

## Breed characteristics of Salem black Goat of Tamil Nadu

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**Abstract:** A survey to identify the habitat, distribution and to establish breed characteristics, production and reproduction performances of Salem black goats was conducted in farmer's herds in Tamil Nadu. Salem Black Goats were distributed in Salem, Dharampuri and Erode districts of Tamil Nadu. They were tall animals with a lean body and predominantly black in color. Average herd size was 21.87 (range 1 to 86). The pooled means for height at withers, chest girth, body length, for full mouth (eight tooth) were  $84.30 \pm 0.66$ ,  $82.34 \pm 0.58$  and  $73.53 \pm 0.74$  cm, respectively. The coefficient of variations for body measurements ranged from 2.72 to 15.06 per cent for adult goats. The carcass trait such as dressing percentage at adult animals at 6, 12 months and two and four tooth were  $43.39 \pm 0.42$ ,  $47.38 \pm 0.23$ ,  $44.31 \pm 0.46$  and  $48.82 \pm 0.91$  per cent, respectively. Age at first kidding and kidding interval were varied from 13 to 19 months and 8 to 10 months, respectively. The mean litter size of the dose pooled over parities was  $1.48 \pm 0.13$ . The overall incidence of multiple births was 37.55 per cent. Kidding occurred throughout the year with high frequency in June and August.

**Key words:** Breed characteristics, Goat, Salem Black, Habitat

### INTRODUCTION

Goats contribute greatly to the agrarian economy through meat, milk, skin and serves as organic fertilizer factories for crop production in the country. In India goat population as per 2007 Livestock Census is 122.58 millions and it ranks second in the world next to China. Several economically useful breeds have been developed with special adaptational features over the years to survive and simultaneously give sustained production under the various agro-climatic conditions of their habitat. In India, major proportion of goat population is constituted by the

non-descript animals which do not confirm to any of the described breeds. However, these animals were defined in terms of phenotypic characteristics which distinguish from other population and have been named after their main habitat and some efforts were made for characterization of goat breeds based on geographical distribution, phenotypes, and production and reproduction performances (Acharya 1982). Detailed reports on the physical and production traits of Salem Black are not many and the available information is not comprehensive.

Hence, detailed study was made to identify the habitat and establish breed characteristics of Salem Black goats under existing management condition.

### MATERIALS AND METHODS

A survey on habitat, distribution, breed characteristics, production and reproduction performances of Salem Black goats was conducted in farmer's herds in Salem, Dharmapuri and North-Western parts of Tamil Nadu. The habitat and distribution were survived by visiting 45 randomly selected villages and 11 weakly markets in the breeding tract during the year 2012-13. Data on morphometric measurements and body weights of Salem black goats at different ages were recorded for 186 males and 389 females from birth to one year age groups and 106 males 462 females from 2 tooth to full mouth age groups. Particulars on reproduction performances and husbandry practices were collected from direct observation and questioning the goat owners.

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The data collected were subject to standard statistical analysis as per Snedecor and Cochran (1989).

## RESULTS AND DISCUSSIONS

The survey revealed that the Salem Black goats were distributed in Mettur and Omalur taluks of Salem district, Pennagaram and Palacode taluks of Dharmapuri districts and Bavani taluk of Erode district. The Salem Black with typical morphological features were seen at Mecheri, Kolathur and Kadayampatti Panchayat Unions in Salem district and Pennagaram and Palacode Panchayat Unions of Dharmapuri district. These areas also had relatively higher population of Salem Black goats. The breeding tract of Salem Black goats were located approximately between 11°00' and 11°38' Northern latitude and 71°00' and 73°45' Eastern longitude. The elevation of the tract approximately ranged from 500 to 675 metres above the mean sea level. The approximate total area of the breeding tract is 6483 square kilometers. The breeding tract was covered with red soil types with mean annual rain fall of 92.70 mm. North-Western agro climatic zone of Tamil Nadu is flanked by a range of hills, viz. Eastern and Western ghats. The Eastern Ghats do not maintain a continuous chain and the breeding tract was predominantly covered with forest, hillocks and uncultivated dry lands. The major fodder trees and shrubs are Babul (*Acacia nilotica*), Umbrella thorn (*Acacia planifrons*), Tamarind (*Tamrindus indica*), Neem (*Azadirachta indica*), East India walnut (*Albizia lebbek*), and fodder grasses like Hariali (*Cynodon dactylon*), Nut grass (*Cyperus rotundus*) and Sarani (*Trianthema portulacastrum*) and also some pulses cultivated in this tract viz. Horse gram (*Dolichos biflorus*), Green gram (*Phaseolustrilobus*), Black gram (*Phaseolus mungo*) and Cow pea (*Vigna unguiculata*). About 84 per cent of goat owners had herd size of 5 to 30 Salem Black and average herd size was 21.87

