

Diversity and management of Telangana goats maintained under field conditions

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ABSTRACT

Goats of Telangana state which have the origin of Mahbubnagar district are also locally known as Mahbubnagari or Palamoor goat. Here, goats are reared mainly by SC/ST communities having no or little land holdings. Goats are kept under semi-extensive management sending them for pasture/jungle grazing during day time and at home in the night. Goat houses are temporary structures without any proper arrangement of water and electricity. Data were recorded on 207 animals of different age groups from farmers' flocks existed in different districts of the state. These goats are hardy, prolific and evolved due to natural selection in high temperature climatic conditions of foot hills of Nallamala forest. It is known for fast growth rate and high prolificacy (50% twinning, 20% triplets & quadruplets), low age of first kidding and short kidding interval. They are medium sized, leggy animals with varied coat colour i.e. white, black, brown, spotted, splashed, admixtures of black & brown, black and white, black & brown etc. Majority of animals had straight head, slightly convex head profile, pendulous ears, straight or backwardly curved horns. Wattles and beard are present in some animals of both sexes. To search the homogeneity in the population, the animals were broadly categorized into two, solid black and the mixed colour goats. The average body measurements (in cm) of adult mixed colour male goats for height, length, chest girth, paunch girth face length, horn length, ear length, tail length were 73.48 ± 1.09 , 67.13 ± 1.19 , 80.0 ± 1.35 , 79.26 ± 1.50 , 18.35 ± 0.41 , 13.96 ± 1.20 , 13.83 ± 0.36 , 13.35 ± 0.42 respectively; for females 70.53 ± 0.52 , 67.22 ± 0.51 , 80.45 ± 0.60 , 81.45 ± 0.71 , 18.44 ± 0.20 , 13.88 ± 0.42 , 11.34 ± 0.58 , 13.37 ± 0.23 . The body weights were 38.70 ± 1.91 , 37.69 ± 0.68 kg. The measurements for same traits in black male goats were 72.18 ± 1.37 , 65.27 ± 1.13 , 78.73 ± 1.73 , 79.64 ± 1.78 , 16.82 ± 0.62 , 12.56 ± 1.14 , 14.36 ± 0.41 , 14.09 ± 0.46 ; for females, 72.03 ± 0.77 , 68.03 ± 0.77 , 81.31 ± 0.69 , 83.72 ± 1.05 , 18.17 ± 0.26 , 13.36 ± 0.74 , 12.42 ± 0.83 , 13.97 ± 0.37 cm and body weights were 37.27 ± 2.52 and 40.42 ± 1.02 kg. Breeding is through natural mating. These goats have early maturity and give multiple births (60% twinning) second kidding onward. The results indicated that two groups of Telangana goats formed on the basis of coat colour were not distinct genetically and thus make a single population with lot of phenotypic heterogeneity.

Keywords: Biometry, goat, management, Telangana

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INTRODUCTION

Human Prosperity has always been linked with the livestock wealth. Andhra Pradesh (including Telangana) has some of the richest livestock resources in the Country and is one of the most advanced States in Animal Husbandry activities. The State has the world famous breed of Ongole Cattle, Aseel breed of poultry, Nellore breed of sheep. Presently Andhra Pradesh stands first in poultry (1005.80 lakhs) and sheep population (210.15

lakhs), second in Buffalo population (107.68 lakhs), seventh in goat population (64.27 lakhs), eighth in cattle (94.24 lakhs) and pig population (5.49 lakhs) in the Country. Although, the state has good number of goats which may be consisting of several smaller sub populations. So far, no uniform or homogenous population has been reported which can be a suitable candidate for breed status assignment. Telangana state which is newly created (29th) state from Andhra Pradesh retained a good population of goats. Presently, there are 34 descript and registered goat

breeds in the country (ICAR-NBAGR, 2018) but no goat population from Andhra Pradesh or Telengana state has been listed in these registered goat breeds. Also not much information is available on goats of Andhra Pradesh/Telengana state. The goat population of Andhra Pradesh has been reported as 9071221 (LC, 2012). It is not known whether this population of 90 lakh goats is having some uniform populations or a mixture of all types including crossbreds. This becomes a issue of search and study the phenotype of existing goats and confirm their distinctness, if existing, at phenotypic or genetic level. Hence, the study was undertaken with the purpose of characterizing the goats of Telengana in the first part. The goat germplasm of Andhra Pradesh will be taken in the second part of the study.

MATERIAL METHODS

Data on Telengana goats were collected by conducting systematic survey in the breeding tract



Figure 1. Map of Telengana state showing sampling area

and collecting data on phenotypic, biometric traits and management practices. The sampling areas

were selected in consultation with Animal Husbandry department and livestock development board of Telengana state. The area of study included Tankara, Hanwada, Komreddypally, Venached, Kosgi, Pellegadda village of Mahabubnagar district; Bijnipally, Indole, Mannanoor, Amrabad, Sarlapally, Gangapally of Nagarkurnool; Ananthpur of Jogulamba Gadwal; Reddypally of Mdak; Anukata of Adilabad ; Surdapur of KB Asifabad and Machapur, Chalyai of Bhupapally district. Animal from Nallamalla forest area were sampled specifically.

Data were recorded on 207 animals of different age groups from farmers' flocks existed in different districts of the state. Information on management and performance traits were collected through direct interaction with farmers. The phenotypic traits included coat colour, head profile, face features, type and shape of ear and horn etc. wheras biometric traits measured included height at wither, body length, chest girth, paunch girth face length, horn length, ear length, tail length. Body weight were taken using spring balance. The data thus generated was analysed to get the average measurements.

