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Study on mortality pattern of madras red sheep under field condition in Tamil Nadu

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Abstract

Study on mortality pattern of Madras Red sheep for a period of 5 (2015 to 2019) years was carried out on its breeding tract of Chengalpattu and Kancheepuram district of Tamil Nadu. The different centers in the study area centre - II reported high mortality (5.19%) than other two centre, but the mortality rate varies among the centers annually. The average mortality for the study period was 14.12% and ranges from 3.64% to 30.56%. The mortality rate was higher in young (7.81%) than the adult (6.31%) and female shows higher mortality (8.01%) as compared to male (6.11%). Maximum mortality was reported in summer season (5.91%) followed by north-east monsoon (3.17%), winter (2.37%) and south west monsoon (2.31%). The proper care and management techniques in young and adult animals by adopting different seasonal managemental practices in different centers in the breeding tract, the mortality in the Madras red sheep can be reduced under field condition.

Keywords: Culling policy, Madras red sheep, mortality rate, seasonal management

Introduction

Madras red is a medium-sized sheep breed in Tamil Nadu, India. It is well known for its high quality meat and skin. The breeding tracts are Chennai, Kancheepuram, Chengalpattu, Tiruvallur, Villupuram districts and adjoining taluks of near-by districts. The breed is well adapted to the hot climate of the Northern Tamil Nadu, which is determined by its mortality rate and production performance. Mortality pattern is highly influences the economic returns in sheep husbandry and has direct effect on the livelihood of the sheep farmers. Study on the mortality occurrence in different season in a region will be of massive help to know the risk periods of sheep mortality and also useful for planning the suitable strategies to decrease the death rate in those season (Thiruvenkadan *et al.*, 2003)^[9]. Therefore, an attempt has been made to report the mortality pattern in Madras red sheep for a period of five years from 2015 to 2019 under field condition.

Materials and Methods

Study on mortality pattern of Madras red sheep was carried out, covering a period of five years (from 2015 to 2019) in Kancheepuram and Chengalpattu districts of Tamil Nadu, India. 120 flocks in 25 villages were covered in this study. All the flocks were beneficiaries of Network Project on Sheep Improvement (NWPSI) - Madras Red Field Unit, an Indian Council of Agriculture Research (ICAR) funded ongoing project in Post Graduate Research Institute in Animal Sciences (PGRIAS), Chengalpattu, Tamil Nadu. The Villages were divided into 3 centers such as Centre – I, Centre – II and Centre – III, it is located in northern (near Chennai district), central & southern and southern part of Chengalpattu and Kancheepuram district, respectively. Annually more or less 9000 animals were included in the study. The animals were maintained under semi-intensive system with minimal supplemental feeding i.e., without concentrates, dry and tree fodders provided only during the scarcity period. They were grazed for around 8 hours in uncultivated lands, dried ponds & lakes and in the banks of cultivated lands. The sheep were vaccinated with Peste-des-Petits Ruminants (PPR), Sheep pox and Enterotoxaemia in January, March and May, respectively. Deworming and Deticking has been done at every 6 months interval. Periodic outbreaks were taken care of that study area.

The seasons were classified as winter (January-February), summer (March-May), South west monsoon (June-September) and North east monsoon (October-December). The study area generally experiences hot and humid climatic conditions. The months between April and June are generally hot with temperatures reaching upto 41.1 °C as maximum. In winter the average minimum temperature is recorded around 19.8 °C. The pre-monsoon rainfall is almost uniform throughout the study area. The coastal regions receive more rainfall than the interior ones. North-east and South-west monsoons are the major donors, with 54% and 36% contribution each to the total annual rainfall. The normal annual rainfall in the study area varies from 1105 mm to 1214 mm.

The animals were grouped as young (below one year) and adult (above one year), since classifying young animals into lambs (0-3 months), weaners (3-6 months), hoggets (6-12 months) as described by (Soundararajan, 2014) [7] was difficult under field condition. The data were also collected separately for male and female animals in the different season to study the effect of sex and season on the mortality percentage. The annual mortality for a given year was worked

out as the number of individuals which have died, expressed as proportion of those sheep at risk during that year. Proportional mortality was worked out to describe the number of deaths due to specific effects such as age, sex, season and centre as for Sard, 1979 [4]. The data were subjected to analyze on percentage basis on standard statistical procedures.

Results and Discussion

The annual mortality percentage of different centre of Madras red sheep for five years (2015 to 2019) were presented in table 1. The proportional mortality calculated for each centre showed that centre I reports higher mortality (5.11%) compared to centre II (4.49%) and III (4.52%) in the study period. In all the centre, 2016 showed higher mortality percentage and 2018 reported lower mortality percentage in Madras red sheep. There was much deviation in the results and the death rate varies among centre annually in the study area. It may be the factors of fluctuations in the flock strength, difference in managemental practices, fodder availability, diseases outbreak, water crisis, predator problem and climatic variations in those particular regions.

