



## Socio-economic and phenotypic parameters of Purgi goats of Ladakh, India

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Received: 7 February 2021; Accepted: 23 November 2022

### ABSTRACT

A study on the socio-economic, phenotypic, and technical features of Purgi goats in Kargil was undertaken. A total of 215 Purgi goat breeders from 8 villages were interviewed and 215 kids born between 2016 and 2018 were studied. The study revealed that Purgi goat farming under the study area is mainly practiced by poor farmers having an education level of middle to matric standard and belonging to the middle age group and scheduled tribe (Muslims) community. The average annual income (Lakhs) from goat farming, livestock rearing, agriculture, other sources and overall were  $0.20 \pm 0.00$ ,  $0.32 \pm 0.02$ ,  $0.59 \pm 0.01$ ,  $0.59 \pm 0.01$  and  $1.40 \pm 0.02$ , respectively. Animals in small flocks are maintained semi-intensively. The predominant coat colour was black. The overall body weight (kg) was  $1.08 \pm 0.04$ ,  $3.60 \pm 0.02$ ,  $5.83 \pm 0.03$ ,  $8.70 \pm 0.04$ ,  $10.58 \pm 0.06$  and  $13.46 \pm 0.14$  at birth, weaning, 6, 9, 12 and 24 months. The least-squares means (cm) for body measurements, viz. height at withers (BH), body length (BL), heart girth (HG), and paunch girth (PG) at birth to yearling age were  $58.87 \pm 0.03$ ,  $76.45 \pm 0.03$ ,  $71.21 \pm 0.05$  and  $74.22 \pm 0.12$  cm, respectively. The age at first estrus, weight at first estrus, age at first service (AFS), weight at first service (WFS), age at first lambing (AFL), gestation period (GP), and inter kidding interval (KI) were  $310.39 \pm 3.82$  days,  $74.22 \pm 0.12$  (kg),  $332.56 \pm 3.00$  (days),  $12.71 \pm 0.05$  (kg),  $513.06 \pm 2.36$  (days),  $149.93 \pm 0.11$  (days) and  $288.16 \pm 2.98$  (days), respectively. It can be concluded that the Purgi goat is a unique, dwarf, and very important genetic resource of the country and it should be characterized and conserved for further improvements.

**Keywords:** Kargil, Purgi goats, Socio-economic, Technical characteristics

Sheep and goats are important in subsistent agriculture on account of their unique ability to adapt and maintain themselves in harsh environments. Rearing goats is a traditional vocation in Jammu and Kashmir. Goats are a great resource for the farmers of the Valley (Rather *et al.* 2020). Goats are reared for meat, milk, hides, and fiber. Due to these reasons, they play a pivotal role in the socio-economic upliftment of the weaker sections. Despite providing support to the huge population of the region, many recognized goat breeds are yet to be characterized and documented. Purgi goat population is distributed in the Kargil district of Ladakh. The population is being used by the breeders/farmers for meat and fiber production and is known for the quality chevon production. Knowledge of phenotypic variation is important for the classification, documentation, characterization, and effective utilization of the genetic worth of livestock breeds through mass selection. Further, no improvement program can be

designed without knowledge of phenotypic traits, performance, and basic information about habitat and managerial practices in vogue (FAO 2011, Rather 2020). The information so collected will be utilized for planning the management of AnGR at local, national, regional, and global levels. The production system includes the natural environment, management practices in vogue and the common uses to which the animals are put, and social and economic factors such as ecological niche, distribution, the socio-economic profile of farmers, market orientation, marketing opportunities, and gender issues (FAO 2011). Purgi is small in size (adult's body weight 18.5-23.5 kg) with dull black and white coat colour and plays a vital role in livelihood support in the area. Purgi is being used by breeders/farmers for meat as well as fiber production and is known for the chevon having a good market. The declining population of this goat may be due to the socio-economic conditions of the breeders/farmers, social status, and the management practices prevailing in the area. Therefore, a study was undertaken for the phenotypic characteristics of Purgi goats.

