

## **GOJALI GOAT BREED OF GILGIT BALTISTAN, PAKISTAN**

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**ABSTRACT:** Gojali goat breed is found in Tehsil Gojal, subdivision Hunza, of Gilgit Baltistan, Pakistan. Generally very small breed with small legs, large belly and most of the specimen have brown strip from temple to nostrils on both sides. It is a pashmina bearing breed. The breed was studied for morphological characteristics, somatometric measurements, growth, productive and reproductive traits. Somatometric measurements indicated the average height  $70.41 \pm 0.837$  cm vs.  $57.91 \pm 0.342$  cm, heart girth  $83.58 \pm 0.628$  cm vs.  $70.42 \pm 0.702$  cm and body length  $78.18 \pm 0.355$  cm vs.  $70.10 \pm 2.160$  cm in males vs. females of Gojali goat. The data on growth traits indicated the average birth weight, weaning weight and adult weight as  $1.53 \pm 0.070$ ,  $7.04 \pm 0.17$  and  $41.38 \pm 0.39$  kg in males against  $1.28 \pm 0.04$ ,  $5.61 \pm 0.58$  and  $25.21 \pm 0.37$  kg in female specimens. The weaning age and adult age averaged  $120 \pm 0.15$  and  $1460 \pm 0.17$  days, respectively. Milk production was  $129.6 \pm 0.822$  liters per lactation and the lactation period was  $209.142 \pm 1.908$  days. The mean dry period in Gojali goat was  $153 \pm 2.285$  days. The mean production of hair and Pashmina was  $0.421 \pm 0.2$  and  $0.012$  kg per year, respectively. The length of hair and Pashmina averaged  $17 \pm 0.71$  and  $2.4 \pm 0.6$  cm, respectively. The age of first breeding in both sexes averaged  $18 \pm 0.160$  months and service period  $190.45 \pm 4.138$  days. The conception rate was 85% and the twinning percentage was zero.

*Key Words: Capra hircus; Goat; Gojali; Growth; Gilgit Baltistan; Pakistan.*

### **INTRODUCTION**

The domestic goat (*Capra hircus*) often is dismissed as the "poor man's cow" for its ability to thrive on meager fodder and cope with harsh environments. However, this belies the economic and archaeological importance of the species. From an agricultural standpoint, the world's 700 million goats provide reliable access to meat, milk, skins, and fiber for small farmers particularly in developing countries (Mac Hugh and Bradley, 2001). Dairy goat sector in developing countries is less developed; hardly less than 5 % of the milk is traded (Dubeuf et al., 2004). Most of the milk produced by the goats is either fed to kids by the does or used for some domestic needs. Similar situation is prevailing in our local goat farming systems. In some cases, milk selling to the neighborhood is customary. Goat and sheep milk is usually mixed with cow /buffalo milk before marketing (Khan,

2008).

Pakistan has 58.3 million goats (Anonymous, 2009). Thirty-six recognized breeds of goats are found in Pakistan. Goats are kept for milk and meat production and contribute significantly to the income of the rural farmers. Dairy goats are kept by the farmers belonging to poor socio-economic class of the society, mostly landless. Goat production is almost evenly distributed among all regions of Pakistan. The vast majority of small ruminant flock owners are small-scale farmers, sometimes landless. Mixed flocks are common, although separate flocks of sheep or goats can also be seen (Naqvi, 2006).

Usually small flocks of sheep and goats are raised together both in plains and subhilly areas. The goats are being kept under four main production systems viz., nomadic, transhumant, sedentary and household. Major feed resources available

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for goats are mainly ranges (60 %), while other feeding material available to these animals is along canal/river banks; pastures, roadside grazing, crop residues, tree leaves, pods etc. Goats are naturally bred under field conditions (Iqbal et al., 2008). There is a growing world-wide recognition of the need for conservation of livestock diversity (Anonymous, 1995) and knowledge of genetic constitution and differentiation of breeds is a major pre-requisite for breed conservation and genetic improvement of local breeds (Menrad et al., 2002).

