

Breed characteristics of Mecheri sheep

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Summary

This study was carried out on 2 309 households in 60 villages with the objective of documenting the performance of Mecheri sheep in their native environment. The study revealed that Mecheri sheep were distributed in Salem, Erode, Karur, Namakkal and parts of Dharmapuri districts of Tamil Nadu. This tract lies in the north-western agro-climatic zone of Tamil Nadu and the climate is generally hot, semi-arid and tropical in nature.

The average flock size of Mecheri sheep was 24, of which, there were 1 ram, 17 ewes and 6 lambs. Mecheri sheep of medium size with a compact body and covered with short hairs, which are not shorn. They are light brown in colour. Their profile reveals a slightly Roman nose. Both males and females are polled. The pooled means for height at withers, chest girth and body length at above 24 months of age were 67±0.4, 74±0.4 and 66±0.4 cm, respectively. The body weight of the animals at birth 3, 6, 9 and 12 months of age was 2.82±0.01, 10.9±0.1, 15.6±0.1, 17.6±0.2 and 21.1±0.1, kg respectively. The dressing percentage of males and females was 54.4±0.4 and 51.8±0.5, respectively. Average ages at first oestrus, mating and lambing were 12.1±0.1, 12.4±0.1 and 17.4±0.1 months, respectively. The average lambing interval was 226±0.7 days and the average litter size was one.

Resumen

El presente estudio se llevó a cabo con 2 309 granjas en 60 poblados con el fin de documentar los rendimientos de la oveja Mecheri en su entorno natural. El estudio reveló que la oveja Mecheri se distribuye entre las zonas de Salem, Erode, Karur, Namakkal y partes de los distritos de Dharmapuri en la region de Tamil Nadu. Esta zona se encuentra en el noroeste de la parte agroclimática de Tamil Nadu y el clima es generalmente caliente, semi árido y tropical. La media de los rebaños es de 24 animales de los cuales 1 macho, 17 hembras y 6 crías. La oveja Mecheri es de tamaño medio con cuerpo compacto y cubierto de pelo corto que no se esquila. Su perfil denota una narz romana. Tanto los machos como las hembras están registrados. Las medidas indicadas para la altura al garrete, circunferencia torácica, largura corporal a los 24 meses es, respectivamente, de 67±0,4; 74±0,4 y 66±0,4 cm. El peso corporal de los animales al nacer, a los 3, 6, 9 y 12 meses es, respectivamente, de 2,82±0,01; 10,9±0,1; 15,6±0,1; 17,6±0,2 y 21±0,1 kg. El porcentaje de manto en los machos y hembras es, respectivamente, de 54,4±0,4 y 51,8±0,5. Le media de edad al primer estro, apareamiento y parto es de 12,1±0,1, 12,4±0,1 y 17,4±0,1 meses, respectivamente. El intervalo medio entre parteos es de 226±0,7 días y la media de crías por parto de uno.

Key words: Mecheri sheep, Meat type, Performance, Characteristics, India.

Introduction

India is rich repository of sheep germ plasm being home to 42 breeds of sheep with a total population (as per the 1997 census) of 47.61 million, producing 152.3 million kg of mutton annually. The contribution of sheep meat to the total meat produced in the country is 5.4% (Bhattacharya *et al.*, 2000). Tamil Nadu is situated in the southern part of India and has eight recognized breeds of sheep. The sheep population as per the 1998 census was 5.54 million (Report, 1998). This constitutes 11.6% of the total sheep population in India.

Mecheri sheep are one of the recognized breeds of sheep in Tamil Nadu, and belong to the hairy type, polled breeds of sheep (Acharya, 1982; Mason, 1988). The breed occupies first position in terms of population and area of distribution in the state. Though this breed of sheep has excellent meat and skin quality no detailed study has been made of them under their natural ecological conditions. Hence, this study was carried out to document the habitat, population statistics, and production and reproduction performance of Mecheri sheep in their breeding tract.

Materials and Methods

This study was carried out in 2 309 households in 60 villages, with the objective of studying the habitat and distribution of Mecheri sheep and documenting their performance within that habitat. Physical measurements were recorded on 1 777 males and 3 030 females of varying age groups. Body weights (kg) were recorded for 1 175 males and 2 769 females. Data on reproduction performance of males (n = 830) and females (n = 780) were recorded from the yearlings and ewes present in the flock by questioning the owners on each animal specifically.

Data on carcass characteristics were collected on 206 animals varying in age and of both sexes, which were slaughtered at local slaughterhouses. For analysis, Mecheri sheep were grouped into birth, 3, 6, 9, 12, 12-24, 24-36 and above 36 months age groups. Data collected were subjected to basic statistical analysis as per Snedecor and Cochran (1989).