### MATERIALS AND METHODS

*Data collection:* To study the socio-economic status of

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Purgi goat farmers, a field survey was undertaken from 2016 to 2018 in eight villages, viz. Baroo, Treapone, Minji, Saiaskout, Titi-chumit, Purick, GM-Pore, and Blambis, of district Kargil (Ladakh). The villages were selected owing to a high population of Purgi goats. The data were collected from 215 randomly selected Purgi goat farmers through a semi-structured questionnaire. The data were collected through personal face-to-face contact method on key socio-economic indicators, i.e. Age of farmer (farmers were classified based on age into three groups: Young group-farmers aged <39, middle age group-farmers between 40-59 and farmers having age 60 and above); category (1 group: Schedule tribe); sex of respondents (1 group: Male); Marital status (1 group: Married); Education level of farmers (5 groups: Illiterate, Primary, Middle, Matric and Graduate); Animal house (2 groups: Pucca and Kuccha).

**Breeding tract of Purgi goat:** Purgi is uniformly distributed in the whole Chiktan block to the Sankoo block of Kargil. Breeding tract of Purgi goats is divided into Blocks Chiktan (villages: Shahar, Youkma, Kharboo, Sandoo, Lamsu, Khangral, Stakchy, Baroo, Treapone and Minji), Taisuru (Parakarchik, Tangole, Panikhar, Sangra, Saiaskout and Titi-chumit), Shargole (Phokarphoo, Shargole, Tacha-karit, GM-Pore, and Sankoo), Sankoo (Umba, Stakpa, Barsoonallah and Blambis).

Kargil is the second largest town in Ladakh after Leh, scattered over an area of 14,086 km<sup>2</sup>. The human population of Kargil is 143,388 numbers with an average literacy rate of 74.49%. Over 90% of the population is busy with livestock rearing. Kargil is situated at 2,676 m ASL and bounded located 204 km to the east of Srinagar and 234 km west of Leh to the east. It is located at 34° 33' 22.8060" E Longitude and 76° 7' 57.0252" N Latitude.

The data on key socio-economic indicators, viz. land holding size, livestock holding, education, age, category, herd size, annual income and flock size and structure along with the other important indicators of goat farming like veterinary care, housing feeding, breeding practices, management, reproductive performance, and disease prevalence were collected through personal interviews of randomly selected 215 farmers through face-to-face contact method, using a structured questionnaire. The body weight and biometric traits were obtained on 255 kids born between 2016 and 2017. Body weights were obtained by weighing individual animals using a weighing scale. A flexible tape rule was used to measure the traits, viz. Body length (BL), distance from point of shoulder to the point of tuber ischia; height at withers (HAW), distance from the base of the hoof to the highest point of withers; paunch girth (PG), body circumference around the paunch; and chest girth (CG), body circumference around the chest just behind the elbow joint. The data so collected were tabulated in excel spreadsheets. The data about the socio-economical profile were analyzed using statistical tools like frequency and percentage for a logical conclusion. However, data on different body weight traits, morphometric traits, and reproduction traits were analyzed by Harvey (1990).

## RESULTS AND DISCUSSION

**Socio-personal profile of Purgi farmers:** The socio-personal profile of Purgi farmers is presented in Table 1. The age respondents in the present study ranged between 35 to 70 years with an average age of 47.21 years. It is concluded that middle-aged people are economically active and engaged in goat rearing. High involvement of middle age group in goat rearing was also reported by Nandi *et al.* (2011), Sorathiya *et al.* (2013), Bashir *et al.* (2016), Nipane *et al.* (2017) and Gamit *et al.* (2020). All respondents in surveyed villages were male, married, and from the schedule tribes (ST) category. However, Roy and Tiwari (2016) in UP found only 11.11% of farmers belonging to the ST category, and 80% of farmers were married. Although no female respondent was observed but females were participating actively in goat farming in surveyed villages. The females were managing goats in terms of feeding and cleaning of animal houses during winters at home. The active participation of females in goat rearing was also reported by Roy and Tiwari (2016). Contradictory to the findings of the present study Gamit *et al.* (2020) reported 4.17% of female respondents. All the respondents were literates with 37.21 (primary schooling), 43.72% (middle pass), 7.44 % (matric pass) and 11.33% (graduates (19.44%), Junior high school (13%) and high school. Contradictory to the present study, Roy and Tiwari (2016) reported a 51.67% proportion of illiterate goat farmers in UP. However, Gamit *et al.* (2020) reported a literacy rate of 55.83%. The good education level in the present study might be associated with the urban and non-migratory nature of Purgi goat farmers. Education plays a key role in the implementation and execution of improved



Fig.1. Purgi goats of Ladakh.

