

## Characterization of Udaipuri goat in its native tract

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### ABSTRACT

The name Udaipuri of this breed has its genesis from Udaipuri Patti, where it actually originated and reared in large numbers by the inhabitants of the area. The breed is distributed from Dugadda to Devrana area of Rathwadhas ranges (Dugadda to Kandi ridge) of Pauri Garhwal district. In kids, the mean horn length, forehead length, ear length, height at withers, body length, chest girth, tail length and body weight from 0-3 months of age were  $0.64\pm 0.05$  cm,  $8.77\pm 0.05$  cm,  $10.14\pm 0.06$  cm,  $33.41\pm 0.11$  cm,  $31.64\pm 0.12$  cm,  $36.64\pm 0.11$  cm,  $7.84\pm 0.05$  cm and  $2.48\pm 0.04$  kg, respectively in females and  $1.26\pm 0.08$  cm,  $8.95\pm 0.07$  cm,  $9.84\pm 0.09$  cm,  $35.84\pm 0.12$  cm,  $35.0\pm 0.14$  cm,  $38.58\pm 0.13$  cm,  $8.12\pm 0.06$  cm and  $2.79\pm 0.06$  kg, respectively in males. The average body measurement at adult age for horn length, forehead length, ear length, height at withers, body length, chest girth, tail length were  $16.05\pm 0.05$  cm,  $15.97\pm 0.03$  cm,  $14.73\pm 0.03$  cm,  $62.03\pm 0.06$  cm,  $61.21\pm 0.06$  cm,  $71.21\pm 0.07$  cm and  $12.76\pm 0.03$  cm, respectively in males and  $12.17\pm 0.01$  cm,  $15.09\pm 0.01$  cm,  $14.44\pm 0.01$  cm,  $59.10\pm 0.01$  cm,  $60.82\pm 0.01$  cm,  $70.96\pm 0.01$  cm and  $11.87\pm 0.01$  cm, respectively in females. The Udaipuri goats are small in size with  $22.10\pm 0.01$  kg body weight of adult females and  $24.67\pm 0.07$  kg of body weight of males. The marketing of live animal is organized and trading or prices are decided on live body weight bases.

**Keywords:** Chaugarkha goats, morphological characteristics, physical measurements, habitat.

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### INTRODUCTION

In India, considerable growth has been recorded in production of goat meat and milk during the last decade. The goat meat production has doubled (9.3% to 18.3%) and goat milk production has shown a growth rate of 31.53% during the last decade. The country stands first in goat milk production and is the second largest meat producer in the world sharing 26.31% goat milk and 10.41% goat meat production. Besides meat and milk, goats also produce good quality skin, valuable Pashmina fiber and manure. The goat sector contributes 14,453 crores to the agricultural economy of the country through meat (6851 crores), milk (4588 crores), skin (648 crores), etc., which accounts for around 8 per cent of the Gross Domestic Product (GDP) from livestock sector. In addition, the goat sector generates about 4% rural employment and about 20 million small and marginal farmers' and landless laborers' families depend on goats for their livelihood partially or completely.

The Himalayan economy is basically agro-pastoral and

its dependence on livestock farming is the extent that it is an integral part of it. Of the 529.7 million domestic animals in the country, nearly 9.7 % are in the Himalayan region (2007 census). The land holdings being very small, these livestock supplement the income and are considered to constitute capital asset. The country had 124.36 million goats as per 2003 census, which has increased to 140.56 million in 2007 and ranks first in the world. The slaughter rate of goat is at the level of 39.7% as compared 31.8% for sheep and 11.0% for buffalo.

Uttarakhand is situated in northern part of India. The total number of goats in the state is 1.315 million as per 2007 livestock census which constitutes about 9.36% of total goats of India. Majority of the goats belong to non-descript type and Udaipuri goats represent a population with potential for being recognized as a distinct breed.

### MATERIALS AND METHODS

The study was carried out in 12 villages of Dugadda and Yamkeshwar blocks of Pauri Garhwal district of

Uttarakhand with the objective of documenting the morphological and physical characteristics of Udaipuri goats in their native environment. The measurements were recorded for horn length, forehead length, ear length, height at withers, body length, chest girth, tail length and body weight of 407 Udaipuri goats (116 males and 291 females). The animals belonging to different age groups such as 0-3 months, 3-6 months, 6-9 months, 9-12 months and above one year of age as adults. In addition to this, data on husbandry practices was also collected. The information on animal husbandry practices were collected by direct interview of the farmers. The data were analysed to estimate the means for different traits.