RESULTS AND DISCUSSION

The survey was started with recording of information on Mahbubnagari goats of Mahabubnagar, Nagarkurnool and Jogulamba Gadwal districts of Telengana. The preliminary information on their phenotypic appearance and body biometry has been presented (Verma et al., 2018a). The data was updated by adding more information from other flocks distributed in other districts. Goats of Telengana state are medium sized, leggy animals with varied coat colour i.e. white, black, brown, spotted, splashed, admixtures of black & brown, black and white, black & brown etc. (Figure 2). Majority of animals had straight head , slightly



Figure 2. Colour Variants of Telengana goats



Figure 3. Head profile of Telengana goats

convex head profile, medium sized pendulous ears, straight or backwardly curved pointed tipped horns (Figure 3). Wattles and beard are present in some animals of both sexes.

All the flocks surveyed lacked homogeneity in terms of morphological traits. To derive a homogenous population from the studied flocks, the animals were categorized into two groups i.e. black coat and mixed colour goats the flocks. The body measurements for different traits has been given in Table 1. The average body measurements (in cm) of adult mixed colour male goats for height, length, chest girth, paunch girth face length, horn length, ear length, tail length were 73.48±1.09, 67.13±1.19, 80.0±1.35, 79.26±1.50, 18.35±0.41, 13.96±1.20, 13.83±0.36, 13.35±0.42 respectively; for females 70.53±0.52, 67.22±0.51, 80.45±0.60, 81.45±0.71, 18.44±0.20, 13.88±0.42, 11.34±0.58, 13.37±0.23, The body weights were 38.70±1.91, 37.69±0.68 kg. The measurements for same traits in black male goats were 72.18±1.37, 65.27±1.13, 78.73±1.73,

79.64±1.78, 16.82±0.62, 12.56±1.14, 14.36±0.41, 14.09±0.46; for females , 72.03±0.77, 68.03±0.77, 81.31±0.69, 83.72±1.05, 18.17±0.26, 13.36±0.74, 12.42±0.83, 13.97±0.37cm and body weights were 37.27±2.52 and 40.42±1.02 kg. Body biometry of district wise local goats of Telengana state has been studied by Dangi *et al* (2019) in Bhupalpally Jogulamba Gadwal, Mahabubnagar and Nagarkurnool districts. There was no significant difference in the average body measurements of animals of different districts. However, the females of Nagarkurnool (38.74±1.08 kg) and males of Bhupapally(44.50±2.36) were found heavier. The average body weights of adult male and females of black and mixed colour goats are comparable with the above estimates.

Management

Goats of Telengana state which have the origin of Mahbubnagar district are also locally known as Mahbubnagari or Palamoor goat. Here, goats are reared mainly by SC/ST communities having no or

Table 2. Association of the POU1F1 exon 6 genotypes with early body weights in Malabari and Attappady goats

Traits	Mixed colour coat				Black			
	3 to 9 Months		Adult		3 to 9 Months		Adult	
	Females (N=13)	Male (N=8)	Females (N=102)	Male (N=23)	Females (N=7)	Male (N=7)	Females (N=36)	Male (N=11)
HW	56.77±1.14	58.00±1.31	70.53±0.52	73.48±1.09	59.71±2.30	60.57±1.62	72.03±0.77	72.18±1.37
BL	52.69±1.08	57.50±1.34	67.22±0.51	67.13±1.19	59.59±2.28	56.29±1.44	68.03±0.77	65.27±1.13
CG	62.54±1.04	62.75±1.45	80.45±0.60	80.30±1.35	68.00±1.83	63.86±0.88	81.31±0.69	78.73±1.73
PG	63.69±1.36	62.25±1.82	81.45±0.71	79.26±1.50	68.71±1.48	64.71±1.41	83.72±1.05	79.64±1.78
FL	14.69±0.46	13.88±0.58	18.44±0.20	18.35±0.41	15.14±0.63	14.00±0.69	18.17±0.26	16.82±0.62
HL	4.23±0.74	4.75±1.15	13.88±0.42	13.96±1.20	4.57±0.84	4.86±0.91	13.36±0.74	12.56±1.14
EL	11.15±0.56	13.00±0.57	11.34±0.58	13.83±0.36	12.14±0.51	12.43±0.61	12.42±0.83	14.36±0.41
TL	11.62±0.47	11.63±0.65	13.37±0.23	13.35±0.42	12.86±0.67	13.14±0.94	13.97±0.37	14.09±0.46
BW	19.54±1.01	19.63±1.15	37.69±0.68	38.70±1.91	22.00±2.04	21.43±1.55	40.42±1.02	37.27±2.52

HW-Height at Wither, CG-Chest Girth, PG- Paunch Girth, FL-Face Length, HL-Horn Length, EL- Ear Length, TL- Tail Length BW- Body Weight

little land holdings. Goats are kept under semi-extensive management sending them for pasture/jungle grazing during day time. The animals come back in the evening and stay at home in the night. Goat houses are kept either in open space or in temporary structures without any proper arrangement of water and electricity. Breeding is through natural mating. These goats have early maturity and give multiple births second kidding onward. So prolificacy is good with singlet in first kidding and 60 % twinning in subsequent kiddings. Triplets in few cases were seen but quadruplets were rare. Genomic DNA of 31 Mahbubnagar goats genotyped for the reported SNPs in the candidate genes for prolificacy (GDF9, BMP15 and BMPR1B), however, did not support their association with prolificacy trait (Verma, 2019).

The results indicated that two groups of Telangana goats formed on the basis of coat colour were not distinct and thus constituted a single population with lot of phenotypic heterogeneity. The distinctness between two groups was tested genetically also using microsatellite markers and confirmed that Telangana goats is a single population with lot of phenotypic heterogeneity (Verma et al., 2018b).

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