Table 1. Distribution of the Purgi goat farmers and managerial practices according to the socio-economic characteristic of farmers

| Variable                  | Category                | Frequency | Percentage |
|---------------------------|-------------------------|-----------|------------|
| Category                  | ST                      | 215       | 100%       |
| Age                       | Young (20-39)           | 0         | 0.00       |
|                           | Middle (40-59)          | 116       | 53.95      |
|                           | Old (60 and above)      | 99        | 46.05      |
| Sex of respondents        | Male                    | 215       | 100        |
| Marital status            | Married                 | 215       | 100        |
| Education                 | Illiterate              | 0         | 0.00       |
|                           | Graduate                | 25        | 11.63      |
|                           | Matric                  | 16        | 7.44       |
| Landholding               | Middle                  | 94        | 43.72      |
|                           | Primary                 | 80        | 37.21      |
|                           | Marginal (0.1-10 Kanal) | 3         | 1.40       |
|                           | Small (11-20 Kanal)     | 36        | 16.74      |
|                           | medium (21-29 Kanal)    | 126       | 58.60      |
|                           | Large (>30 Kanal)       | 48        | 22.33      |
| Income from goats         | Average income          |           | 0.20±0.00  |
|                           | Very low ₹ (≤0.250)     | 200       | 93.02      |
|                           | Low ₹ (0.251-0.500)     | 15        | 6.98       |
|                           | Medium ₹ (0.501-1.000)  | 0         | 0.00       |
|                           | High ₹ (1.001-1.250)    | 0         | 0.00       |
|                           | Very high ₹ (≥1.251)    | 0         | 0.00       |
| Income from livestock     | Average income          |           | 0.32±0.02  |
|                           | Very low ₹ (≤0.250)     | 83        | 38.60      |
|                           | Low ₹ (0.251-0.500)     | 122       | 56.74      |
|                           | Medium ₹ (0.501-1.000)  | 6         | 2.79       |
|                           | High ₹ (1.001-1.250)    | 4         | 1.86       |
|                           | Very high ₹ (≥1.251)    | 0         | 0.00       |
| Income from agriculture   | Average income          |           | 0.59±0.01  |
|                           | Very low ₹ (≤0.250)     | 7         | 3.26       |
|                           | Low ₹ (0.251-0.500)     | 92        | 42.79      |
|                           | Medium ₹ (0.501-1.000)  | 116       | 53.95      |
|                           | High ₹ (1.001-1.250)    | 0         | 0.00       |
|                           | Very high ₹ (≥1.251)    | 0         | 0.00       |
| Income from other sources | Average income          |           | 0.29±0.01  |
|                           | Very low ₹ (≤0.250)     | 116       | 53.95      |
|                           | Low ₹ (0.251-0.500)     | 89        | 41.40      |
|                           | Medium ₹ (0.501-1.000)  | 10        | 4.65       |
|                           | High ₹ (1.001-1.250)    | 0         | 0.00       |
|                           | Very high ₹ (≥1.251)    | 0         | 0.00       |
| Overall income            | Average income          |           | 1.40±0.02  |
|                           | Very low ₹ (≤0.250)     | 0         | 0.00       |
|                           | Low ₹ (0.251-0.500)     | 0         | 0.00       |
|                           | Medium ₹ (0.501-1.000)  | 16        | 7.44       |
|                           | High ₹ (1.001-1.250)    | 129       | 60.00      |
|                           | Very high ₹ (≥1.251)    | 70        | 32.56      |
| Animal House              | Pucca                   | 191       | 88.84      |
|                           | Kuccha                  | 24        | 11.16      |
| Farming experience        | Good                    | 215       | 100        |
| Arrangement               | Close                   | 61        | 28.37      |
|                           | Open/close              | 154       | 71.63      |
|                           | Day/night               | 149       | 69.30      |
|                           | Night                   | 66        | 30.70      |
| Feeding                   | Green+ Busa             | 215       | 100        |
| Mineral mixture           |                         | 0         | 0          |
| Salt                      | Lahori salt             | 515       | 100        |