(range 1 to 86), of which. there were 0.8 buck, 12.16 does and 8.9 kids. Similar herd composition were also reported for Kanni Adu breed of goat (Thiruvankadan, 1997).

Salem Black goats are tall animals, predominantly black in colour; Nearly 3.17 per cent goats had white spots or patches on the body, ears and poll. There was no difference in colour between kids and adults. Black seem to be a common colour in most of the Indian breeds of goats. The predominantly black coat colour of Salem Black is comparable to that of other black goat such as Kanni Adu, Osmanabadi (Thiruvankadan, 1997; Mishara and Koratkar, 1994). Neck was thick, broad and well set to the thorax in males, but it was slender in females. The flank was medium squarely set, long, lean and straight legs. The tail was thin, medium in length and curled upwards. Udder was small and tightly attached to the belly with small conical teat placed laterally. In adults, both males and females had horns and they were grey in colour and they curved upwards and backwards. The horns were medium in size. Males had thicker and longer horns than females. There was no typical horn pattern. In males, the beard grew around 9 to 11 months. In both males and females, beards and tassels were observed in 43 and 22 per cent and 89 and 76 per cent, respectively (Plate 1 and 2).



PLATE 1 SALEM BLACK-BUCK PLATE 2 SALEM BLACK-DOE

The mean body measurements and body weights of adult Salem Black goats are presented in Table 1.