Table 1: Annual mortality percentage of different centers of Madras Red sheep under field condition

Year	Total No. of Sheep at Risk	Mortality Percentage (%)			Annual Mortality (%)
		Centre - I	Centre - II	Centre - III	
2015	9615	5.07	5.81	2.12	13.00
2016	8324	11.83	8.23	10.50	30.56
2017	8845	2.83	4.35	4.07	11.25
2018	8074	0.84	0.92	1.88	3.64
2019	9499	4.96	3.15	4.05	12.16
2015 to 2019	8871	5.11	4.49	4.52	14.12

The overall mortality rate was 14.12% and it ranged between 3.64% to a maximum of 30.56% in 2015 to 2019. The mortality rate was 14.59% in Magra sheep, which ranged from 7.4 to 24.56% (Taneja *et al.*, 1991) [8]. Soundararajan, (2014) [7] reported a mortality rate of 4.96% with a range of 2.85 to 10.59% in Madras red sheep at farm level and 9.81% ranges from 3.03 to 19.95% was reported in Mecheri sheep by Thiruvankadan *et al.* (2003) [9]. The present study field level mortality percentage was higher than the farm level in Magra sheep, Madras red sheep and Mecheri sheep. The annual mortality rate was more than 10% in all studied years except 2018, where a minimum mortality rate (3.64%) was reported. Since it was a field level various causes' attributes to the wide fluctuation in the mortality rate over the year which includes disease outbreak, seasonal variations, availability of pastures, predator attacks and varies managemental practices. Among the 5 years, highest mortality was occurred during 2016, which was may be due to post effects of heavy rainfall and flood in North-East monsoon at the end of the previous year (November & December month of 2015) in that study area.

The annual mortality percentage of different sex and age of Madras red sheep for five years (2015 to 2019) were presented in table 2. In case of sex, higher mortality was noticed in female sheep as compared to male sheep in that study period. It ranges on 1.76% (2018) to 12.18% (2016) and 1.88 (2018) to 18.38% (2016) in the male and female, respectively. Similar results were reported Iyue *et al.*, 2001 [2] and contrary found, higher mortality in male sheep compare to female (Bashir *et al.*, 2020) [1]. The other point of view for better genetic improvement, higher growth rate and higher marketing value, the male animals in the flocks were advised to cull before attaining sexual maturity in the field condition.

So, the mortality of female will be utterly higher than male because the male below one year were only being included. So, the female mortality was higher than male mortality in the study area.

Table 2: Annual mortality percentage of different sex and age of Madras Red sheep under field condition

Year	Total No. of Sheep at Risk	Mortality Percentage (%)			
		Sex Effect		Age Effect	
		Male	Female	Young	Adult
2015	9615	5.13	7.87	6.70	6.30
2016	8324	12.18	18.38	16.34	14.22
2017	8845	5.55	6.33	6.28	4.97
2018	8074	1.76	1.88	1.93	1.71
2019	9499	5.94	6.22	7.79	4.37
2015 to 2019	8871	6.11	8.01	7.81	6.31

The mortality rate was higher in young (7.81%) compared to adult (6.31%). Similar results were reported Sarkar *et al.* (2008) [5] and Sheeba *et al.* (2021) [6] under organized farm. The mortality of young was may be due to weak birth or debility and less resistance of young lambs to various diseases in field condition. The other causes includes poor mothering ability, lack of milk in dams and low birth weight because of nutritional causes, as the pregnant ewes has to pass through the period of fodder scarcity and dry summer coinciding with the pregnancy period (Thiruvankadan *et al.*, 2003) [9]. Worm infestation and predator attacks were the most common issues related to field in case of young animals. Mortality at this stage can be minimized by improving lamb care and proper nutritious management of pregnant and lactating ewes.

Table 3: Annual mortality percentage of different Seasons of Madras Red sheep under field condition

Year	Total No. of Sheep at Risk	Mortality Percentage (%) on Season			
		Winter	Summer	SWM*	NEM**
2015	9615	0.99	3.87	1.46	6.68
2016	8324	7.52	14.95	4.10	3.99
2017	8845	1.25	4.02	3.31	2.67
2018	8074	0.83	1.31	0.39	1.11
2019	9499	1.47	5.42	2.89	2.38
2015 to 2019	8871	2.41	5.91	2.43	3.37

*SWM – South-West Monsoon ** NEM – North-East Monsoon

The annual mortality percentage of different seasons of Madras red sheep were presented in table 3. The maximum mortality was seen during summer season (5.91%) followed by North-east monsoon (3.17%), winter (2.37%) and south-west monsoon (2.31%). Similarly the highest mortality during summer months was also reported by Iyue *et al.* (2001)^[2], Reddy and Choudhary, (2000)^[3] and Soundararajan, (2014)^[7] in farm condition. The summer months contribute to higher mortality in four out of five years and in the year 2015, north-east monsoon increases the mortality rate of the year by reaching the highest. It may be due to the heavy rain occurs at the end of the year 2015 where most of the cultivable lands and sheds of the animals were damaged and the lives of majority of the animals turn out to be questionable. The farmers' survivability was given priority which in turn leads to higher livestock death due to heavy rain & flood and post effects.

The mortality rate depicts the economy in both the farm and field. The higher mortality in young animals can be minimized by proper caring of weak lambs, nutrient management of mothering ewes and by providing timely vaccination and deworming. The mortality in adults can be taken care by appropriate culling of aged, poor reproductive & productive and diseased animals. The majority of death in female occurs during its pregnancy and lactating periods when its nutrient demand was higher, so meeting out its requirement will reduce the mortality. In case of season, the higher mortality during summer season will be diminished by avoiding grazing in hot part of the day, providing proper shelter, adequate water, supplementing dry fodders and concentrates and reducing heat stress. Predatory and climatic conditions should be taken care of in sheep husbandry.

Conclusion

From this study and the result obtained, it can be concluded that young animals' showed higher mortality compared to adult and female has higher fatality than male in field condition. Among the seasons, summer was considered as the most risk period in the different regions in Madras red sheep breeding flocks. Hence, interpreting the mortality pattern could be of immense role to predict the status and improve the sheep husbandry in field condition.

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