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Production and reproduction performance of *Pattanam adu* sheep in the breeding tract of Tamil Nadu

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Abstract
A study on the production and reproduction performance of *Pattanamadu* sheep was conducted in the breeding tract of Tamil Nadu, India. Two district Ramanathapuram (3 blocks -Mudukulathur, Kamuthi and Paramakudi) and Virudhunagar (2 blocks - Aruppukottai and Thiruchuli) and 6 villages from each block and 2 flocks from each villagewere selected randomly. A total number of 60 flocks were included in this study. Data were collected by personal interview method with the help of pretested interview schedule. The flock size of *Pattanamadu* sheep in the study area is 77.33±1.15, 133.67±3.99 and 243.00±20.21 in small, medium and large flocks, respectively. The study revealed that the pooled Mean ± SE (kg) body weight at birth, three month, six month, nine month, one year age, two teeth, four teeth, six teeth and eight teeth were 3.16 ± 0.01, 14.77 ± 0.11, 21.56 ± 0.24, 31.33 ± 0.36, 38.90 ± 0.17, 38.97 ± 0.17, 43.89 ± 0.19, 45.98 ± 0.17 and 50.67 ± 0.16, respectively. Average age at first mating-male (months), age at first mating-female (months), Age at first lambing (months), lambing percentage (%), twinning percentage (%), tupping percentage (%) in small, medium and large flocks were 19.89, 21.63 and 21.78; 12.59, 13.01 and 13.65; 18.01, 19.08 and 19.39; 92.95, 93.01 and 92.31; 1.92, 1.75 and 1.69 and 99.38, 98.14 and 97.12, respectively. Highly significant differences ($P \leq 0.01$) were noticed for all the reproductive performance except for the twinning percentage. Adoption of scientific methods in sheep management and by following suggestion of veterinarians regarding ram rotation, maintaining of Ram: Ewe ratio, flushing of ewes before main breeding season and health care would increase production and reproduction performance in *Pattanam adu* sheep thereby increasing the economic status of the shepherds.

Keywords: *Pattanam aadu* breed, production, reproduction and sheep farming

Introduction
Sheep production is a major source of livelihood to the poor people of India including the state of Tamil Nadu. The small ruminant (sheep and goats) contributes to the rural economy in terms of meat, milk, wool, hair and manure. They account for 15% of total meat production in India. Sheep act as a means of asset retention with high liquidity. They help in adsorbing family labours with otherwise goes unemployed [1]. The latitude and longitude of Ramanathapuram and Virudhunagar Districts are 9.3639° N, 78.8395° E and 9.5680° N, 77.9624° E, respectively. The climate of a breeding tract of *Pattanam adu* sheep is tropical in nature and the temperature ranging from 22.3 to 37.8 °C. The minimum and maximum relative humidity were 68% (range 62–83) and 75% (range 62–88), respectively. The average annual rainfall was 827 mm and maximum rainfall was received from the northeast monsoon (501.6 mm) season. The major part of the breeding tract was covered with black cotton soil [2].
Pattanam adu is one of the unrecognized sheep breeds that accounts for the highest sheep population of the southern region of Tamil Nadu with an estimated population of 2,22,870 in its breeding tract [2]. *Pattanam adu* sheep is an important mutton type animal and is popular among sheep farmers for its heavy body weight. Hence the present study will help to understand the production and reproduction performance of *Pattanam adu* sheep.

Materials and Methods
This study was conducted in the native tract of *Pattanam adu* sheep in the Southern Agro climatic zone of Tamil Nadu. In Ramanathapuram district, three blocks and in Virudhunagar district two blocks were selected, each block six villages and from each village two flocks

were selected by multi stage random sampling method. A total number of 60 flocks were included to study the production and reproduction performance of the *Pattanam adu* sheep (n = 2880). Data were collected by personal interview through pretested interview schedule. The flocks were divided as small (less than 80), medium (81 to 160) and large (above 160) based on the flock size for comparison. The base line information about production performance of the *Pattanam adu* sheep, the pooled Mean ± SE (kg) body weight at birth, three months, six months, nine months, one year age, two teeth, four teeth, six teeth and eight teeth and reproduction performance of *Pattanam adu* sheep, the average age at first mating-male (months), age at first mating-female (months), Age at first lambing (months), lambing percentage (%), twinning percentage (%), tupping percentage (%) in small, medium and large flockswere recorded. The data collected were tabulated anda standard statistical procedure was used for a logical conclusion.