Goats are the main stay of the poorest segments of rural society of Gilgit Baltistan. Six goat breeds, Pameri, Gojali, Balti (pashmina bearing), Dareli, Jerakheil and Koh-e-Ghizer are found in area (Naqvi and Hussain, 2009). Not much work has been done on the goat breeds of the area, therefore a study was planned to provide baseline information on phenotypic characteristics of Gojali goat breed of Gilgit Baltistan.

#### MATERIALS AND METHOD

A survey was conducted in the Gojal Tehsil of Gilgit Baltistan to study the somatometric measurements, growth, productive and reproductive traits of Gojali breed of goat of Gilgit Baltistan. The study was done on village flocks as well as on animals brought for sale in the markets. The data was recorded on physical characteristics, growth traits, somatometric measurements, productive and reproductive traits. Weight of the goats was carried out by spring balance where as somatometric measurements were measured by inch tap additional information was collected from the owners through interviews.

#### RESULTS AND DISCUSSION

##### Name

The breed is called Gojali after its home tract Tehsil Gojal (Naqvi and Hussain, 2009), subdivision Hunza, district of Gilgit (Figure 1).



Figure 1. Map of Gojal

##### Habitat and Distribution

This is dispersed in Tehsil Gojal and is found nearly in all valleys of Tehsil Gojal, i.e., Misghar, Chipursen, Khunjerab, Sost and Shammshal.

##### Climate

The climate of Gojal is characterized by cold winter, pleasant and dry summer. The summer in the low lying valleys is light hot at its peak, but at high altitudes e.g. Khunjerab pass, Klick pass, Misghar, Chipursen and Shammshal it is very pleasant. Winter season at high altitude is extremely cold as compared to low lying valleys. Mean maximum and minimum temperature during summer season range between 28°C and 11.6°C, respectively. December, January and February are the coldest months. During winter mean maximum and minimum temperature are 1°C and -13°C, respectively. The annual rainfall of Tehsil Gojal is about 145.0 mm per year. The annual average snowfall is 8 to 10 inches (Rehmat, 2000).

##### Physical Characteristics

Generally it is a very small breed with small legs, large belly and most of the specimens have brown strip from temple to nostrils on both sides. The head is small; females are short bearded while males are long bearded. Whole of the body is covered with hair (Figure 2).

##### Colour

The body colour is mostly brown, black and fawn.

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**Figure 2. Gojali Breed of Goat**

### Face

Average width and length of face is about  $12 \pm 0.251$  and  $17 \pm 0.21$  cm, respectively in males and  $15 \pm 1.21$  and  $10 \pm 0.171$  in females (Table 1).

### Horns

The horns of this breed grow mostly upward, backward and slightly outward. The length of horns in male and female averaged  $31.5 \pm 3$  cm and  $27 \pm 2$  cm, respectively (Table 1).

### Ears

These are small and a leaf shaped, little broader at base and wider outwardly and ending in round tips. The width and length of the ears averaged  $12 \pm 0.6$  and  $14.2 \pm 0.8$  cm, respectively (Table 1) in both

the sexes.

### Neck

It is medium sized and average length of neck for male and female was about  $32 \pm 1.5$  and  $24 \pm 1.2$  cm, respectively (Table 1).

### Back

It is somewhat depressed at thoracic region.

### Legs

This breed has small legs. Length of forelegs in males and females averaged  $70.5 \pm 2$  and  $55 \pm 2$  cm, respectively, whereas the length of hind legs in males and females averaged  $73.5 \pm 1.8$  and  $57 \pm 1.8$  cm, respectively (Table 1).

### Growth Traits

The data on growth traits (Table 2) revealed that birth weight, weaning weight, and adult weight averaged  $1.53 \pm 0.70$ ,  $7.04 \pm 0.171$  and  $41.38 \pm 0.39$  kg in males as against  $1.28 \pm 0.04$ ,  $5.61 \pm 0.58$  and  $25.21 \pm 0.37$  kg in female specimens. The weaning and adult age in males averaged  $120 \pm 0.150$  and  $1460 \pm 0.17$  days, respectively.

