

Lesser-known goat populations - Need for their characterization and recognition

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INTRODUCTION

Goats form an important constituent of Indian livestock and are reared mainly by small, marginal farmers and landless laborers. Low input, high prolificacy, small generation interval and easy marketing made this species an important source of livelihood for the poor people and hence also treated as ‘poor man’s cow’. Goat population, as per the last livestock census conducted in 2003, has been estimated as 124 million but a vast majority (about seventy percent) of this population is constituted by non-descript goats. There are twenty descript breeds of goat in India (Acharya, 1982) namely, Changthangi (J& K state), Chegu, Gaddi (Himachal Pradesh), Beetal (Punjab), Jamnapari and Barbari (Uttar Pradesh), Sirohi, Marwari, Jakhrana (Rajasthan), Kutchi, Mehsana, Surti, Gohilwadi, Zalawadi (Gujarat), Osmanabadi, Sangamneri (Maharashtra), Malabari (Kerala), Kanni Adu (Tamilnadu), Ganjam (Orissa) and Black Bengal (West Bengal). The accession numbers have been allotted recently to all the acknowledged breeds and published by NBAGR (NBAGR, 2008). Breed descriptors of some of these breeds have also been published from time to time in Indian Journal of Animal Sciences (NBGR 2008, 2009). Recently, one additional breed i.e. Attapaddy Black from Kerala has also been allotted the accession number after completing a comprehensive phenotypic and genetic characterization. But apart from these descript breeds there are many more populations existing in different parts of the country which are knocking to be included in the list of descript goat breeds of India. These populations appear to be distinct from the already known goats of its area but, for want of systematic studies for their characterization, have not been included among the descript goat breeds. There is no proper documented information available on these lesser known populations of goat, therefore an attempt has been made to collect information on some of such populations existing in different parts of the country and is presented here. Of late, an attempt has been made by the State departments of Animal Husbandry to conduct breed-wise livestock census, the breed wise population estimates for different breeds/populations of goats have been given in table 1.

Table 1: Breed wise estimates of goat populations (in 000)

S. No.	Breed	Population
1	Attapady Black	41211
2	Barbari	424057
3	Beetal	509009
4	Black Bengal	19501883
5	Bouer	183028

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6	Changthangi	210214
7	Chegu	22437
8	Chougarkha	2476
9	Gaddi	473756
10	Ganjam	145579
11	Gohilwadi	321930
12	Jakhrana	1963930
13	Jamunapari	531652
14	Kannai Adu	1296197
15	Khagani	380890
16	Kodi Adu	202018
17	Kutchi	664538
18	Malabari	710570
19	Marwari	7576142
20	Mehsana	608606
21	Nandi Durga	637221
22	Osmanabadi	1412760
23	Sangamneri	214627
24	Sirohi	2928502
25	Surti	681965
26	Zalawadi	841141
27	Other graded	688954
28	Non-descript	68333811

Source- www.dahd.nic.in

Goat populations of Northern region

Non-pashmina goat of Ladakh: The native tract of the breed is Leh, Khaltsey and Nubra blocks of Ladakh. The animals are commonly reared for meat, manure, wool and milk. It is small, long horned, medium length ear, predominantly white coat coloured and long haired goat. Both sexes are horned and horns are curved, pointed backward and outward. Mean values of adult body weight (kg), body length, height at withers, heart girth, trunk girth, horn length, ear length and tail length (inches) are 26.78±1.43, 25.02±0.35, 21.98±0.65, 28.05±0.72, 34.11±0.67, 11.23±0.17, 4.75±0.18 and 4.36±0.17, respectively. Milk yield varies from 100 to 250 ml per goat per day. Age at first kidding, kidding interval and prolificacy are 785±0.05 days, 350±2.5 days and 5-10 % respectively (Roy et al., 2007).

Shingari: This goat population is found in Jammu and Kashmir. These goats are reared for meat purpose. The adults are small sized having body weight of 25.23± 0.56kg (male) and 20.35± 0.41 kg (female). The coat colour varies from white to grey with black and tan colour patches.