TABLE 1 MEAN ( $\pm$  S.E.) BODY MEASUREMENT (CM) AND BODY WEIGHT (KG) OF SALEM BLACK ADULT GOATS

Character	2-Tooth			4-Tooth			6-Tooth			Full Mouth		
	Male	Female	Pooled	Male	Female	Pooled	Male	Female	Pooled	Male	Female	Pooled
Height at withers	74.53 $\pm$ 0.27 (28)	73.76 $\pm$ 0.37 (66)	<b>73.64 <math>\pm</math> 0.84</b> <b>(94)[11.15]</b>	78.48 $\pm$ 0.30 (19)	74.13 $\pm$ 0.39 (87)	<b>74.91 <math>\pm</math> 0.62</b> <b>(106)[8.49]</b>	83.54 $\pm$ 0.24 (18)	78.46 $\pm$ 1.26 (102)	<b>79.24 <math>\pm</math> 0.87</b> <b>(120)[11.86]</b>	87.59 $\pm$ 0.53 (16)	83.19 $\pm$ 0.33 (152)	<b>84.30 <math>\pm</math> 0.66</b> <b>(168)[9.63]</b>
Chest girth	68.79 $\pm$ 0.33 (28)	68.38 $\pm$ 0.52 (66)	<b>68.44 <math>\pm</math> 0.53</b> <b>(94)[7.53]</b>	74.50 $\pm$ 0.30 (19)	64.83 $\pm$ 0.39 (87)	<b>66.56 <math>\pm</math> 0.50</b> <b>(106)[7.83]</b>	77.69 $\pm$ 0.21 (18)	78.26 $\pm$ 1.29 (102)	<b>77.35 <math>\pm</math> 0.65</b> <b>(120)[7.73]</b>	84.08 $\pm$ 0.50 (16)	82.13 $\pm$ 0.38 (152)	<b>82.34 <math>\pm</math> 0.58</b> <b>(168)[8.78]</b>
Body length	65.11 $\pm$ 0.46 (28)	64.99 $\pm$ 0.56 (66)	<b>64.94 <math>\pm</math> 0.74</b> <b>(94)[11.10]</b>	70.75 $\pm$ 0.37 (19)	64.31 $\pm$ 1.46 (87)	<b>65.46 <math>\pm</math> 0.63</b> <b>(106)[9.97]</b>	72.40 $\pm$ 0.11 (18)	71.77 $\pm$ 0.34 (102)	<b>72.67 <math>\pm</math> 0.66</b> <b>(120)[9.92]</b>	80.48 $\pm$ 0.39 (16)	72.71 $\pm$ 0.23 (152)	<b>73.53 <math>\pm</math> 0.74</b> <b>(168)[12.53]</b>
Face length	16.88 $\pm$ 0.16 (28)	16.21 $\pm$ 0.20 (26)	<b>16.60 <math>\pm</math> 0.13</b> <b>(54)[5.83]</b>	17.68 $\pm$ 0.17 (19)	17.46 $\pm$ 0.14 (44)	<b>17.53 <math>\pm</math> 0.13</b> <b>(63)[6.10]</b>	19.15 $\pm$ 0.11 (18)	21.25 $\pm$ 0.32 (42)	<b>20.67 <math>\pm</math> 0.21</b> <b>(60)[8.36]</b>	23.25 $\pm$ 0.24 (16)	18.19 $\pm$ 0.27 (42)	<b>18.99 <math>\pm</math> 0.23</b> <b>(58)[12.19]</b>
Ear Length	16.68 $\pm$ 0.10 (28)	15.83 $\pm$ 0.25 (26)	<b>16.28 <math>\pm</math> 0.15</b> <b>(54)[6.44]</b>	16.64 $\pm$ 0.15 (19)	15.85 $\pm$ 0.20 (44)	<b>16.19 <math>\pm</math> 0.13</b> <b>(63)[6.17]</b>	17.31 $\pm$ 0.14 (18)	17.47 $\pm$ 0.22 (42)	<b>17.43 <math>\pm</math> 0.13</b> <b>(60)[6.02]</b>	17.40 $\pm$ 0.13 (16)	17.50 $\pm$ 0.33 (42)	<b>17.48 <math>\pm</math> 0.16</b> <b>(58)[9.15]</b>
Tail Length	17.91 $\pm$ 0.21 (28)	16.76 $\pm$ 0.36 (26)	<b>16.95 <math>\pm</math> 0.20</b> <b>(54)[8.49]</b>	17.87 $\pm$ 0.26 (19)	17.39 $\pm$ 0.26 (44)	<b>17.48 <math>\pm</math> 0.12</b> <b>(63)[7.55]</b>	21.07 $\pm$ 0.16 (18)	16.94 $\pm$ 0.24 (42)	<b>18.70 <math>\pm</math> 0.27</b> <b>(60)[12.06]</b>	22.02 $\pm$ 0.22 (16)	19.31 $\pm$ 0.28 (42)	<b>19.47 <math>\pm</math> 0.17</b> <b>(58)[8.72]</b>
Horn length	11.86 $\pm$ 0.19 (28)	11.85 $\pm$ 0.22 (26)	<b>11.26 <math>\pm</math> 0.16</b> <b>(54)[9.60]</b>	16.64 $\pm$ 0.15 (19)	11.52 $\pm$ 0.16 (44)	<b>11.62 <math>\pm</math> 0.11</b> <b>(63)[8.58]</b>	20.49 $\pm$ 0.28 (18)	15.59 $\pm$ 0.24 (42)	<b>16.93 <math>\pm</math> 0.31</b> <b>(60)[15.06]</b>	23.26 $\pm$ 0.38 (16)	21.06 $\pm$ 0.37 (42)	<b>22.40 <math>\pm</math> 0.20</b> <b>(58)[8.80]</b>
Body weight	26.28 $\pm$ 21.63 (6)	20.71 $\pm$ 0.19 (42)	<b>21.40 <math>\pm</math> 0.36</b> <b>(48)[12.72]</b>	34.18 $\pm$ 0.54 (6)	23.38 $\pm$ 0.38 (48)	<b>24.58 <math>\pm</math> 0.41</b> <b>(54)[9.65]</b>	41.76 $\pm$ 0.68 (10)	26.42 $\pm$ 0.43 (73)	<b>28.26 <math>\pm</math> 0.11</b> <b>(83)[9.65]</b>	48.64 $\pm$ 0.64 (12)	31.76 $\pm$ 0.26 (96)	<b>33.63 <math>\pm</math> 0.30</b> <b>(108)[8.56]</b>

Figures in parentheses denote the number of observations.

Figures in square bracket denote the coefficient of variations (per cent) for pooled only.