Results and Discussion

Origin, habitat and geographic distribution

In India, most breeds have generally been named after their habitat or on the basis of prominent characteristics. The name Mecheri has been derived from its place of origin i.e., the Mecheri Block in Mettur Taluk of Salem District in Tamil Nadu. Mecheri sheep have synonyms like *Maiylambadi*, *Kannivadi* and *Thuvaramchambali*. They are distributed in Salem, Namakkal, Erode and Karur districts and a part of Dharmapuri district (Figure 1) in Tamil Nadu and these places lies between approximately 10°35" N and 12°53" N latitude and 76°5" E and 78° 5" E longitude with a approximate total area of 24 124 km². The elevation of the tract ranges between approximately 150 m and 500 m a.s.l. In the majority of places in the breeding tract farmers rear only Mecheri sheep. In the areas bordering the breeding tract, in addition to Mecheri sheep, farmers also rear Coimbatore, Tiruchy Black and non-descript breeds of sheep.

The Mecheri sheep breeding tract lies in the north-western agro-climatic zone of Tamil Nadu. The climate is generally hot, semi-arid and tropical in nature. Mean annual maximum and minimum temperatures are 34.3°C and 21.9°C respectively. Mean annual relative humidity recorded at 0830 h and 17.30 h are 77.2% and 55.1% respectively. The tract receives an average annual rainfall of 1 112.5 mm.

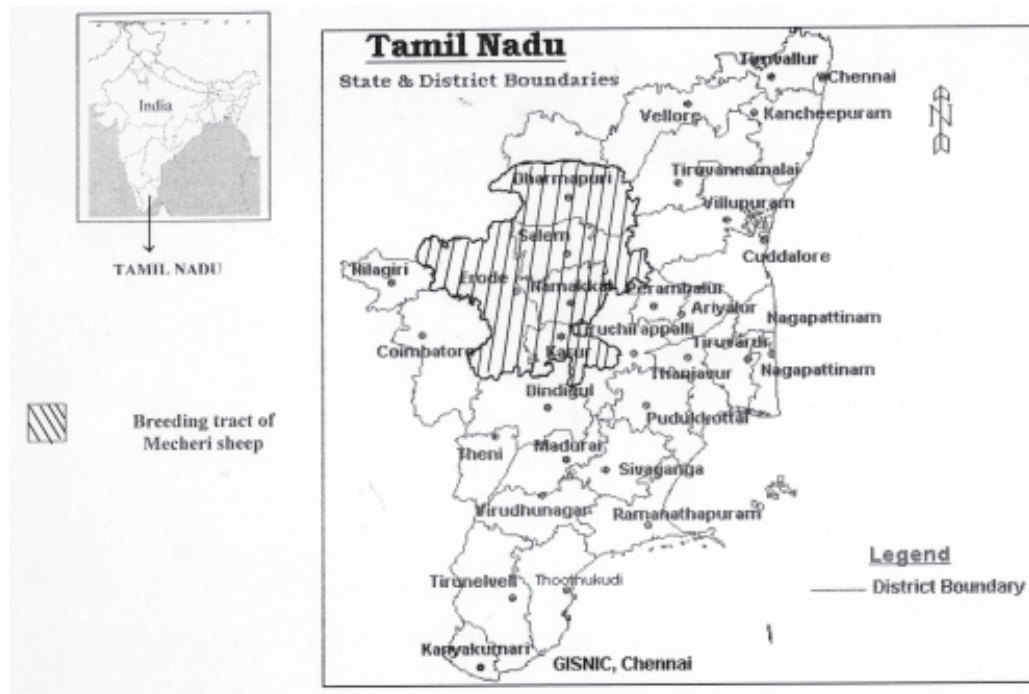


Figure 1. Breeding tract of Mecheri sheep.

Population statistics

The total estimated Mecheri sheep population in the breeding tract, according to the 1998 census figures, counted 12 53 184 heads, which constituted 93.2% of the total sheep population in this tract at that time. Among the total sheep population of Tamil Nadu, Mecheri sheep account for 22.6%. Acharya (1972) reported that the Mecheri sheep was distributed in Salem and Bhavani taluk of the Erode district and the total population according to 1972 and 1977 census was 0.956 and 0.917 million, respectively. However, in the present study, Mecheri sheep, in addition to Salem and Bhavani taluk of Erode district, were distributed in other parts of Erode district, Karur and parts of Dharmapuri district. Hence, the present estimated population is much higher than those reported earlier by Acharya (1982). Average flock size of Mecheri sheep in the breeding tract was 24, of which there were 1 ram, 17 ewes and 6 lambs. Acharya (1982) observed a higher average flock size of 44.

