REPRODUCTIVE PERFORMANCE OF SHEEP IN MIGRATORY AND NON-MIGRATORY FLOCKS IN SOUTHERN TAMIL NADU

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ABSTRACT

A study was conducted to analyse the migratory sheep production system in southern agro-climatic zone of Tamil Nadu. Reproductive performance of the rams and ewes was recorded through the questionnaire both in migratory and non-migratory flocks. Mean lambing percentage, twinning percentage, livability at birth percentage, age at first mating (months) in ewes, age at first mating (months) in rams, age at first lambing (months) and weaning percentage in migratory and non-migratory flocks were 93.56 and 91.50; 1.87 and 1.52; 98.32 and 98.73; 12.34 and 13.22; 19.64 and 21.44; 18.54 and 19.68; 85.98 and 87.15, respectively. The weaning period for ram and ewe lambs were 2.94+0.96 and 5.03+0.13 in migratory flocks and 4.82+0.13 and 6.06+0.17 in non-migratory flocks, respectively. Reproductive performance of sheep in migratory flocks was significantly better than non-migratory flocks. The months of October, November and December were main lambing season and the months of April and May were second lambing season.

Key words- Reproductive performance, Migratory, Non-migratory flocks.

INTRODUCTION

Sheep rearing in Tamil Nadu is practised in a traditional method of open range system in the three conventional systems of grazing viz., stationary, migratory and semi-migratory. Migratory system of sheep production is traditional and popular in southern agro-climatic zone of Tamil Nadu. Reproductive performance of sheep has direct impact on the overall economic returns to sheep rearers. Research findings on the performance of migratory sheep flocks are scanty. Hence the present study was aimed to the reproductive performance parameters in migratory flocks and compare it with non-migratory flocks present in the same location.

MATERIALS AND METHODS

The study was conducted in the districts of Ramanathapuram, Sivagangai and

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Pudukkottai in Southern agro-climatic zone of Tamil Nadu where the migratory system of sheep production is practised as a traditional occupation by large number of sheep farmers. A total of hundred migratory and non-migratory sheep farmers were selected randomly in the study location. The sheep in the flocks were predominantly of 'Pattanam Aadu' type. The average flock size were 135.15, 235.04 and 457.60 in small, medium and large flocks, respectively. The sheep were raised only on grazing without any supplementation. The information on the age at first mating for male and female, age at first lambing, lambing interval and weaning period were collected to the nearest month. Lambing percentage was calculated based on the ewes available in the flock and also twinning percentage and lambing months were recorded. The data collected from both type of flocks were statistically analysed and compared.

RESULTS AND DISCUSSION

Reproductive performances of sheep in migratory and non-migratory flocks in the study area are presented in Table 1. Lambing percentage, twinning percentage, livability at birth (per cent), age at first mating (months) in ewes, age at first mating (months) in rams, age at first lambing (months) and weaning percentage in migratory and non-migratory flocks averaged 93.56 and 91.50; 1.87 and 1.52; 98.32 and 98.73; 12.34 and 13.22; 19.64 and 21.44; 18.54 and 19.68; and 85.98±0.48 and 87.15±0.61 respectively. Pairwise comparison of mean showed highly significant difference (pd" 0.01) for all the reproductive parameters except twinning percentage between migratory and non-migratory sheep flocks. The ram: ewe sex ratio was 1:24 in migratory flocks and 1:52 in non-migratory flocks.

The weaning period (months) were different for ram lambs and ewe lambs in both migratory flocks and non-migratory flocks. The weaning period for ram and ewe lambs were 2.94+0.96 and 5.03+0.13 in migratory flocks and 4.82+0.13 and 6.06+0.17 in non-migratory flocks which differed significantly higher (pd" 0.01) in both flocks studied. All the reproductive parameters except livability at birth and weaning percentage were better in migratory flocks compared to non-migratory flocks. The livability at birth was lower in migratory flocks which might be due to inbreeding depression, migrating stress, no extra care and management given to pregnant ewes nearing to parturition. Similarly, weaning percentage was also comparatively lower in migratory flocks. The reason might be less number of lambs born in non-migratory flocks, as the flock size itself was smaller compared to migratory flocks. Hence, lesser the number, more time and better care would be given for the lambs in non-migratory flocks. In migratory flocks, lambing occurs more in number and also throughout the year, which makes flock owners difficult to take care of the lambs born especially during peak lambing months. Adaptability and stress due to change of place in migratory flocks might be the reasons for lesser weaning percentage. The present findings on reproductive parameters were comparable with earlier reports in different sheep breeds (Sheep breeds of Tamil Nadu by Ganasakale and Rathnasabapathy, 1973; Coimbatore sheep by Rajapandi, 2005 and Kandasamy *et al*., 2006; Muzaffarnagari sheep by Dineshkumar *et al*., 2006; Sonadi sheep by Tailor *et al*., 2006; Pugal sheep by Dass, 2007; Chokla sheep by Jain *et al*., 2009; Malpura sheep by Kumar *et al*., 2008; Ganjam sheep by Nayak *et al*., 2010 and Ramnad White sheep by Raja *et al*., 2012).