Table 2. Physical traits of Purgi goats

| Trait              | Number | Frequency                                      |
|--------------------|--------|------------------------------------------------|
| Coat colour        | 200    | Black – 72.99%,                                |
|                    | 59     | White – 21.53%,                                |
|                    | 15     | Brown – 5.47%                                  |
| Head Shape         | 216    | Straight (78.83%)                              |
|                    | 58     | Slightly Convex (21.17%)                       |
| Eyes colour        | 9      | Black – 2.28%,                                 |
|                    | 37     | Brown – 13.50%,                                |
|                    | 228    | White – 83.21%                                 |
| Ear size and shape | 243    | Medium & Small Droopy: 88.69% with curled tips |
|                    | 31     | Medium & Small Straight – 11.31%               |
| Horn               | 245    | Twisted (89.42%),                              |
|                    | 29     | Straight (10.58%)                              |
| Body size          | 274    | Small                                          |
| Hooves             | 274    | Light Black                                    |
| Animals            | 274    | Active and docile                              |

management and breeding techniques in goat rearing and people with higher education are more innovative than illiterate farmers. Pictures of the goat are given in Fig. 1.

**Socio-economic profile of Purgi goat farmers:** The distribution of Purgi goat farmers according to socio-economic characteristics is presented. Contradictory to the results of the present study Roy and Tiwari (2016) reported the proportion of landless, Marginal, small, medium, and large land-holding farmers as 34.44%, 31.11%, 11.67%, 8.33%, and 14.44%. The reason for the proportion of farmers having medium and large land holdings may be due to the reason that Ladakh is a less populated area with a fragile ecology. The average annual income (Lakhs) of Purgi goat farmers from goat farming, livestock, agriculture, other sources and overall was  $0.20 \pm 0.00$ ,  $0.32 \pm 0.02$ ,  $0.59 \pm 0.01$ ,  $0.59 \pm 0.01$  and  $1.40 \pm 0.02$ , respectively. The mean overall annual income (lakhs) from all sources of the breeders was

$\text{₹}1.40 \pm 0.02$  lakhs. Most houses are pucca with both open and closed types.

**Management practices:** The results of the present study indicated that these Purgi goats were mostly reared under a semi-intensive feeding system and fed on an average of 1.5 kg of greens/bhusa/ dried alfalfa per goat per day especially during chilling winters when animals were managed indoors in round the clock in Pucca and Kuccha houses to prevent them from severe cold and stray dogs. Pucca and Kuccha houses were used by 88.84 and 11.16, respectively for housing Purgi goats during night hours and winters along with other livestock species. The present study aligns with the report of (Rather *et al.* 2020). However, Kumar *et al.* (2006) and Verma *et al.* (2007) reported that farmers were managing animals in Kuccha houses. However, Oladele and Adenegan (1998) and Adeshinwa and Okunlola (2000) reported extensive systems as the most common production practice in south-western Nigeria. Ajala and Gefu (2003) also reported that small ruminants were mostly managed under an extensive system in northern Nigeria. The difference may be attributed to the variation in the economic conditions of farmers. Rather *et al.* (2020) reported that goats were fed paddy straw, maize stubble, oats, dried tree leaves, hay prepared from natural growing grasses, pods, and stock of soya, pea, and beans were used as fodder whereas, maize, rice bran, wheat bran, oil cakes, etc were used as a concentrate. Vaccination against FMD and PPR and drenching against ecto and endo-parasites were regularly done. However, farmers were not feeding mineral mixtures and no fortification of feed and fodder was done except all were feeding goats Lahori salt. The animals were treated by expert veterinarians from Sheep Husbandry Department as per morbidity. Stream and pond water was used for quenching of thirst of Purgi goats during summer and winter (buckets) and were done outdoors and indoors, respectively twice daily. The dung produced by goats was used as manure in agricultural lands. Random natural mating was