#### RESULTS AND DISCUSSION

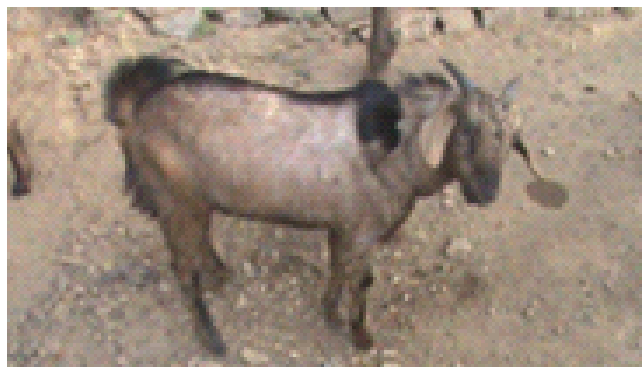
*Origin and native tract:* The native tract of this breed is Udaipuri and Ajmeri patties spread from Dugadda to Yamkeshwar. These patties (strips) are named after the settlers who migrated to these areas in the past from Udaipur and Ajmer (Rajasthan) districts of Rajasthan. Thus, the name Udaipuri of these goats has its genesis from Udaipuri Patti where it actually originated and is reared in large numbers by the inhabitants of the area. The breed is distributed from Dugadda to Devrana area of Rathwadhas ranges (Dugadda to Kandi ridge) of Pauri Garhwal district situated between 29° 48' to 30° 15' latitude and 78° 24' to 79° 23' longitude. Entire area is hilly with an elevation of approximately 1000 to 1500 M above mean sea level. The breeding tract of the Udaipuri goats lies in western part of Pauri Garhwal of Uttarakhand state where the climate is generally semi temperate to temperate throughout the year. The maximum temperature recorded in the month of June was 45° C at Kotdwar, which lies at the foothill of the district, while in the higher reaches at Dudhatoli it rises

to 25° C. Temperature drops to a minimum of 1.3° C in January and mean monthly temperature of the region ranges between 25° C and 30° C. The average annual rainfall in the district is 218 cm. The relative humidity varies between 54 and 63 per cent. The higher reaches receive some snow in winter when temperature drops to freezing point.

*Morphometric characteristics:* Udaipuri goats are small sized with a compact body covered with short hairs. The head is small with small to medium forehead with black hairs. The profile of the head is convex. The ears are medium and pendulous. The head possesses tapering muzzle, alert eyes and black coloured Roman nose. In adults, both males and females have curved and backward horns, which are ash gray to gray in colour. Representative adult male and female Udaipuri goats are shown in Fig. 1.

The top line is almost straight; the flank is moderate and the thigh is lean and not well developed. They have small, lean and straight legs squarely set under body. The hooves and claws are grey in colour. The tail is thin, short in length and warped with black hairs. The udder is small with well set small pointed teats. The length of teats ranged from 3 to 4.5 cm.

The goats in the region are reared by the farmers in an unorganized, semi-feral system of management. The goats are taken out for browsing covering a distance of 1 to 2 kilometres for a period of seven to eight hours, daily. The goats browse on the bushes along road sides, on the denuded cliffs, where other agricultural activities are bare minimum. The main sources of browsing material are local grasses, bushes, leaves from harvested crops and lopped tree leaves. The goats, by and large, depend on browsing during all the seasons and farmers hardly provide any



**Figure 1.** Typical Udaipuri buck (left) and doe (right)

**Table 1.** Physical measurements of different traits (cm) in male Udaipuri goats

Age	Horn length	Forehead length	Ear length	Height at withers	Body length	Chest girth	Tail length	Body weight	N
0-3 Months	1.26±0.08	8.95±0.07	9.84±0.09	35.84±0.12	35.0±0.14	38.58±0.13	8.21±0.06	2.79±0.06	22
3-6 Months	9.38±0.08	13.61±0.07	13.08±0.07	52.0±0.16	52.0±0.13	58.61±0.13	11.15±0.09	12.61±0.12	13
6-9 Months	11.67±0.09	14.5±0.05	13.61±0.06	55.39±0.10	54.67±0.10	61.55±0.11	11.44±0.06	16.78±0.08	18
9-12 Months	12.96±0.06	15.19±0.05	14.19±0.04	57.0±0.08	57.73±0.07	66.77±0.08	12.15±0.04	18.96±0.07	26
Adult	16.05±0.05	15.97±0.03	14.73±0.03	62.03±0.06	61.21±0.06	71.57±0.07	12.76±0.03	24.67±0.07	37

