

PERFORMANCE OF INDIGENOUS GOAT (*PALLAI ADU*) UNDER FIELD CONDITIONS

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ABSTRACT

Survey conducted in the breeding tracts of Pallai Adu goats revealed that the animals were distributed in the Karungulam and Ottapidaram blocks of Thoothukudi and Palayamkottai block of Tirunelveli districts in Tamil Nadu. Morphology, body weight and reproduction performance were recorded in both sexes. The animals are medium sized and predominately yellowish brown in colour. Head is straight and its colour is same as of body colour. The average flock size was 21.2 ± 3.8 . The overall mean height at withers, body length and chest girth in adult goats were 69.07 ± 0.05 , 52.82 ± 0.04 and 69.79 ± 0.02 cm respectively. Both the sexes are horned and the mean horn length in adults was 11.96 ± 0.02 . The pooled mean birth weight was 1.80 ± 0.02 kg and male kids were significantly ($P < 0.05$) heavier than female kids. The mean body weight in bucks and does were 21.19 ± 0.08 and 20.25 ± 0.06 kg respectively. The age at first mating in adult males and females were 8.08 ± 0.22 and 8.45 ± 19.33 months respectively. In does the age at first kidding and kidding interval were 12.84 ± 2.95 and 7.75 ± 0.42 months respectively. Pallai Adu goats are highly prolific and the incidences of birth in single, twin and triplets and quadruplets recorded were 12.1, 75.2, 10.6 and 2.1 per cent respectively.

Keywords: Goat, Pallai adu, Body weight, Reproduction

India has vast animal genetic resources. There are 20 breeds of goat distributed in different agro-climatic regions of the country. Pallai Adu is one of the indigenous goat distributed in southern parts of Tamil Nadu. Locally the goat is also called as Seeni Adu, because of its promising reproductive performance. Pallai Adu goats were seen in variety of coat colours (Mariadas, 1996). Kanni Adu and Kodi Adu are the other two major

indigenous goat breeds found in the Pallai Adu breeding tract. Thiruvenkadan *et al* (2000) reported the performance of Kanni Adu and Jain *et al* (2000) for Kodi Adu. As yet no study has been conducted on the Pallai Adu, the present study is an attempt to document the characteristics and performance of this valuable indigenous germplasm in its native tract.

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MATERIALS AND METHODS

Survey was conducted in the distribution areas of Pallai Adu goat in Thoothukudi and Tirunelveli districts of Tamil Nadu. Information was collected randomly using formal questionnaires and informal discussion with 146 goat farmers. The flock size was studied in 30 herds. Morphology, physical measurements and body weights were recorded in 153 animals of both sexes. Reproductive performance was observed in 52 bucks and 145 does. The data recorded were collated, scrutinized and analyzed by method of least-squares (Harvey, 1990).

RESULTS AND DISCUSSION

Pallai Adu goats were distributed in Karungulam and Ottapidaram blocks of Thoothukudi district and Palayamkottai block of Tirunelveli district of Tamil Nadu. The demographic areas in the present study were in agreement with the earlier preliminary report (Mariadas, 1996). The climate was generally hot and humid. The ambient temperature ranged from 24.5 to 35.4° C. The maximum precipitation is contributed by the northeast monsoon (551.1mm) followed by the southwest monsoon (151.1 mm). The soil in the distribution areas was red sandy. The main occupation of the farmers rearing Pallai Adu goat was agriculture (70 %). Pallai Adu are raised solely on grazing with out supplementation of concentrate feed to any category of animals. Majority of farmers provide shelter especially during night hours and the sheds were adjacent to the farmers' house. The flock size varied from 15 to 35 with the mean value of 21.2 ± 3.8 .

Breed characteristics:

Pallai Adu goats are medium sized short animals with compact body. Coat colour is predominantly yellowish brown. Few animals have white with mixtures of black or brown colour. Moreover very few animals have black or brown head (Fig

1). Head is straight. Ears are medium, leaf like and semi pendulous. Both the sexes have thick and long horns. In kids, horn spurs are observed. Females have short, straight and sleek hairs in almost all parts of the body. Males have fairly long, straight and rough hairs on neck and withers. Udder was fully developed and has conical shaped teats.

Physical body measurements:

The least-squares mean body measurements and body weight were presented in Table 1. The overall mean height at withers, body length and chest girth in adult goats were 69.07 ± 0.05 , 52.82 ± 0.04 and 69.79 ± 0.02 cm respectively. The mean height at withers, body length and chest girth in bucks were 74.34 ± 0.09 , 55.30 ± 0.08 and 70.08 ± 0.05 cm respectively and the corresponding values in does were 65.24 ± 0.07 , 50.33 ± 0.06 and 68.05 ± 0.04 cm. The body length was short. Males had significantly ($P < 0.01$) higher values than females for all three principal body measurements. Body measurements observed in Pallai Adu were less than that reported for Kanni Adu (Anonymous, 2002; Thiruvankadan *et al.*, 2000b), Kodi Adu (Mariadas, 1996; Jain *et al.*, 2000) and Salem Black (Thiruvankadan and Karunanithi, 2006) goats. The mean horn length in Pallai Adu bucks and does were 12.75 ± 0.03 and 11.16 ± 0.07 cm respectively and were comparable to that of Kanni Adu (Anonymous, 2002) and less than that of Salem Black (Thiruvankadan and Karunanithi, 2006) goats.