Table 3. Least square means for body weight and body measurements of Purgi goats at different ages

| Trait   | S | Birth            | Weaning          | 6 months         | 9 months         | 12 months        | 24 months        |
|---------|---|------------------|------------------|------------------|------------------|------------------|------------------|
| BW (kg) | F | $1.08 \pm 0.04$  | $3.60 \pm 0.02$  | $5.83 \pm 0.03$  | $8.70 \pm 0.04$  | $10.58 \pm 0.06$ | $13.46 \pm 0.14$ |
|         | M | $1.35 \pm 0.03$  | $3.63 \pm 0.02$  | $5.80 \pm 0.03$  | $8.77 \pm 0.03$  | $10.83 \pm 0.05$ | $13.50 \pm 0.13$ |
|         | O | $1.22 \pm 0.02$  | $3.61 \pm 0.02$  | $5.82 \pm 0.02$  | $8.72 \pm 0.03$  | $10.64 \pm 0.04$ | $13.48 \pm 0.09$ |
| BH (cm) | F | $33.15 \pm 0.05$ | $43.79 \pm 0.06$ | $48.63 \pm 0.05$ | $53.97 \pm 0.07$ | $58.53 \pm 0.08$ | $58.02 \pm 0.08$ |
|         | M | $34.21 \pm 0.06$ | $45.81 \pm 0.07$ | $51.21 \pm 0.07$ | $55.23 \pm 0.09$ | $59.21 \pm 0.09$ | $59.74 \pm 0.09$ |
|         | O | $33.68 \pm 0.02$ | $44.8 \pm 0.02$  | $49.92 \pm 0.03$ | $54.60 \pm 0.02$ | $58.87 \pm 0.03$ | $58.88 \pm 0.04$ |
| BL (cm) | F | $38.27 \pm 0.03$ | $57.45 \pm 0.04$ | $78.93 \pm 0.03$ | $74.18 \pm 0.03$ | $75.35 \pm 0.05$ | $76.19 \pm 0.05$ |
|         | M | $40.21 \pm 0.07$ | $61.11 \pm 0.07$ | $60.99 \pm 0.06$ | $75.98 \pm 0.05$ | $77.55 \pm 0.06$ | $79.97 \pm 0.06$ |
|         | O | $39.24 \pm 0.03$ | $59.28 \pm 0.02$ | $69.96 \pm 0.03$ | $75.08 \pm 0.03$ | $76.45 \pm 0.03$ | $78.08 \pm 0.03$ |
| CG (cm) | F | $40.26 \pm 0.06$ | $58.57 \pm 0.08$ | $66.81 \pm 0.09$ | $70.91 \pm 0.11$ | $69.86 \pm 0.11$ | $73.29 \pm 0.11$ |
|         | M | $42.48 \pm 0.09$ | $61.75 \pm 0.08$ | $67.99 \pm 0.09$ | $73.25 \pm 0.11$ | $72.56 \pm 0.12$ | $75.99 \pm 0.12$ |
|         | O | $41.37 \pm 0.04$ | $60.16 \pm 0.04$ | $67.4 \pm 0.05$  | $72.08 \pm 0.05$ | $71.21 \pm 0.05$ | $74.64 \pm 0.06$ |
| PG (cm) | F | $45.04 \pm 0.13$ | $64.67 \pm 0.15$ | $72.92 \pm 0.15$ | $72.95 \pm 0.19$ | $72.79 \pm 0.19$ | $75.71 \pm 0.23$ |
|         | M | $47.12 \pm 0.15$ | $65.01 \pm 0.17$ | $72.12 \pm 0.17$ | $74.13 \pm 0.21$ | $75.65 \pm 0.17$ | $77.89 \pm 0.26$ |
|         | O | $46.08 \pm 0.09$ | $64.84 \pm 0.11$ | $72.52 \pm 0.09$ | $73.54 \pm 0.13$ | $74.22 \pm 0.12$ | $76.8 \pm 0.15$  |