Goat populations of Central region:

Udaipuri Goat: The Udaipuri goat is a small, meat type goat existing in the Western Himalayan region of Uttarakhand. The native tract is the Ajmer and Udaipur palties (from Dugadda to Yamkeshwar). These goats are small in size with compact body covered with short hairs, which are not shorn. The animals are of tan colour. The head is small in length with small to medium forehead. The profile of head is convex. The ears are medium and pendulous. The head possess tapering muzzle and Roman nose. Horns are curved and backward down. The top line is almost straight and flank is moderate in size. They have small, lean and straight legs. The tail is thin, short in length and wrapped. The average body weights of adult male and female animals are 24.67 and 22.10 kg, respectively (Barwal et al., 2010a,b). Other morphometric traits like height at wither, body length, and chest girth are 59.10 cm, 60.82 cm, 70.96 cm in males and 62.03 cm, 61.21 cm and 71.57 cm, respectively in females. Majority of the females attain sexual maturity between 10-12 months of age.

Jaunpuri Goat: The Jaunpuri goats are dual-purpose animals reared for milk and meat. The native tract of this type of goat population is Sultanpur and Jaunpur districts of eastern Uttar Pradesh. These goats have been developed by crossing Jamnapari male with nondescript females of this region before independence. The average body weight, body length, chest girth and body height are reported as 34.83 kg, 56.50 cm, 71.50 cm, 70.66 cm in adult males and 24.47 kg, 50.26 cm, 66.20 cm and 63.25 cm respectively in females (Singh et al., 2010a, b).

Bundelkhandi Goat: The bundelkhandi goats are named after the Bundelkhand region in central India and encompass Chitrakut, Banda, Jhansi, Jalaun, Hamirpur, Mahoba and Lalitpur districts of Uttar Pradesh and Chhatarpur, Tikamgarh, Damoh, Sagar, Datia, Satna, Panna and Gawalior districts of Madhya Pradesh. The animals are entirely black, hardy, have long legs, narrow face and



are able to survive in very low and high temperature in different seasons of Bundelkhand region. These goats are good for milk and meat. Under good feeding and management conditions the peak yield of milk reaches up to 2.8 liters in a day and lactation length reaches up to 220 days. Adult body weights of male and female goats are about 62 and 48kg respectively (Bhusan et al., 2010).

Pantja: These are dual-purpose goats, having brown to tan body colour with black top line and two white strips on head (on either side of head). These goats are found in the Himalayan foothills of Uttarakhand and nearby areas. These are medium sized goats.

Based on the survey of 275 herds, Pantja goats (32.67%) were found to be next to Black Bengal (51.72%) with an estimated population of 14,543. Average measurements for body length, height at wither, chest girth for adult animals of age more than 24 months were 54.68 ± 2.66 cm, 61.71 ± 1.92 cm, and 66.09 ± 1.68 cm, respectively whereas average body weight was estimated as 20.03 ± 1.24 kg. Mean age at first, second and third kidding was 430.7 ± 5.8 , 779.1 ± 13.5 and 1060.4 ± 25.8 days, respectively. Goats show maximum kidding (34.5%) during winter (December to February) and minimum (15.64%) during rainy (July to September) season. The means for first, second and third lactation length were 138.4 ± 2.4 , 156.0 ± 2.5 and 159.8 ± 3.8 days while means for first, second and third dry periods were 170.1 ± 8.9 , 124.4 and 153.3 ± 18.1 days, respectively (Singh et al 2009, Verma et al 2008).



Bareilly Goat: These goats are reared in Rohilkhand area around Bareilly district of Uttar Pradesh. These are reared mainly for meat purpose. The goats have black body coat with hair tuft in the breech, broad pendulous ear, twisted short horn and Roman nose. Body weight at birth varies from 2-3 kg, 8-10 kg at weaning, 10-15 kg at 6 to 9 months, 20-25 kg at yearling and 35-40 kg at adult (Das 2008). These goats have high twinning rate (>50%).

Chaugarkha: The native tract of this breed is Almora district of Uttarakhand state. These goats are small in size and reared primarily for meat purpose. The coat colour varies from black, fawn and white. The ear length, face length, height at withers, body length, tail length, heart girth, paunch girth and horn length in adult animals are 13.73 ± 0.1 , 14.56 ± 0.1 , 53.97 ± 0.35 , 54.71 ± 0.47 , 11.34 ± 0.1 , 60.76 ± 0.46 , 66.82 ± 0.60 and 6.80 ± 0.22 cm, respectively in females and 13.55 ± 0.17 , 14.53 ± 0.24 , 54.6 ± 0.68 , 54.66 ± 0.87 , 11.88 ± 0.28 , 59.57 ± 0.87 , 63.33 ± 0.86 and 8.97 ± 0.44 cm, respectively in males. The average body weight of adult is 17.61 ± 0.61 kg in males and 18.18 ± 0.42 kg in females (Barwal et al., 2007).