The pooled means for height at withers, chest girth, body length for full mouth (eight tooth) were  $84.30 \pm 0.66$ ,  $82.34 \pm 0.58$  and  $73.53 \pm 0.74$  cm, respectively. Males had higher body measurements than females at all the age groups. The coefficient of variations ranged from 2.72 to 15.06 per cent for adult goats. The mean for height at withers, chest girth and body length recorded in Salem Black bucks and does at full mouth were more or less similar to Kanni Adu and Kodi Adu goats of Tamil Nadu and Sirohi, Parbatsari and Devagarhi goats (Thiruvankadan *et al.*, 2011, Thiruvankadan, 2012, 1997 Krishnamurthy *et al.*, 1992; Jain *et al.*, 2000) and were higher than the Marwari goats (Taneja *et al.*, 1992).

In adult, the pooled mean of the body weight at two, four, six and full mouth were  $21.40 \pm 0.36$ ,  $24.58 \pm 0.41$ ,  $28.26 \pm 0.11$  and  $33.63 \pm 0.30$  kg, respectively. In all the age groups the difference between body weights of males and females were highly significant ( $P < 0.01$ ) and males were heavier than the females. The coefficient of variations ranged between 8.56 and 12.72 per cent. Similar body weights were also observed in Kodi Adu and Kanni Adu breed of goat breeds of Tamil Nadu (Thiruvankadan *et al.*, 2011; Thiruvankadan, 2012). The pooled mean body weight of males at birth (2.26 kg) was higher than the values reported for Jakhrana and lower than that of Kodi Adu (Thiruvankadan, 2012) and Marwari goat (Mittal, 1991).

The mean age at sexual maturity of males were observed to be  $9.60 \pm 0.26$  months and ranged from 6 to 11 months and females were  $10.28 \pm 0.23$  months with the range of 8 to 13 months. Age at first kidding and kidding interval were varied from 13 to 19 months and 8 to 10 months, respectively. The mean litter size of the dose pooled over parities was  $1.48 \pm 0.13$ . The overall incidence of multiple births was 37.55 per cent were similar to those reported for Salem Black goats by

Thiruvankadan and Karunanithi, (2006). On contrary, Mariadas, (1996) observed that the incidence of twin birth was rare in Salem Black goats. The multiple birth percentages observed in this study were lower than those reported for the Kanni Adu and Kodi Adu breeds (Thiruvankadan *et al.*, 2000). The Carcass trait dressing percentage at 6, 12 months and two and four tooth age were  $43.39 \pm 0.42$ ,  $47.38 \pm 0.23$ ,  $44.31 \pm 0.46$  and  $48.82 \pm 0.91$  per cent, respectively. The mean dressing percentage of Salem black goat obtained at 6 months (43.39 per cent) was in close agreement with the values for Jakhrana and Marwari goats (Prasad *et al.*, 1992; Annual report, 1993) and similar to those reports of feral goats of Dharmapuri district in Tamil Nadu (Viswanathan *et al.*, 1997).

The Salem Black was housed only during nights and the sheds were generally located near the houses of goat owners or formed part of the residence. Kids were housed separately in a special, round enclosure made up of Palmyra leaves and thorny bushes. The special type of accommodation for kids is called as *kodappu* (Plate 3 and 4).



PLATE 3 : SALEM BLACK – SHED WITH RESTING PEN

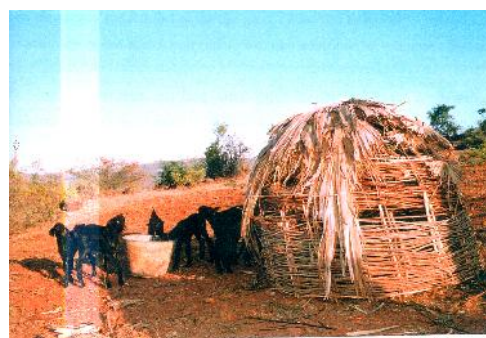


PLATE 4 : SALEM BLACK – HOUSING (KODAPPU) FOR KIDS

The bucks were used for breeding at the age of two to six tooth age and randomly mated with in the herd. Generally males and female were run together in herd throughout the year. Medium and large sized herds usually had bucks for breeding and small sized herds did not have breeding bucks. Kidding occurred throughout the year with high frequency in June and August. The husbandry practices were generally in agreement with earlier reports of Thirunavukarasu and Prabakaran, (1996) for feral goats of Tamil Nadu. Early sexual maturity, low adult mortality were the distinguishing features of Salem Black goats.

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