observed as a routine practice and no selection of prone sire was observed. Males, surplus females (at around the age of 1 to 1.5 years), and culled stock were sold for chevon to bluchers. The chevon produced was locally used no export was observed. Similar findings were reported by Rather *et al.* (2020). It is concluded from the study majority of farmers had small to medium livestock flock/herd size ranging between 5-49 goats, 19-63 overall livestock excluding poultry, and 5-20 poultry birds/ household. More or less similar findings were also observed by Das (2003) and Sah (2005). Animals are mostly treated by paravets followed by veterinary assistant surgeons and owners by allopath and indigenous medicines respectively. Deworming is done twice a year. The most common diseases in the area are contagious caprine pleuropneumonia, *Peste des petitis* ruminants, foot, and mouth disease, goat pox, and foot rot in the area. Vaccinations are being practiced by the farmers on regular basis for infectious diseases. Adesehinwa *et al.* (2004) stated that an increase in the cost of production of ruminant animals was attributable to additional costs incurred in transporting and treating sick animals, as well as the cost of pest and disease control to prevent an epidemic outbreaks. Most respondents claimed that input supplies such as drugs and feeds increased livestock production. Chukwuma (2012) that awareness of the need for veterinary services, no doubt, is a step toward its access and utilization.

**Flock size:** The flock size of Purgi goats reared by farmers is presented in Supplementary Table 1. The overall flock size of  $24.85 \pm 0.78$ / family (rang 5-49) was observed in the present study. The Purgi goats were reared in mixed farming and farmers were also keeping other livestock species along with Purgi goats. Mixed livestock farming is practiced throughout India and is reported by researchers throughout the country (Rather *et al.* 2019 and Want 2016).

**Physical traits:** The physical traits of Purgi goats are presented in Table 2. The animals are active, docile, and small sized having light black hooves. Contradictory to the results of the present study Deokar *et al.* (2006) reported black-colored hooves in Osmanabadi goats. Whereas Deokar *et al.* (2007) observed black (30.88%) and white (69.12%) hooves in Sangamneri goats. However, Deshpande *et al.* (2009) in Surti goats reported a proportion of 76.05%

and 23.95 of brown, and black hooves, respectively. Rather *et al.* (2020) in Kashmir goats reported a proportion of black, white, and brown of 24.73%, 15.05%, and 26.88, respectively. Wattles were absent in all studied goats whereas beard was observed in all adult goats. The absence of wattles and the presence of beards in adult goats (35.75 %) irrespective of sex was also reported by Rather *et al.* (2020) in Kashmir goats.

**Body weights and body measurement traits of Purgi goats:** The body weight and morphometrics of Purgi goats at different ages from birth to 24 months age are presented in Table 3. The male animals were significantly heavier in all ages than females. It is observed that Purgi is a dwarf goat. Higher estimates for growth traits and body measurements were reported in Osmanabadi goats (Patilet *et al.* 2008, Jagdale *et al.* 2012 and Panda *et al.* 2016), Sirohi goats (Pathodiya *et al.* (2004, Sharma *et al.* 2008, Meel *et al.* 2010, Tyagi *et al.* 2013, Dudhe *et al.* 2015 and Waiz *et al.* 2017), Jakhrana goats (Mandal *et al.* 2010 and Bhusan *et al.* 2012), Rohilkhand local goats (Fahim *et al.* 2013), Berari goats (Kharkar *et al.* 2014), Sangamneri goats (Jagdale *et al.* 2012, Patil *et al.* 2013), Konkan kanyal goats (Bhagat *et al.* 2015), Marwari (Swami *et al.* 2006), Malabari goats (Alex *et al.* 2010), Bakerwali goats (Reotheia *et al.* 2013), Jamunapari goats (Roy *et al.* 1997) and Kashmiri goat (Rather *et al.* 2020). The effect of sex was significant ( $P \leq 0.05$ ) on all the traits under study with sexual dimorphism in favor of male kids. These results aligned with the finding of Dudhe *et al.* (2015) and Pathodiya *et al.* (2004). However, the non-significant effect of the sex of kids on HG, HAW, and BL on all ages was observed by Kharker *et al.* (2014).

