

Changthangi :

The pride of Jammu and Kashmir

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Changthangi is a well-recognized breed of goat popular for its valuable produce called pashmina. The breeding tract of this goat is in the Changthang area of Leh district of Jammu and Kashmir and is adjacent to Tibet. The breed is well adapted to the local cold arid agro-climatic conditions of the region and is reared mainly by a nomad known as 'Changpa'. The fibre produced by this breed is the prime source for the world-class shawl industry of Kashmir. In addition to pashmina, this goat is also reared for chevon, milk, manure, pelt and even carriage. The number of this goat is presently declining and restricted mainly to Changthang area. Changthang region has harsh climatic dryness (with very low rainfall) and temperature varies from -40°C to $+40^{\circ}\text{C}$. The majority of the animals have white coat, though brownish red, fawn, grey and black animals are also seen. The horns are brown and mostly curved in shape. The Changthangi goats are small in body size (adult's body weight 26.50-30 kg). The major breeding season is July-November, while main kidding season at high altitude is February to April. The most prevalent diseases in the area are CCPP, PPR, EMD, goat pox and foot rot. The breed has high economic importance and market for the livelihood of the breeders.

Keywords: Changthangi doe, Changthangi goat, Fibre, Meat

ANIMAL husbandry had traditionally been a predominant farming occupation in hill and mountainous regions where land holding is marginal and fragmented. The economy of the region is basically agro-pastoral and livestock constitutes an important means of livelihood. The wide variations in topography, agro-climatic conditions and cultural traditions had favoured diverse animal husbandry practices since ages under different production systems. Among the livestock resources of the region, a unique breed of mountain goats called Changthangi, has been reputed to produce high value "Pashmina" for

sophisticated wool industry. These goats, across the Himalayan ranges, contribute to the subsistence livelihood of small holders particularly, the small and marginal farmers, landless labourers and the poorer sections of the society by

providing meat, milk, fibre, skin and hides, manure and transport at higher altitudes. The pashmina can only be grown in goat types raised at high altitude mountainous regions of India, Tibet, Nepal, China and Mongolia. The natural habitat of

these pashmina-yielding goats extends from the Ladakh plateau of Jammu and Kashmir through higher mountain ranges of Pangi, Lahaul and Spiti and Kinnaur valleys in Himachal Pradesh up to Uttarkashi, Pitthoragarh, and Chamoli districts of Uttarakhand.

Distribution and breeding tract

The breeding tract constitutes an area of about 24,000 square km and lies



Changthangi male



Changthangi female

in the Leh district of J&K between 32°–30/to 34°–00/NL and 77°–50/to 79°–10/EL.

Native environment and topography of breeding tract: The breeding tract of the Changthangi goat falls in the cold arid region of western subcontinent between the Karakoram and the Greater Himalayas interwoven with barren and rugged mountains forming some main valleys and collateral valleys of Changthang area. The terrain is mostly mountainous and denuded. The Changthang area is divided into two rural development blocks-Durbuk and Nyoma. The elevation of the area varies from 3,340 to 4,560 m above MSL and these elevations correspond to Liksy and Korzook villages, respectively. Changthang region has harsh climatic dryness with very low rainfall and temperature varies from hot to extreme cold. The area is known as Cold Himalayan Desert and has very low thermal and hydric indexes. July and August are the hottest and the January is the coldest month. The minimum and maximum temperature ranges between –40°C to 40°C and rainfall is very meager. The average relative humidity varies between 13-90% with the highest humidity corresponding to the lowest temperature.

Strength-weakness of breeding tract

- Farmers have very good experience in rearing livestock since long.
- Good wool and quality pashmina producing livestock is limited
- Low reproductive efficiency of the herds and low productivity also
- Poor accessibility in delivery of inputs and transport of product
- Lack of technology to improve pasturelands
- Weak coordination among the stakeholders
- Lack of improved technologies of wool, skin and hide processing etc

Socio-economic profile of Changthangi goat breeders

Goats are important component in resource-poor communities and they provide tangible benefits such as cash income from these animals, meat for home consumption, manure, skins and fibre. The system is agro-pastoral with rural communities heavily dependent on subsistence mixed annual cropping and livestock production for their livelihoods. A large percentage of farmers (98.2%) indicated cash income from sale of goats as important in goat farming, followed by socio-cultural values (69.3%) and meat (59.6%).