**Table 2.** Physical measurements of different traits (cm) in female Udaipuri goats

Age	Horn length	Forehead length	Ear length	Height at withers	Body length	Chest girth	Tail length	Body weight	N
0-3 Months	0.64±0.05	8.77±0.05	10.14±0.06	33.41±0.11	31.64±0.12	36.64±0.11	7.84±0.05	2.48±0.04	19
3-6 Months	6.55±0.08	12.85±0.06	13.70±0.05	49.80±0.10	50.20±0.11	58.0±0.12	11.25±0.05	13.13±0.13	20
6-9 Months	7.42±0.07	12.95±0.06	13.26±0.05	52.05±0.12	52.53±0.10	60.0±0.09	11.37±0.06	16.31±0.10	19
9-12 Months	9.01±0.02	13.84±0.02	14.09±0.02	54.19±0.03	54.95±0.03	64.0±0.03	11.33±0.02	17.52±0.03	63
Adult	12.17±0.01	15.09±0.01	14.44±0.01	59.10±0.01	60.82±0.01	70.96±0.01	11.87±0.01	22.10±0.01	170

concentrate to the goats. The kids are allowed to suckle their mother during early life and also fed on grasses, tree leaves etc. up to three month of age and thereafter they are allowed to browse along with the flock.

Physical measurements and body weight: The average body measurements and weights of Udaipuri goats of both sexes and at different ages have been provided in Tables 1 and 2. In kids of 0-3 months of age, the mean horn length, forehead length, ear length, height at withers, body length, chest girth, tail length and body weight were 0.64±0.05 cm, 8.77±0.05 cm, 10.14±0.06 cm, 33.41±0.11 cm, 31.64±0.12 cm, 36.64±0.11 cm, 7.84±0.05 cm and 2.48±0.04 kg, respectively in females and 1.26±0.08 cm, 8.95±0.07 cm, 9.84±0.09 cm, 35.84±0.12 cm, 35.0±0.14 cm, 38.58±0.13 cm, 8.12±0.06 cm and 2.79±0.06 kg, respectively in males. The body measurement at adult age for horn length, forehead length, ear length, height at withers, body length, chest girth, tail length were 16.05±0.05 cm, 15.97±0.03 cm, 14.73±0.03 cm,

62.03±0.06 cm, 61.21±0.06 cm, 71.21±0.07 cm and 12.76±0.03 cm respectively in males and 12.17±0.01 cm, 15.09±0.01 cm, 14.44±0.01 cm, 59.10±0.01 cm, 60.82±0.01 cm, 70.96±0.01 cm and 11.87±0.01 cm, respectively in females. Based on height at withers, goats have been classified as large (>65cm), small (51-65 cm) and dwarf (<50 cm) (Devendra and Burns 1983). Accordingly Udaipuri goats can be classified as small. In general males had greater body measurements and weight than females of the corresponding age. Similar observations have been reported by Singh and Barwal (2007) and Barwal et al. (2010) in Chaugarkha goats. The Udaipuri goats are small in size with 22.10±0.01 kg adult body weight in females and 24.67±0.07 kg in males (Tables 1 and 2).

Housing: The goats are kept along with other animals in the same house during the night. The small size flocks of goats are mostly housed with cattle and buffaloes while flock size of more than 5 goats is housed separately in

closed type pens, which are not well ventilated. The kids are also housed with the goats. Tree leaves from the nearby forest are collected which are used as litter. A basketful or two of this leaf litter is scattered under the goats in the shed every day. This acts as cushion and provides comfort and also absorbs the dung and urine of the animals. After 2 or 3 days, the soaked leaf litter is removed and put either in a pit or in a heap.

**Breeding:** The bucks are part of the flock all the times and the owner exercises no control over mating. Among the flocks studied, majority of the large flocks owned breeding males. Farmers with small flocks got breeding services of their does with breeding bucks from other flocks. A few male kids were selected and kept for breeding purposes, others were disposed of or slaughtered for meat purpose at an early age and almost all the females were retained in the flock. Only old does were sold for meat purpose (Singh et. al., 2009).

**Marketing:** The Udaipuri goats are reared mainly for meat purpose either for own consumption or sale or also used as sacrificial animal during religious rituals. They are either sold as live animals or slaughtered at maturity or whenever need arises. The marketing of live animal is organized and prices are decided on live body weight basis.

Udaipuri goats thus constitute a valuable goat germplasm of the hilly state of Uttarakhand and a source of income for farmers from the lower strata of

society. The animals are quite uniform in their morphology and have distinct morphological characteristics from the recognised goat breeds of the country besides having an isolated breeding tract. It is therefore suggested that this new goat population may be considered for recognition and registration as a new breed of Indian goats.

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