Morphological characteristics

Mecheri sheep are medium sized animals with a compact body covered with short hairs, which are not shorn. They are light brown in colour (Figures 2 and 3). The head is medium in length with a medium to broad forehead which is well carried. The profile reveals a slightly Roman nose. The ears are medium-long, leaf like and semi pendulous. The eyes are small and bright and the eyelashes are white in colour. They have brown coloured tapering muzzle. Both males and females are polled. The proportion of animals possessing wattles in males and females were 49% and 46% respectively. Beards are present in 6% of the males and completely absent in females. The neck is short and slender in females, but in males it is thick, broad and well set to the thorax. Rams have straight and moderately fleshed shoulders. Udders are not well developed, being small and round and tightly attached to the belly with small conical teats placed laterally.



Figure 2. Mecheri sheep male.



Figure 3. Mecheri sheep female.

Table 1. Average (\pm S.E) of some physical measurements (cm) of Mecheri sheep.

Age	Sex	Characters				
		Height at withers	Body length	Chest girth	Ear length	Tail length
Birth	Male	34.8 \pm 0.3 (350)	29.0 \pm 0.3 (350)	32.1 \pm 0.3 (350)	11.0 \pm 0.1 (328)	6.8 \pm 0.1 (350)
	Female	34.2 \pm 0.3 (438)	29.5 \pm 0.3 (438)	33.3 \pm 0.3 (438)	11.2 \pm 0.1 (410)	6.4 \pm 0.3 (438)
	Pooled	34.5 \pm 0.4?? [34.2]	29.3 \pm 0.2 [19.2]	32.8 \pm 0.2 [18.0]	11.1 \pm 0.1	6.6 \pm 0.1
Three months	Male	53.5 \pm 0.4 (143)	51.2 \pm 0.4 (256)	54.7 \pm 0.4 (256)	12.6 \pm 0.1 (164)	8.6 \pm 0.1 (143)
	Female	54.0 \pm 0.4 (153)	52.5 \pm 0.3 (342)	54.8 \pm 0.3 (345)	11.7 \pm 0.0 (262)	8.9 \pm 0.0 (153)
	Pooled	54.6 \pm 0.4 [12.3]	52.0 \pm 0.3 [11.8]	54.8 \pm 0.3 [11.2]	4.4 \pm 0.1	8.4 \pm 0.0
Six months	Male	58.6 \pm 0.8 (119)	56.4 \pm 0.5 (119)	62.5 \pm 0.6 (119)	14.3 \pm 0.1 (68)	10.4 \pm 0.8 (119)
	Female	57.6 \pm 0.2 (589)	54.9 \pm 0.8 (589)	60.2 \pm 0.2 (589)	14.7 \pm 0.1 (120)	9.4 \pm 0.3 (589)
	Pooled	57.8 \pm 0.2 [11.04]	55.2 \pm 0.7 [33.3]	60.6 \pm 0.2 [8.8]	14.5 \pm 0.1	9.8 \pm 0.4
Nine months	Male	58.8 \pm 0.6 (89)	57.3 \pm 0.6 (89)	62.1 \pm 0.6 (89)	15.0 \pm 0.2 (52)	9.8 \pm 0.3 (89)
	Female	59.2 \pm 0.4 (391)	58.9 \pm 0.3 (391)	62.7 \pm 0.3 (391)	14.6 \pm 0.0 (88)	8.6 \pm 0.3 (391)
	Pooled	59.1 \pm 0.3 [11.9]	58.7 \pm 0.3 [10.1]	62.6 \pm 0.3 [10.1]	14.8 \pm 0.1	9.0 \pm 0.2
12 months	Male	67.9 \pm 0.6 (134)	65.0 \pm 0.5 (134)	71.6 \pm 0.5 (134)	14.5 \pm 0.3 (54)	9.6 \pm 0.4 (134)
	Female	63.9 \pm 0.3 (497)	61.1 \pm 0.3 (497)	67.3 \pm 0.3 (497)	14.3 \pm 0.2 (67)	8.8 \pm 0.3 (497)
	Pooled	64.7 \pm 0.3 [8.6]	61.9 \pm 0.2 [9.3]	68.2 \pm 0.2 [8.8]	14.4 \pm 0.1	9.1 \pm 0.3
12-24 months	Male	68.1 \pm 0.5 (600)	63.8 \pm 0.5 (600)	71.7 \pm 0.5 (600)	14.4 \pm 0.1 (289)	9.2 \pm 0.2 (600)
	Female	66.1 \pm 0.4 (265)	62.2 \pm 0.5 (265)	70.7 \pm 0.5 (265)	13.4 \pm 0.5 (7)	8.3 \pm 0.2 (265)
	Pooled	67.5 \pm 0.4 [16.1]	63.3 \pm 0.4 [16.3]	71.4 \pm 0.4 [16.1]	14.4 \pm 0.1 (296)	9.0 \pm 0.2 (865)
Above 24 months	Male	71.1 \pm 0.5 (229)	70.9 \pm 0.6 (229)	80.0 \pm 0.6 (229)	14.6 \pm 0.1 (200)	8.2 \pm 0.3 (229)
	Female	65.7 \pm 0.5 (505)	63.1 \pm 0.5 (505)	71.0 \pm 0.6 (505)	14.6 \pm 0.1 (228)	7.9 \pm 0.1 (505)
	Pooled	67.4 \pm 0.4 [16.5]	65.5 \pm 0.4 [17.8]	73.8 \pm 0.4 [15.8]	14.6 \pm 0.1	8.1 \pm 0.2