Households with large herds sold significantly more goats on average than those with medium and small

breeders. Such households presented a significant source of goats for the market and they could, therefore, be a target group for commercialization

Goat is more efficient producer of meat and milk than the cows, even under condition of good grazing. It was reported that for each kilogram live weight of breeding females goats produce 1.5 and 1.8 times the weight of meat produced by sheep and cattle respectively under the same management and environmental condition.

Physical traits

Body: Classified as Medium sized goats of India.

Body Coat: Varies from white to light brown and nearly whole body is covered with pashmina and long hairs including the facial areas.

Head: Typical convex.

Face: Long, tapering.

Ears: Straight and short.

Horns: Both sexes have horns but polled animals are also found. In most of the cases the colour of horn is brown, while in some cases black and white horns are also found. The shape of the horns are curved in most of the cases more than 87% while few animals have straight (13%) horns.

Wattle: Absent.

Tail: Short to medium, thin and straight, with very short in 4.0% and medium in 96%.

Morphometric traits

Body weight: Adult male: 26.50 to 30.0 kg; Adult female: 22-27.5 kg.

Body length: Adult male: 46.0-53.0 cm, Adult female: 44.0-51.0 cm.

Ear length: Male: 10.50-12.50 cm, female: 9.50-12.00 cm.

Tail length: Males: 9.0-13.0 cm, females: 8.5-11.5 cm.

Horn length: Males: 20.50-30.0 cm, Females: 18.0-29.0 cm.

Body height: Adult male: 46.0-58.0 cm, Adult female: 42.0-56.5 cm.

Chest girth: Adult male: 59.0-68.0 cm, Adult female: 55.0-64.0 cm.

Management practices

Housing: Goats are kept in paddocks during night. The paddocks have wall of stones piled in an orderly fashion in such a way that air may

pass through it. At places the paddock are made by dried bushes and their roots. A space area of 9 m × 9 m is provided to accommodate 300 animals during winter and only 200 during summer. Rongpas (stationary Changpas) sometimes provides a *kaccha* type of house in extreme winters. No special housing is provided during kidding and kids are kept in the open paddocks and the dams are allowed for grazing after 2–3 days of kidding. At some places, especially at high altitudes the young kids are kept underground (dugged out holes) with some old cloth lining provided to these holes. They are taken out of these holes only for milk feeding. This is done to avoid direct wind exposure to the kids, as the winds blows at very high speed. The sick kids are also kept in these holes separately. The sick animals are kept in the tents, where the Changpa goat breeders themselves live.

Feeding management: The Changthangi goat is exclusively maintained on extensive feeding/ grazing during summer. The animals remain in the pasture throughout the day from morning till evening (7-8 hrs). When snow melts, the nutritious clover crops in the pastures are fed whereas in winter the dried surface grasses and some under sand herbs and shrubs, after removing the top soil by hooves, are eaten by the goat. Only during severe winters, if there is snowfall and the grasses become covered by the frost, barely, palletted concentrate feed and some dried grasses are fed to the animals, otherwise the flocks remain on surface grazing only. There are 3 types of plant categories found in the area - cushion plants, dwarf plants and woody plants. Out of these plant species 5–6 types of grasses growing in the riverine or marshy areas are utilized by animals as fodder. Kids suckle their mothers up to 2 weeks of life and thereafter kids are sent out along with flocks and they start nibbling on blades of grasses. No systematic weaning of kids is done in the area and therefore no milk replacer is provided.

Diseases and their management

The declining population of this



Flock of Changthangi goat

breed may be due to socio-economic conditions of the breeders/farmers and the management practices prevailing in the area. As the matter of fact no serious exercise have been made to describe and evaluate this native goat breed on scientific lines and to make good results and contribution of this breed. Keeping in view the unique characteristics, adaptability in extreme cold climatic conditions of Ladakh, contribution to the income of the livestock keepers, suitable measures may be taken up by the Government to reverse the decline. The occurrences of the diseases in this breed of goat in its native tract are very less. Common bacterial diseases affecting the Changthangi goat are diarrhoea and clostridial diseases, but occasional incidence of Brucellosis are also reported. The commonly reported viral diseases are foot-and-mouth disease, ecthyma, goat pox and contagious caprinepleuro-pneumonia (CCPP). Among the parasitic diseases, *Eimeria* (coccidia) and few cases of *Moniezia* *Nematodirus* species and *Haemonchus* species were also observed. The goats are vaccinated against FMD, pox and clostridial diseases (dysentery, struck, malignant oedema, pulpy kidney, black's disease). For protection against the clostridial disease, multi-component clostridial vaccine is administered.

