul-aabedin (2009). [*Emergence of Islam in Ladakh*](https://books.google.com/books?id=SUlVPgAACAAJ&q=Emergence+of+islam+in+ladakh). Atlantic Publishers & Distributors. p. 35. [ISBN](https://en.wikipedia.org/wiki/ISBN_(identifier)) [978-81-269-1047-2](https://en.wikipedia.org/wiki/Special:BookSources/978-81-269-1047-2).
3. Census of India, 2011.https://censusindia.gov.in.
4. Channappa, Shashidhar KK, Goudappa SB, Basavaraj H, Sreedhara JN. Profile characterises and their relationship between sheep management practices in Raichur district of Kalyana Karnataka, India. The Pharma Innovation Journal*.* 2021; SP-0(12):2034-2040.
5. Ganguly, Sumit (2016), Deadly Impasse, Cambridge University Press, p. 137, ISBN 978-0-521-76361-5:
6. Giriraj N, Veeranna KC, Aditya, Rathod P. Socio- economic profile of the ram lamb fattening entrepreneurs. The Pharma Innovation Journal. 2022; SP-11(10):1241-1244.
7. Hamadani, H., Khan, A.A., Khan, H.M., Banday, M.T., Mir, M.S., Reshi, P., Sheikh, I.U. and Wani, S.A. (2023). Socio-economic Status of Dairy Farmers in the Srinagar District of Jammu and Kashmir. Asian Journal of Dairy and Food Research.doi:10.18805/ajdfr.DR-2065.
8. Hussain, K.M., Choudhary, B.H. and Ahmed, K.F. 2020. *Statistical Handbook District* *Kargil* 1490-1493.
9. Kanakaraja, M.G., Mahadev Appa, D.G., Patil, V. M., Biradar, C., Prasad, K., Basavaraj D.M. and Jagjiwan R. 2022. Socio- economic profile of Kenguri sheep farmers under extensive rearing system in Yadgir district of Karnataka. *The Pharma Innovation Journal,* **11**(5): 548-551.
10. Mahe A, Prashant GW, Biradar SC, Vivek MP, Jagannathrao, Suranagi MD. Socio-economics and Constraints and Rearing Practices of Bidri Goat Farmers in Bidar District of Karnataka. India Indian Journal of Small Ruminants*.* 2023;29(1):134-139.
11. Manzoor A, Khan HM, Nazir TA, Ganai AM. Socio- economics and Health practices in South Kashmir of Jammu and Kashmir. Indian Journal of Small Ruminants. 2022; 28(1):178-184.
12. Manzoor, A., Khan, H.M., Nazir, T.A., Shah, A.A., Akram, T., Afzal, I. and Khursheed, A. 2020. Socio-economics of sheep rearers in Anantnag district of Jammu and Kashmir. *Journal of Entomology and Zoology Studies,* **8**(4): 2400-2406.
13. Nijanand, G., N. Rajanna, N., Suresh, R., Sakaram, D. and Reddy, M.S. 2021. A Study on Socio-Economic Profile of Migratory Sheep Farmers in Narayanapet District of Telangana State. *International Journal of Agriculture, Environment and Biotechnology,* **14**(04): 631-634.
14. Nishanth AA, Paramasivam A, Jagatheesan PNR, Ramachandran M, Henry ACE. Socio economic profile of Pattanam sheep farmers in the Cauvery delta zone of Tamil Nadu. The Pharma Innovation Journal. 2023;12(4):1911-1914.
15. Payalkumari Maheshbhai Patel and Mohit Chhabhaya Rameshbhai 2024, An analysis of the socio-economic status of farmers and cropping pattern adopted in the Valsad district of Gujarat *International Journal of Agriculture Extension and Social Development* 7;624-628
16. Reddy PP, Vinoo R, Muralidhar M, Venkateswara CH, Kumar A, Sudhakar K. Socio-economic Status, Sheep Husbandry Practices and Morphological Patterns of Maceral Sheep, a Lesser-known Sheep Breed of Andhra Pradesh. Journal of Animal Research. 2020;10(5):827- 835.
17. Shah, S. M. and Akhone, M.M. 2021. Animal Husbandry in Cold Arid Region- The Kargil Perspective. *International Journal of Livestock Research*, **11**(10): 13–18.
18. Shashidhara KK, Reddy BS, Dixit, Chanappa AK, Goudappa SB. Traditional Sheep Management Practices in North Eastern Dry Zone of Karnataka, India. Scientist. 2022;1(3):5146-5156.
19. Shirsat SG, Kolhe SR, Nande MP, Khanvilkar AV, Shende TC. Socio-economic status of migratory shepherds and sheep husbandry practices of sheep in Western Maharashtra. International Journal Pure & Applied Bioscience. 2019;7(2):105-112.
20. Shivakumara C, Reddy BS, Patil SS. Socio-Economic Characteristics and Composition of Sheep and Goat Farming under Extensive System of Rearing Tumakuru, Chitradurga, Belagavi and Kalaburagi districts of Karnataka; c2020. Agricultural Science Digest. 40(1):105-108.
21. Singh, Amarinder (2001), A Ridge Too Far: War in the Kargil Heights 1999, Moti bagh Palace, ISBN 9788193107416
22. Siripurapu KK. The Traditional Sheep Penning System: An Exploratory Study on Farmers’ Preferences, Farmer- Pastoralist Relationships and Economics of Sheep Penning in Telangana. India Pastures & Pastoralism. 2023;01: 64-92.
23. Sukhadeve,s ., Hussain, K.M., and Ahmed, K.F. 2023. *Statistical Handbook District* *Kargil* DISTRICT STATISTICS & EVALUATION OFFICE (DSEO) KARGIL
24. Sundaramoorthy M, Kumaravelu N, Thamilvanan T, Serma A, Pandian S, *et al*. Pattanam adu sheep farming in the breeding tract: The socio-economic dimensions. Journal of Entomology Studies and Zoology. 2021;9(1):1490-1493.
25. Vasanthi S, JayaLaxmi P, Reddy S, Prasad RMV. Socio-economic status and constraints faced by shepherds in Telangana. The Pharma Innovation Journal. 2022;11(11):1601-1604.