The lambing interval in sheep also varied according to the number of lambing in a year. About 20 per cent of ewes in the migratory flocks and less than 5 per cent in non-migratory flocks were reported to lamb twice a year. In the event of two lambing per year, the lambing interval (months) in migratory and non-migratory sheep flocks were 5.93±0.04 and 6.49±0.09, respectively, where as in one lambing per year, it was 11.10 ± 0.17 and 12.00±0.07 respectively in migratory and non-migratory flocks. The overall lambing interval was 7.94±0.15 and 9.75±0.25 months in migratory and non-migratory flocks, respectively. The lambing interval highly differed (pd" 0.01) between migratory and non-migratory flocks. In general, reproductive performance of sheep in migratory flocks were better than non-migratory flocks which might be due to early weaning of lambs, ideal sex ratio in parent stock and rotational grazing in places where feed resources were available in plenty en route migration.

Lambing calendar in migratory sheep flocks: Month-wise number of lambs born in migratory sheep flocks as reported by the farmers are presented in Table 2. Majority of the farmers reported that the incidence of lambing was highest in the month of November (26.42±1.44 lambs), followed by December (21.92±1.22 lambs) and October (18.86±1.05 lambs). Hence the months of October, November and December were the main lambing months, the next being the month of May with a mean of 17.37±0.09 lambs, followed by April (16.09±0.93) which can be considered as minor lambing season. In all the flocks lambs were born throughout the year, but in small numbers. This finding agree well with the earlier reports by Chandran (1998), Dixit *et al*., (2005), Dineshkumar *et al*., (2006), Kandasamy *et al*., (2006), Kumaravelu (2007), Kumar *et al.,* (2008), Jain *et al*., (2009), Nayak *et al*., (2010) and Dass *et al*., (2012).

Mean lambing percentage, twinning percentage, livability at birth percentage, age at first mating (months) in ewes, age at first mating (months) in rams, age at first lambing (months) and weaning percentage in migratory and non-migratory flocks were 93.56 and 91.50; 1.87 and 1.52; 98.32 and 98.73; 12.34 and 13.22; 19.64 and 21.44; 18.54 and 19.68; 85.98 and 87.15, respectively. The weaning period (months) differed for ram lambs and ewe lambs in both migratory and non-migratory flocks. The weaning period for ram and ewe lambs were 2.94+0.96 and 5.03+0.13 in migratory flocks and 4.82+0.13 and 6.06+0.17 in non-migratory flocks, respectively. Reproductive performance of sheep in migratory flocks was significantly better than non-migratory flocks. The months of October, November and December were main lambing season and the months of April and May were minor lambing season.

Table-1 Mean ± SE of reproduction parameters in migratory and non-migratory sheep flocks

S. No	Particulars		Migratory sheep flock	Non-migratory sheep flock	P value
1	Number of flocks		100	100	
2	Age at first mating – Male (months)		19.64 ± 0.13	21.44 ±0.29	0.0000**
3	Age at first mating – Female (months)		12.34 ± 0.13	13.22 ± 0.15	0.0000**
4	Age at first lambing (months)		18.54 ± 0.12	19.68 ± 0.32	0.0000**
5	Lambing percentage		93.56 ± 0.29	91.50 ± 0.58	0.0005**
6	Twinning percentage		1.87 ± 0.11	1.52 ± 0.23	0.1317^{NS}
7	Livability at birth		98.32±0.05	98.73 ± 0.36	0.0000**
8	Weaning percentage		85.98 ± 0.49	87.15 ± 0.61	0.0000**
9	Weaning period (months)	Male lambs	2.94 ± 0.67	4.82 ± 0.13	0.0000**
		Female lambs	5.03 ± 0.13	6.06 ± 0.17	0.0000**
10	Lambing interval (months)	Two lambing /year	5.93 ± 0.04	6.49 ± 0.09	0.0000**
		One lambing/year	11.10 ± 0.17	12.00 ± 0.17	0.0008**
		0verall	7.94 ± 0.15	9.70 ±0.25	0.0060**

^{NS}- Not significant

**- significant at pd" 0.01 level

Table -2. Lambing calendar in migratory flocks

Months	Small (n=40)	Medium (n=45)	Large (n=15)	Overall
January	8.33±0.31	14.40±0.46	29.20±1.96	14.10±0.79
February	3.43±0.13	6.47±0.21	12.40±0.86	6.11±0.33
March	1.88±0.08	3.49±0.10	6.60±0.51	3.29±0.18
April	8.60±0.34	17.29±0.62	32.87±2.38	16.09±0.93
May	9.73±0.40	8.29±0.65	35.47±2.62	17.37±0.99
June	4.65±0.28	8.13±0.28	15.60±1.00	7.83±0.43
July	3.18±0.15	5.73±0.18	11.60±0.85	5.57±0.32
August	3.20±0.14	5.63±0.18	11.73±0.79	5.55±0.32
September	2.53±0.15	4.47±0.15	8.80±0.62	4.32±0.24
October	10.90±0.41	19.44±0.61	38.87±2.53	18.86±1.05
November	15.30±0.58	27.38±0.85	53.87±3.43	26.42±1.44
December	12.55±0.47	22.56±0.71	45.60±2.78	21.92±1.22

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