Tarai: These goats are found in villages of Tarai region of the Uttarakhand state. The colour pattern ranges from black, tan, fawn, white and spots of these colours to others. These goats are small to medium in size and reared for milk and meat. These goats have well set udder with small teats. Milk yield is 1-1.5 kg. These goats kid once a year and have potential for giving birth to twins and triplets (Singh et al., 2010)

Goat populations of Western region:

Kanyal goats: These are found in Kudal, Sawantwadi, Dodamarg, Malvan and Vengurle talukas of Sindhudurg district of Konkan region in Maharashtra state. These goats have black white marking on collar, and lower jaw, ventral surface is white and muzzle is white, half moon type. Average birth weight is 1.99 kg; weight at 3-month is 8.69 kg and at 6-month 13.79 kg. These goats are regular breeders and breed round the year. Twinning percentage is high, about 66%. A flock of 180 Kanyal goats is maintained at Cattle Breeding Farm, Nileli, Dist-Sindhudurg. A study has been conducted to characterize the Konkan Kanyal goats under field conditions (Verma et al., 2010). The prominent



characters of Konkan Kanyal goats are as follows:

Body – Black/brown coat with white markings on collar, lower jaw and ventral surface, hair short, fine and silky.

Head – Bilateral white strips from nostrils to ears

Forehead – Flat and broad

Ears – Black with white margins, flat, long drooping

Horns – Backward, straight, pointed, cylindrical

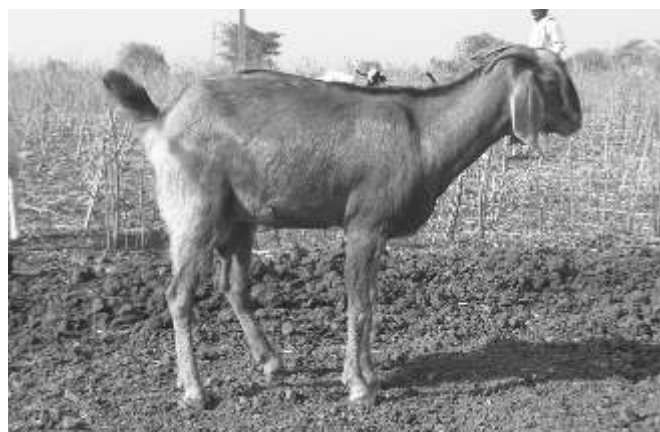
Muzzle – White

Legs – Long laterally black, medially white from knee to fetlock joint

The estimates of biometrics taken on animals under field conditions for height at withers, body length, chest girth, paunch girth, face length, horn length, ear length, tail length indicated the average measurements (in cm) 73.42, 70.74, 72.37, 71.95, 17.58, 15.88, 16.11, 16.32 respectively for adult males and 68.95, 66.86, 69.53, 70.79, 16.15, 13.04, 15.88 and 14.71 respectively for females. The body weights of adult male and females are 35.26 and 29.80 kg under field conditions. The average birth weights of male and female kids recorded under farm conditions are 2.275 and 2.055 kg, which increased up to 24.29 and 20.44 kg respectively at 12 months age. The average birth weight, age at first kidding, kidding interval and twinning recorded under farm conditions are 2.16 kg, 545.82 days, 239.85 days, and 34.67% respectively. The average daily milk yield, lactation yields and lactation length is 0.609 kg, 69.035 kg and 96.199 days respectively.

Berari Goat: These goats are found in Vidarbha region of Maharashtra specifically in Kalamana and Bhiwapur Tehsils of Nagpur district. It is mainly reared for meat purpose. The predominant colour of these goats is brown (95%), while about 5%