### Somatometric Measurements

The height averaged  $70.41 \pm 0.837$

**Table 1. Physical characteristics of Gojali goat of Gilgit Baltistan, Pakistan**

(mean of 50 observations)

S. No	Body region	Measurements (cm)			
		Length		Width	
		Male	Female	Male	Female
1	Face	$17 \pm 0.21$	$15 \pm 1.21$	$12 \pm 0.251$	$10 \pm 0.171$
2	Horns	$31.5 \pm 3.00$	$27 \pm 2.00$	$12 \pm 1.100$	$8 \pm 1.000$
3	Ears	$14.2 \pm 0.80$	$12 \pm 0.60$	$7 \pm 0.500$	$5 \pm 0.410$
4	Neck	$32.0 \pm 1.50$	$24 \pm 1.20$	$32 \pm 2.500$	$30 \pm 3.000$
5	Forelegs	$70.5 \pm 2.00$	$55 \pm 2.00$		
6	Hind Legs	$73.5 \pm 1.80$	$57 \pm 1.80$		

**Table 2. Growth traits of Gojali goat of Gilgit Baltistan, Pakistan**

S. No	Trait	No. of observation	Mean	
			Male	Female
1	Birth weight (kg)	30	$1.53 \pm 0.70$	$1.28 \pm 0.04$
2	Weaning weight (kg)	50	$7.04 \pm 0.17$	$5.61 \pm 0.58$
3	Weaning age (months)	80	$120 \pm 0.15$	$120 \pm 0.15$
4	Adult weight (kg)	50	$41.38 \pm 0.39$	$25.21 \pm 0.37$
5	Adult age (days)	100	$1460 \pm 0.17$	$1460 \pm 0.17$

**Table 3. Somatometric measurements of Gojali goat of Gilgit Baltistan, Pakistan (cm)**

S.No	Sex	No. of observations	Height	Girth	Length
1	Male	50	70.41±0.837	83.58±0.628	78.18±0.355
2	Female	50	57.91±0.342	70.42±0.702	70.10±2.160

cm vs. 57.91±0.342 cm, heart girth 83.58±0.628 cm vs. 70.42±0.702 cm and body length 78.18±0.353 cm vs. 70.10±2.16 cm in males vs. females of Gojali goat (Table 3).

### Productive Traits

#### Milk Production

The data on productive traits of Gojali goat showed that on an average in a lactation period of 209.142±1.908 days, it produced 129.6±0.822 liters of milk (Table 4). The mean dry period in Gojali goat was 153±2.285 days.

#### Hair and Pashmina Production

Gojali breed produced small quantities of Pashmina, however this breed yields

**Table 4. Milk production, lactation length and dry period of Gojali Goat of Gilgit Baltistan, Pakistan**

Trait	No. of observations	Mean values
Milk production	50	129.6±0.822
Lactation	50	209.142±1.908
Dry period (days)	50	153±2.285

**Table 5. Hair/pashmina production of Gojali goat of Gilgit Baltistan, Pakistan**

Traits	No. of observations	Mean values
Shearing season	-	May and June
No. of shearing year	-	Once a year
Pashmina yield (kg)	30	0.089±0.012
Fibre length (cm)	30	2.4±0.6
Hair yield (kg) year	30	0.421±0.2
Fibre length (cm)	30	17±0.71
Utility of hair	-	Local carpet and ropes

more quantity of Pashmina than that of Balti breed (Naqvi and Hussain, 2009). The goats are normally clipped during May and June every year. The mean production of hair and Pashmina was 0.421±0.2 and 0.89±0.012 kg year, respectively (Table 5). The hair is utilized in cottage industry for manufacturing local carpets (sharma) and ropes. Pashmina is used in shawls and warm wearing. The length of hair and Pashmina averaged 17±0.071 and 2.4±0.6 cm, respectively.

### Reproductive Traits

The age of first breeding in both sexes averaged 18±0.160 months and service period 190.45±4.138 days. It was observed that the conception rate averaged 85. The data revealed that twinning percentage was zero (Table 6).

**Table 6. Reproductive traits of Gojali goat of Gilgit Baltistan, Pakistan**

Trait	No. of observations	Mean values
Breeding age (months)	50	18±0.160
Breeding season	100	Sep-Oct
Service period (days)	50	190.45±4.138
Conception rate (%)	70	85
Twinning (%) (kg) year	100	Zero

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