Body weight:

The over all birth weight was 1.80 ± 0.02 kg. Male kids (1.85 kg, n=23) were significantly ($P < 0.01$) heavier than female kids (1.75 kg, n=26). The birth weight recorded in the present study was lower than that of Kanni Adu goats and the sex effect was reported non-significant (Thiruvankadan *et al.*, 2000b). The birth weight recorded was lower in kids born in multiple births than those born as single.

In adults, the overall mean body weight was 20.72 ± 0.04 kg. Bucks weighed significantly ($P < 0.05$) higher than does. Adult body weight of Pallai Adu goat was lower than Kanni (Anonymous, 2002; Thiruvankadan *et al.*, 2000b), Kodi Adu (Mariadas 1996; Jain *et al.*, 2000) and Salem Black (Thiruvankadan and Karunanithi, 2006) goats.

Reproduction performance:

The reproductive performance of Pallai Adu goats are set out in Table 2. Mean age at first mating in bucks was 8.08 ± 0.22 months while does mature at the age of 8.45 ± 19.33 months. The mean age at first kidding and kidding interval were of 12.84 ± 2.95 and 7.75 ± 0.42 months respectively. The average age at first kidding observed in Pallai Adu was less than that reported for Kanni Adu (Thiruvankadan *et al.*, 2000a), Kodi Adu (Jain

et al., 2000), Salem Black (Thiruvankadan and Karunanithi, 2006). Pallai Adu goats are highly prolific and incidences of multiple births were very common. The incidence of single, twins and triplets and quadruplets recorded were 12.1, 75.2, 10.6 and 2.1 per cent respectively. The kids born as triplets and quadruplets were found to mature late and also had more age at first kidding, which might be due to their slow growth rate in early days. Pallai Adu had better reproduction performance than Kanni Adu (Thiruvankadan *et al.*, 2000a), Kodi Adu (Mariadas, 1996; Jain *et al.*, 2000), Salem Black (Thiruvankadan and Karunanithi, 2006).

Pallai Adu is an excellent medium stature food animal and has high litter size, less kidding interval and better adaptability to rural environment, which could increase the overall economics of rural livelihood.

Table 1.

Least squares mean (\pm SE) body measurements and body weight of adult Pallai Adu goat

Trait	Overall (n=104)	Buck (n=26)	Doe (n=78)
Height at withers (cm)	69.07 ± 0.05	74.34 ± 0.09^a	65.24 ± 0.07^b
Body length (cm)	52.82 ± 0.04	55.30 ± 0.08^a	50.33 ± 0.06^b
Chest girth (cm)	69.79 ± 0.02	70.08 ± 0.08^a	68.05 ± 0.07^b
Ear length (cm)	11.14 ± 0.05	11.22 ± 0.09	11.05 ± 0.07
Tail length (cm)	14.94 ± 0.09	15.03 ± 0.08	14.84 ± 0.08
Horn length (cm)	11.96 ± 0.02	12.75 ± 0.07^a	11.16 ± 0.06^b
Body weight (kg)	20.72 ± 0.04	21.19 ± 0.08^a	20.25 ± 0.06^b

Means with different superscript differ significantly ($P < 0.05$) between sexes

Table 2.
Reproduction performance of Pallai Adu goat

Trait	n	Mean ± SE
Male		
Age at first mating (months)	52	8.08 ± 0.22
Female		
Age at first mating / Sexual maturity (months)	145	8.45 ± 19.33
Age at first kidding (months)	127	12.84 ± 2.95
Kidding interval (months)	89	7.75 ± 0.42
Incidence of multiple births (%)		
Single		12.1
Twins		75.2
Triplets		10.6
Quadruplets		2.1

Fig.1
Pallai Adu



REFERENCES

- Anonymous. 2002. Final Report. ICAR Ad-hoc scheme on study of economic traits of Kanni goat and establishing them as a breed. Veterinary University Training and Research Centre, TANUVAS, Tirunelveli, Tamil Nadu.
- Harvey, W.R. 1990. Mixed model least squares and maximum likelihood computer Program, Ohio State University, Columbus, USA.
- Jain, A., Sahana, G., Kandasamy, N and Nivsarkar, A.E. 2000. Kodi Adu- A new goat breed of Tamil Nadu. Indian Journal of Animal Sciences. 70 (6): 649-651.
- Mariadas, B. 1996. (Goat breeds of Tamil Nadu) *Tamil Nattin Velladu Inangal* (Tamil). Monograph pp. 13-14.
- Thiruvankadan, A.K. and Karunanithi, K. 2006. Characterization of Salem Black goats in their home tract. Animal Genetic Resources Information, 38: 67-75.
- Thiruvankadan, A.K., Panneerselvam, S. and Kandasamy, N. 2000a. Reproductive performance of Kanni Adu goats under field conditions. Indian Journal of Animal Sciences, 70(7): 691-693.
- Thiruvankadan, A.K., Panneerselvam, S. and Kandasamy, N. 2000b. Distribution, characteristics and production performance of Kanni Adu goats of Tamil Nadu. Indian Journal of Animal Sciences, 70(7): 723-727.