animals have blackish brown colour with glossy hair. Forehead is convex (100%) with straight nose and muzzle is black in 96% and brown in 4%. These goats do not have beard and wattle. The horns are straight (94.93%) and curved (5.06%) in Berari goat (Kuralkar et al., 2010b). Majority of the animals have pendulous ears. The average measurements for horn length, ear length, chest girth, body length, height at wither, paunch girth (cm) and body weight (kg) for Berari male in 0-3 months age were 3.67±0.14, 14.37±0.57, 42.86±2.52, 28.06±1.55, 42.13±2.10, 45.33±2.67 cm and 6.80±0.96 kg, respectively and for above 1 year age the estimates were 15.75±2.39, 16.00±2.27, 77.50±3.79, 51.50±1.32, 71.75±0.62, 78.80±3.30 cm and 34.00±5.50 kg, respectively. Corresponding values for females in 0-3 months age were 2.15±0.19, 13.43±0.42, 42.42±1.69, 29.11±1.12, 42.19±1.48, 46.75±1.79 cm and 6.79±0.58 kg, respectively. The estimates in 1 year old females were 12.33 ±.45, 17.28 ±0.28, 72.21±0.58, 47.88±0.67, 67.11±0.68, 77.60±0.75 cm and 27.77±0.61 kg, respectively (Kuralkar et al., 2010a).



Goat populations of North Eastern Himalayan and Eastern region:

Assam hill goats: These are Bengal type goats reared for meat. The animals are small sized with short legs. Coat colour varies from black to brown. The ears are small and flat having spots on it. The average adult body weight is 25.45±2.12 kg for males and 18.31±1.67 kg for females.

Ghumusari goats: These are indigenous goats found in the western part of Ganjam district i.e. Bhanjanagar and its adjoining areas of erstwhile Ghumusar tehsil of Orissa. The Ghumusar goats are as prolific as Black Bengal type goats and grow faster than the Black Bengal type goats with a very good meat quality. These are famous for excellent meat quality, early maturity and high prolificacy like Black Bengal. The body size is intermediate between Black Bengal and Ganjam goats, the two well-known meat breeds found in this region. The Ghumusar goats have higher body weight at birth compared to Bengal type goats. The overall means for body weight at birth, 3, 6, 9 and 12 month of age are 1.75±0.02, 7.14±0.04, 10.18±0.03, 13.01±0.03 and 17.05±0.03 kg, respectively. These goats have lower age at first kidding and kidding interval as compared to Ganjam goats. The body weight is similar or a little less than Ganjam goats. Twins (62.458 %) and triplets (7.966 %) are common in these goats from second kidding onwards (Patro et al., 2007).

Raighar goats: These are found around Raighar, Umarkote and Dabugon area of Koraput district in Orissa. The Gonda and Bhatra tribes of Koraput are the original breeders of these goats. These goats have distinct morphological features, different from those of Ganjam, Bengal and Malkangiri goats available in Orissa. These goats are maintained on browsing in villages without giving any extra feed. The colour is mostly brown without any patchy pattern. White stripes on both sides extending from the forehead upto the nose is a constant feature. The udder is well developed with medium sized teats. The age at sexual maturity is around eight months. The interval between two kiddings is about 7 months. Twins and triplets are common after the first kidding. Survivability of the young ones is high. The goats yield about ½ to 1 kg of milk/day (twice milking) after feeding the kids. The dressing percentage is around 48.5%. A combination of high prolificacy, survivability and milk yield is found in Raighar goats (Dash, 2007).

Bengal type goats: These goats are found in Bihar, Orissa, Bengal and the entire Northeast region. These are famous for excellent skin quality. It is an early maturing and prolific animal. It gives high frequency of twins and the interval between kidding is less. It not only browses but also grazes close to the ground unlike Ganjam goats. Black coat colour is dominating but brown, white and mixed coloured animals are also seen. It possesses many good characters of a meat animal. It is a smaller breed and the milk yield is just adequate to feed the kids (Rao et al., 2006).

Kalahandi goat – The native tract of this type of goat population is Kalahandi and Nuapara district and adjoining areas in Orissa. Colour of these goats is mostly black and the animals are hardy and can thrive well in harsh climatic conditions like high temperature in the native tract, which goes up to 48°C in summer. Twinning is more than 60%. The body weight at 12-month age is 14 to 15 kg. The reproduction traits are at par with Bengal type goats.

Jharkhand Black Bengal type: These goats are found in Jharkhand. The average body weights at birth, 4, 8 and 12 months of ages were 1.28±0.11, 3.45±0.22, 4.85±0.67 and 6.23±0.43 kg, respectively (Singh and Singh, 2006). The genetic diversity of this population in combination with other known goat breeds of India has been studied by Dixit et al., (2009).