Notes: Figures in the round bracket are number of observations.
 SE for pooled estimates cannot exceed the highest individual estimate.
 Figures in the square bracket are coefficient of variation (%).

Physical measurements

The mean (\pm SE) of body measurements of Mecheri sheep are given in Table 1. The pooled means for height at withers, body length and chest girth at above 24 months of age were 67.4, 65.5 and 73.8 cm, respectively. This is similar to the earlier reports of Ganesakale and Rathinasabapathy (1973) and Acharya (1982). In general, body measurements in adults were higher in males than females. The coefficient of variation for these three measurements was higher in lambs than adults.

Production performance

Body weight

The mean (\pm SE) of body weight of Mecheri sheep is presented in table 2. Ram lambs had significantly higher body weight than ewe lambs in all age groups except at birth and 3 months of age. Body weight observed in the present study was slightly higher than the earlier reports (Acharya, 1982; Ganesakale and Rathinasabapathy, 1973). The coefficient of variation for body weight

ranged between 9.9% and 18.7% in lambs and between 13.6% and 14.4% in adults.

Carcass characteristics

The mean (\pm SE) of carcass characteristics of Mecheri sheep is presented in table 3. The dressing percentage observed was similar to the earlier reports of Acharya (1982), Report (1975) and Arumugam *et al.* (1978). Since the consumers in the breeding tract generally prefer meat from ram lambs, a higher percentage of ram lambs (85%) were slaughtered at the age of 6-12 months. Slaughter of ewe lambs for meat purposes was rarely practiced and only aged and unproductive females were slaughtered. The higher dressing percentage observed in Mecheri sheep was the distinguishing feature of this breed. Skin weight accounted for 10.2% of the pre-slaughter live weight of the animal.

Reproduction parameters

The reproductive performances of Mecheri sheep are presented in table 4. There was

Table 2. Average (\pm S.E) of body weight (kg) of Mecheri sheep.

Age	Male	Female	Pooled
Birth	2.88 \pm 0.0 (348)	2.77 \pm 0.0 (437)	2.82 \pm 0.0 [9.9]
Three months	11.0 \pm 0.1 (259)	10.8 \pm 0.1 (348)	10.9 \pm 0.1 [15.8]
Six months	17.6 \pm 0.3 (119)	15.2 \pm 0.2 (586)	15.6 \pm 0.1 [17.4]
Nine months	19.4 \pm 0.3 (89)	17.1 \pm 0.2 (391)	17.6 \pm 0.2 [18.7]
12 months	23.7 \pm 0.3 (131)	20.4 \pm 0.1 (495)	21.1 \pm 0.1 [16.6]
24-36 months	31.2 \pm 0.3 (166)	28.1 \pm 0.2 (342)	29.8 \pm 0.2 [13.6]
Above 36 months	34.6 \pm 0.6 (63)	28.6 \pm 0.2 (162)	30.3 \pm 0.3 [14.4]

Notes: Figures in the round bracket are number of observations.

Figures in the square bracket are coefficient of variation (%).

Table 3. Average (\pm S.E) of carcass characteristics of Mecheri sheep.