Result and Discussion

Body weight of *Pattanam* sheep

The Mean ± SE body weight (kg) of *Pattanam adu* sheep breed at different age groups are presented in Table 1 and Table 2. The pooled mean body weight at birth, three month, six month, nine month, one year age, two teeth, four teeth, six teeth and eight teeth were 3.16 ± 0.01, 14.77 ± 0.11, 21.56 ± 0.24, 31.33 ± 0.36, 38.90 ± 0.17, 38.97 ± 0.17, 43.89 ± 0.19, 45.98 ± 0.17 and 50.67 ± 0.16, respectively.

The body weight reported in the present study was higher than that of earlier reports in *Pattanam adu* sheep by [2, 3], and Nellore brown reported by [4] and comparable with findings of [5] in Nellore Palla sheep under field conditions. The body weight reported in the present study was higher than that of earlier findings in other southern breeds of sheep in Tamil Nadu (Vembur sheep by [6], Ramnad white sheep by [7, 8]. Kilakarsal sheep by [9].Chevvadu, Katchakatti and Vembur by [2].

Reproductive performance of *Pattanam* sheep

The reproductive performance of *Pattanam adu* sheep in the study area is presented in Table 3. Average age at first mating - male (months), age at first mating - female (months), Age at first lambing (months), lambing percentage (%), twinning percentage (%), tupping percentage (%) in small, medium and large flocks were 19.89, 21.63 and 21.78; 12.59, 13.01 and 13.65; 18.01, 19.08 and 19.39; 92.95, 93.01 and 92.31; 1.92, 1.75 and 1.69 and 99.38, 98.14 and 97.12, respectively. Highly significant differences ($P \leq 0.01$) were noticed for all the reproductive performance except for the twinning percentage.

The present findings on reproductive parameters were comparable with earlier reports in different sheep breeds by [5, 10, 11]. The reproductive efficiency of the flock is always determined by reproductive performance of breeding rams and ewes in the flock. A higher level of reproductive efficiency improves the biological and economic efficiency of sheep. It is observed from the Table 3, that reproductive performance in general were observed to be better in small flocks compared to medium and large flocks. Lesser ram:ewe ratio, attention on individual animals, good grazing management in small flocks might have a positive effect on reproductive performance in small sized flocks.

Table 1: Mean ± SE body weight (kg) of *Pattanam* sheep (below one year)

Age	Sex	No	*Pattanam* sheep flocks
Birth weight	Male	180	3.28 ± 0.04
	Female	180	3.05 ± 0.03
	Pooled	360	3.16 ± 0.01
3 Month	Male	180	15.50 ± 0.15
	Female	180	14.05 ± 0.13
	Pooled	360	14.77 ± 0.11
6 Month	Male	60	23.05 ± 0.23
	Female	300	20.08 ± 0.27
	Pooled	360	21.56 ± 0.24
9 Month	Male	60	35.25 ± 0.53
	Female	300	26.55 ± 0.61
	Pooled	360	31.33 ± 0.36
One year	Male	60	43.61 ± 0.23
	Female	300	34.12 ± 0.10
	Pooled	360	38.90 ± 0.17

Table 2: Mean ± SE body weight (kg) of *Pattanam*sheep (teeth viz)

Age	Sex	No	*Pattanam* sheep flocks
2 teeth	Male	60	47.47 ± 0.22
	Female	300	37.25 ± 0.10
	Pooled	360	38.97 ± 0.17
4 teeth	Male	60	55.55 ± 0.25
	Female	300	40.96 ± 0.12
	Pooled	360	43.89 ± 0.19
6 teeth	Male	60	57.43 ± 0.12
	Female	300	43.69 ± 0.20
	Pooled	360	45.98 ± 0.17
8 teeth	Male	60	62.22 ± 0.14
	Female	300	48.35 ± 0.19
	Pooled	360	50.67 ± 0.16