Goat populations of Southern region:

Mahabubnagar goats: The native tract of these goats is Mahabubnagar district and adjacent areas of Nalgonda and Ranga Reddy districts of southern Telangana region of Andhra Pradesh. The predominant colour pattern in Mahabubnagar goats was bicolour with the admixture of black and white (30.88%), brown and white (22.14%) and black and brown (10.38%). About 25% animals had single colour and 11.5% showed multi colour pattern. In single colour 9.69% animals had black colour, 9.06% brown and 6.23% white. Majority (74.28%) of the animals had straight head profile and 21.01% had slightly convex head, 91.57% animals had pendulous, 4.59% erect and 3.84% horizontal ears. The horn

pattern is straight in 56.91% animals and curved in 43.09% animals (Ekambaram, 2009c). The mean body weights of males at birth, weaning, 6, 9 and 12 months of age were 2.16±0.03, 9.03±0.11, 12.77±0.13, 15.66±0.14 and 18.81±0.17 kg, respectively. The corresponding values in females were 2.11±0.03, 8.37±0.10, 11.69±0.12, 14.37±0.12 and 16.97±0.15 kg, respectively (Ekambaram, 2009a). The mean diploid chromosome number of Mahabubnagar goats is 60. These goats have 29 pairs of acrocentric autosomes and a pair of sex chromosome. The overall mean relative length of chromosomes ranges from 1.68±0.04 to 5.22±0.07% for autosomes. The relative lengths of X and Y-chromosomes are 5.86±0.08 and 1.36±0.05%, respectively (Ekambaram, 2009b). The karyotypic features of this breed are, thus, similar to other Indian goat breeds.

Salem Black Goat: These goats are found in Mettur and Omalur taluks of Salem district, Bhavani and Satyamangalam taluks of Erode district in Tamilnadu. Salem black goats are tall and predominantly black in colour. The beard is present among 45% of males and 22% of females. The means for height at withers, chest girth and body length are 83.5±0.2, 77.7±0.2, 72.4±0.5 cm in six teeth males and 87.6±0.5, 84.1±0.5 and 80.5±0.4 cm in eight teeth males. The corresponding estimates are 78.5±1.3, 78.3±1.3 and 71.8±0.3 cm in six teeth females and 83.2±0.3, 82.1±0.4 and 72.7±0.2 cm in eight teeth females. The mean body weights in six and eight teeth males are 41.76±0.68, 48.64±0.64 kg and in females are 26.42±0.43 and 31.76±0.26 kg, respectively. The age at first mating and first kidding are 10.28 and 15.23 months. The mean litter size is 1.48±0.13. The incidence of multiple births is 37.5% (Gopu et al., 2008).

Bidri goat: These goats are found in Bidar district of Karnataka. It is a coloured dual-purpose strain of goat. The average body weight at one year of age is 17.38±0.73 kg. The average daily milk yield over different lactations is 0.63 kg, with a range from 0.4 kg/day to 1.12 kg/day (Naveen Kumar et al., 2008).

Kodi Adu: This breed is distributed in the southeastern coastal areas of Tamil Nadu. It is black in colour with white spots on the body. These animals are tall, long, lean and leggy. These goats are mainly reared for meat. Twinning is very common (Kanakraj, 2007).

Barren goat: These goats are found in Barren island of Andaman. The approximate population of barren goats is just about 100 animals (Anthra, 2006). These goats are endangered now. They are adapted to dreadful and hostile environment of Barren Island and tolerant to salt water. These goats are generally reared in free-range system. They generally give birth to twins and triplets. These goats are resistant to common diseases.

Teressa goats: These goats are found in the Terresa, Katchal and Bambooka Islands of Andaman. The approximate pre-sunami population of these goats was 2000-3000 (Anthra, 2006). They can survive in hot and humid climate. These goats are generally reared in free-range system. They generally give birth to twins and triplets. These goats are resistant to common diseases.

Andaman goat: These goats are found in the Andaman group of Islands. These are generally reared in semi-intensive system. Andaman goats are adapted to hot and humid climate. These goats are resistant to common diseases.



In this era of intellectual property rights (IPRs), proper documentation on such unexplored populations is essentially required. For this, these goat populations need to be studied extensively for their morphological traits and performance. The complete characterization (phenotypic and genetic) of these populations may indicate their distinctness of some or all of these populations. The genetic characterization using microsatellites or any other tool will reveal their genetic relationship with the descript goats of their native or neighboring region. After confirming such distinctness, the population can be granted the breed status and the useful characteristics of the breed can be utilized for upgrading other non-descript populations. The information can also be utilized for formulating the breeding and conservation policy for these small ruminants to improve the performance of poor performing goats.

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