**Reproduction performance:** The reproductive performance of the Purgi goat is presented in Table 4. It is observed from the results of the present study that Purgi goats were good breeders exhibiting first estrous at an age of  $310.39 \pm 3.82$  days and having a body weight of  $12.73 \pm 0.10$  kg. The reproduction traits observed in Purgi goats are within the range reported for Indian native breeds (Dixit *et al.* 2013, Rather *et al.* 2020). The major breeding season was October-December major breeding season and the minor was March-April. The finding agrees with the report of Rather *et al.* (2020). However, Dixit *et al.* (2013)

Table 4. Reproduction performance of Purgi goats

| Variable | N       | AFH (days)         | WFH (kg)         | AFS (days)         | AFL (days)         | WFS (kg)         | GP (Days)         | KI (days)          |
|----------|---------|--------------------|------------------|--------------------|--------------------|------------------|-------------------|--------------------|
| Overall  | 477     | $310.39 \pm 3.82$  | $12.73 \pm 0.10$ | $332.56 \pm 3.00$  | $513.06 \pm 2.36$  | $12.71 \pm 0.05$ | $149.93 \pm 0.11$ | $288.16 \pm 2.98$  |
| Villages | P.Value | 0.9459             | 0.1101           | 0.0186             | 0.235              | 0.1403           | 0.2215            | 0.8424             |
| Baroo    | 61      | $305.56 \pm 12.92$ | $12.61 \pm 0.34$ | $317.50 \pm 10.15$ | $503.26 \pm 10.30$ | $12.83 \pm 0.18$ | $149.01 \pm 0.18$ | $279.44 \pm 10.07$ |
| Btambis  | 51      | $319.77 \pm 8.26$  | $12.84 \pm 0.22$ | $318.18 \pm 6.49$  | $512.31 \pm 12.30$ | $12.94 \pm 0.11$ | $151.50 \pm 0.10$ | $284.05 \pm 6.44$  |
| Gm-Pore  | 48      | $310.79 \pm 8.89$  | $12.50 \pm 0.23$ | $340.13 \pm 6.99$  | $515.10 \pm 13.27$ | $12.55 \pm 0.12$ | $152.66 \pm 0.30$ | $290.26 \pm 6.93$  |
| Minji    | 71      | $303.33 \pm 12.92$ | $13.06 \pm 0.34$ | $352.22 \pm 10.15$ | $526.26 \pm 14.78$ | $12.43 \pm 0.18$ | $151.21 \pm 0.18$ | $296.78 \pm 10.07$ |
| Purick   | 66      | $306.74 \pm 8.08$  | $12.35 \pm 0.21$ | $336.74 \pm 6.35$  | $508.74 \pm 15.66$ | $12.71 \pm 0.11$ | $148.23 \pm 0.20$ | $285.52 \pm 6.30$  |
| Salaskou | 68      | $313.13 \pm 7.91$  | $12.98 \pm 0.21$ | $332.50 \pm 6.22$  | $510.81 \pm 11.20$ | $12.76 \pm 0.11$ | $147.33 \pm 0.22$ | $284.92 \pm 6.16$  |
| Titi-Chu | 67      | $308.00 \pm 14.15$ | $11.93 \pm 0.37$ | $316.33 \pm 11.12$ | $494.21 \pm 10.10$ | $12.52 \pm 0.19$ | $150.25 \pm 0.11$ | $287.20 \pm 11.03$ |
| Treapone | 45      | $315.83 \pm 11.19$ | $13.54 \pm 0.30$ | $346.88 \pm 8.79$  | $533.91 \pm 16.51$ | $12.90 \pm 0.15$ | $149.23 \pm 0.08$ | $297.08 \pm 8.72$  |

in the Surti breed of goat reported March-April as a major breeding season. Twins were born to 10% only. However, Dixit *et al.* (2013) in the Surti breed of goat reported twins in 50–60% of goats. Male kids also exhibited sexual maturity at an age of 8–10 months age.

From the result of the present study, it is concluded Purgi goat is a unique, dwarf, and a very important genetic resource of the country maintained by the tribal community of Kargil. Purgi is adapted to the harsh agro-climatic and management conditions of Kargil. Therefore, it is recommended that Purgi should be studied and registered on priority.

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