Parameters	Male	Female	Pooled
Average age of slaughter (years)	1.6 \pm 0.1	2.6 \pm 0.1	2.0 \pm 0.1
Average pre slaughter live weight (kg)	17.7 \pm 0.5	20.9 \pm 0.6	18.9 \pm 0.4
Dressed carcass weight (kg)	9.7 \pm 0.3	10.8 \pm 0.4	10.1 \pm 0.3
Dressing percentage (%)	54.4 \pm 0.4	51.8 \pm 0.5	53.4 \pm 0.3
Skin weight (kg)	1.9 \pm 0.0	2.1 \pm 0.0	1.9 \pm 0.0
Skin length (cm)	91.1 \pm 1.0	99.7 \pm 1.2	94.4 \pm 0.8
Skin width (cm)	67.6 \pm 2.8	69.5 \pm 1.7	68.3 \pm 1.6
No. of observations	128	78	206



Figure 4. Grazing of animals in their natural environment (males and females are razing together).

only a marginal difference between the age at first oestrus and age at first mating as most of the animals were mated in the first oestrus itself. Maintaining breeding rams along with ewes in the pen and grazing fields might be the reason for this lack of difference. The age at first mating observed in females was lower than the earlier report of 15 months by Acharya (1982). Ewes mostly gave birth to singles at lambing and the twin births were very rare and accounted only for 0.1% of the total births. In males,

cryptorchid condition was observed in 9.4% of males born.

Breeding management

Breeding of Mecheri sheep was random and unplanned (Figures 4 and 5). Generally males and females were run together in the flocks throughout the year. The majority of the ewes were mated in the months of June

Table 4. Reproductive performance of Mecheri sheep.

Particulars	Number of observation	Mean±S.E	Coefficient of variation (%)
<i>Male</i>			
Age at 1 st mating (months)	830	12.6±0.1	20.6
<i>Female</i>			
Age at 1 st oestrus (months)	780	12.1±0.1	16.2
Age at 1 st mating (months)	780	12.4±0.1	15.8
Age at 1 st lambing (months)	769	17.4±0.1	11.2
Interval from lambing to 1 st conception (days)	741	73.6±0.8	28.5
Lambing interval (days)	720	226±0.7	8.4
Tupping percentage	50	93.0±1.1	7.5
Lambing percentage	50	95.9±1.1	7.8



Figure 5. Mecheri sheep males and females are housed together.

to November. This coincides with increased rainfall as the tract received its maximum amount of rain during this period. In permanent flocks, few ram lambs (Figure 6) were selected for future breeding while others were disposed of and almost all the females were retained for breeding. The rams were kept for mating up to four years of age.

Ewes were kept for breeding up to five to seven years of age.

Attempts at improvement

From 1971 to 1975, a scheme called 'Studies on carcass characteristics of Mecheri and Mandya lambs' was carried out in the



Figure 6. A flock of Mecheri lambs.

breed's home tract and recommended pure breeding (Report, 1975). Another study was carried out on the characterization and evaluation of breed from 2000 to 2003 under farmer's field conditions and indicated that this breed has considerable production potential under semi-arid tropical conditions. A nucleus flock of 300 breeding Mecheri ewes is being maintained at Mecheri Sheep Research Station, Pottaneri, Salem under the control of Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu, India, in the center of the breeding tract and acts as a center for supplying improved male stock to farmers.

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List of References

Acharya, R.M. 1982. Sheep and Goat Breeds of India. FAO Animal Production and Health Paper 30, Food and Agriculture Organization of the United Nations, Rome, Italy, pp.vii + 190.

Annual Report. 1998. Annual Administration Report, Animal Husbandry Department, Government of Tamil Nadu.

Arumugam, M.P., K.T. Radhakrishnan, P. Thangaraju & K. Kandavel. 1978. Studies on some physical carcass characteristics of Mecheri and Mandya lambs. *Cheiron*, 7 (1): 72-77.

Bhattacharya, N.K., M.K. Agnihotri & U.K. Pal. 2000. Estimated production of Meat by 2000 Ad in India and its impact on defense logistics. Proceedings of National Seminar on Latest Trends in Equine Breeding/Husbandry Practices with Critical

.....

Approach to Changed Role of RVC in Modern Scenario. 28- 29 November, New Delhi. 42-49.

Ganesakale, D. & V. Rathinasabapathy. 1973. Sheep breeds of Tamil Nadu. *Cheiron*, 2 (2): 146-155.

ICAR Report. 1975. Final report of the ICAR scheme on Studies on carcass characteristics of Mecheri and Mandya lambs. Directorate of Veterinary Education and Research, Madras Veterinary College, Chennai - 600 007.

Mason, I.L. 1988. World Dictionary of Livestock breeds (3rd Edition). CAB International, Wallingford, United Kingdom. pp 293.

Snedecor, G.W & W.G. Cochran. 1989. Statistical Methods (8th Edition). Iowa State University Press, Ames, Iowa, USA pp. xx+503.