Table 3: Mean ± SE of reproduction performance in *Pattanam* sheep flocks

S. No	Particulars	Small flock	Medium flock	Large flock	F value
1	Number of flocks	15	30	15	
2	Age at first mating – Male (months)	19.89 ± 0.21	21.63 ± 0.19	21.78 ± 0.22	4.913**
3	Age at first mating – Female (months)	12.59 ± 0.19	13.01 ± 0.21	13.65 ± 0.18	5.849**
4	Age at first lambing (months)	18.01 ± 0.26	19.08 ± 0.18	19.39 ± 0.29	4.686**
5	Lambing percentage	92.95 ± 1.26	93.01 ± 1.38	92.31 ± 1.92	5.193**
6	Twinning percentage	1.92 ± 0.21	1.75 ± 0.23	1.69 ± 0.19	0.694^{NS}
7	Tupping percentage	99.38 ± 0.59	98.14 ± 0.63	97.12 ± 0.74	4.539**

^{NS} - Not significant

** - Significant at $P \leq 0.01$ level

Conclusion

The production and reproduction performance of *Pattanam adu* sheep were documented in the breeding tract of Tamil Nadu. The results of the current study revealed that the *Pattanam* sheep has superior production as well as reproduction performance than other breeds like Ramnad

white, Kilakarsal, Chevvadu, Katchakatti and Vembur in the southern agro climatic zone of Tamil Nadu which falls under the breeding tract of *Pattanam adu* sheep. Adoption of scientific methods in sheep management and by the following suggestion of veterinarians regarding ram rotation, maintaining of Ram: Ewe ratio, flushing of ewes before main breeding season and health care would increase production and reproduction performance in *Pattanam adu* sheep thereby increasing the economic status of the shepherds. State and Central Government support like the creation of Ram production centers and schemes like Network projects and ONBS (Open nucleus Breeding Schemes) must be initiated for overall genetic improvement of the breed.

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References

1. Suresh A, Gupta DC, Mann JS, Singh VK. Sheep production in semiarid zones - Management and economics. Central sheep and wool research institute, ICAR, Avikanagar, Rajasthan 2007, 1-55.
2. Ravimurugan T, Thiruvenkadan AK, Krovvidisudhakar, Elango A, Panneerselvam S. Breed characteristics of Pattanam sheep of Tamil Nadu. Indian Journal of Animal Genetic Resources 2012;5(1):99-104.
3. Ravimurugan T, Pavithra P. Characterization and evaluation of Pattanam sheep of Tamil Nadu. International Journal of Current Microbiology and Applied Sciences 2020;9(6):2845-2849.
4. Vani S, Guruvishnu P, Jayalaxmi P, Prasad RMV. Nellore Sheep - Local practices for conservation of germplasm - A survey in Kadapa district of Andhra Pradesh. International Journal of Livestock Research 2017;7(8):254-258.
5. Harini KS, Punyakumari B, Vinoo R, Sureshbabu D, Bharathi G. Morphometric characterization, productive and reproductive performance of Nellore Palla sheep under field conditions. Indian Journal of Small Ruminants 2019;25(2):156-160.
6. Chandran PC, Kandasamy N, Panneerselvam S. Distribution characterization and management of Vembur sheep. Indian Journal of Animal Sciences 2009;79(1):73-77.
7. Kumaravelu N, Murallidharan RA, Sivakumar T, Murugan M. Biometry of Ramnad white sheep in its native tract. Indian Journal of Animal Production Management 2008;24(1-2):31-34.
8. Ravimurugan T, Devendran P. Body measurements and body weight of Ramand White sheep. Indian Journal of Small Ruminants 2009;15(2):266-267.
9. Ravimurugan T, Devendran P, Joshi BK. Distribution and characterization of Kilakarsal sheep. Indian Journal of Small Ruminants 2010;16(1):122-124.
10. Sarikonda SSR, Ashalathapeeka, Sudhakarkaza, Rajakishorekonka. Reproductive performance of sheep in irrigated and rainfed areas in Krishna district of Andhra Pradesh, India. International Journal of Livestock Research 2019;9(12):68-71.
11. Mubashiralirather, Ambreenhamadani, Shanaz S, Safeeralam, Aadilayaz, Mirshabir *et al*. Genetics of some reproduction traits in some sheep breeds from India: A review. Journal of Entomology and Zoology Studies 2020;8(3):1234-1238.