Dipping on large scale against mange and ectoparasites is done periodically.

Mortality pattern: The kid mortality in Pashmina goats decreases with increasing age and comes down from 28.34% in 1–2 months age group to 2.17% in 9–12 months age group. The overall mortality up to 1 year of age was 54.30%. The main causes of mortality are respiratory diseases, nutritional stress, wild animals attack as well as exposure of the kids to extreme cold climatic conditions of the region.

Migration

In Changthang area livestock (goat) is reared under extensive and complete migratory system of rearing. The livestock remains in migration throughout the year with defined routes to tread and camping spots to stay. The duration of stay at a given spot depends upon the availability of grazing on the land surface and also the migration pressure of other flocks.

Reproduction management

There is marked seasonality in the reproductive behaviour of Changthangi goats. The major breeding season is July–November. Only natural mating is practiced in this breed and a buck is allotted to 25–40 does for breeding. The age at first mating for male goat is 2–2.5



Table 1. Average age at different stages.

First tugging	Age at first kidding	Kidding interval	Kidding percentage	Litter size
550.33 ± 7.20 days	699.44 ± 10.23 days	366.45 ± 3.43 days	97.58 ± 2.23%	1.02 ± 0.50

years, whereas it is 1.5 years in females. The oestrous cycle lasts for 21–22 days with oestrous duration of 36–48 h. The gestation and service periods were 151.08 ± 0.50 and 227.79 ± 7.52 days, respectively, in Changthangi goats. The average age at various stages is given in Table 1.

Production characters

Daily milk production: 170–500 ml.

Milk yield per lactation: Poor milkers, most of the milk is consumed by kids.

Pashmina (Kashmir-cashmere) yield per annum: At first clip 78 ± 6 g, second clip 159 ± 9 g, third clip 227 ± 9 g, fourth clip 191 ± 10 g and fifth clip 195 ± 20 g.

Economics

Income and investment pattern in any enterprise is one of the most sensitive and crucial factors determining the economics of that enterprise. Pashmina occupies a prime position among animal fibres

for its fineness, warmth, durability, lightness, softness and ability to absorb dyes and moisture compared to mohair and/or wool. Pashmina is highly valued fibre for manufacturing quality apparels. It is recorded in the Guinness Book of World Records to be the costliest cloth in the world after trade ban of most precious natural fibre Shahtoosh (King of fibre) obtained from small Tibetan Antelope known as Chiru. Total Pashmina production in India during 2005–2006 was 40–50 tonnes, of which Changthangi breed contributed 70–80%. Goat fibre with less than $19 \mu\text{m}$ diameter is classified as cashmere but the fibre from Changthangi breed has average diameter of $10\text{--}14 \mu\text{m}$, which is considered best and warmest in the world. Brilliantly coloured feather weight pashmina shawls prepared from the fibre of Changthangi goats have become a fashion sensation, combining today's essential elements of style, comfort and luxury

throughout the world and fetch the prices more than ₹ 50,000 per shawl. Changthangi goat rearers or Changpas usually build up the flocks from their own animals over the period of productive life of animal and cull old/unproductive and dispose surplus animals. Changthangi goats are reared under harsh climatic conditions, therefore, suffer heavy losses on account of diseases, cold aridity and malnutrition. The magnitude of loss due to mortality was accounted for under the depreciation

The most important benefits from Changthangi goat rearing are in the form of Pashmina, animal sales, changes in flock inventory, milk and manure. The Changthangi goat rearers usually earn a net profit of about ₹ 724.67 to ₹ 970.96 per animal and about ₹ 41,307 to ₹ 112,732 per family. Changthangi goat rearing on an average generated an income to the tune of ₹ 13,794 to ₹ 26,796 per household per year by utilizing family labour like adult male, women, elderly persons and children.

It may be concluded from the above findings that Pashmina enterprise is profitable, possesses self-employment potential and if proper attention and care is taken, it will prove helpful in increasing the family welfare of downtrodden nomads, the Changpas rearing the breed under miserable conditions. The returns from Pashmina fibre forms the major component of gross returns in Changthangi goats (>40%) followed by sale and value addition in kids. Goat rearing not only generates income for livelihood under harsh climatic conditions, but also provides nutritional security to Changpas in the form of milk and meat.

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