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Comparative lactation performance study of pulikulam cows in its breeding tracts of Tamil Nadu, India

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Abstract
Field investigation was conducted to compare the lactation performance of Pulikulam cattle in its native breeding tracts viz., Sivagangai and Madurai districts of Tamil Nadu. It is the recognised cattle breed reared as migratory herds by nomadic pastoralists for livelihood security. Milking is not practised in herd and calf is allowed to suckle the milk. From 100 numbers of pulikulam cows 280 Milk recordings done. The observed daily minimum and maximum partial milk yield was 0.412 kg and 2.884 kg. Average partial daily milk yield was 1.583±0.23 kg. Total partial milk yield ranges from 296.6 kg to 389.80 kg. Pulikulam cows fed with concentrates in Sivagangai districts given more milk than reared in herds in Madurai districts. There is a scope for genetic make use of increasing the milk yield in pulikulam cattle. Indigenous cattle milk fetches more money than cross bred cattle in turn it may enhance better livelihood security to the pastoralists.

Keywords: Pulikulam cattle, pastoralist, lactation performance

1. Introduction
Pulikulam cattle is one of the recognized cattle breeds in India. The cattle name Pulikulam was derived from the village name called pulikulam in Sivagangai district where the exact pulikulam breed was inhabited. (Singh., P.K. *et al*., 2012) [10] pulikulam cattle is being reared as a big migratory herds in Madurai and Sivagangai districts. In a single herd the number of animals varied from a minimum of 30 to a maximum of 500 animals and sometime the animals from nearby herds will be pooled and taken for grazing. The breed was noted significantly very long back in 1909 by the author Gunn [3] and later on in the year 1962 by Pattabhiraman [8]. This breed is being maintained or reared in large herds and the rearers or herd men depends only on grazing in open areas and hence the main constraints faced by the owners are to find the grazing land to feed all the animals. Due to shrinkage of grazing land the animal number is getting reduced in the herd. This breed is famous for bull baiting and bull gaming. Sale of male calves and sale of manure is the main source of income for the animal rearers. But milking and other scientific management practicing was not followed in most of the herds. (Srinivasan *et al*., 2021) [4]. Milking is practiced when ever necessary to meet out household requirements of the herders (Singh., P.K. *et al*., 2012) [10]. If milking is practiced by the animal rearers the livelihood status of the pulikulam pastoralists may get improved. With this current scenario it was an attempt to identify the comparative lactation production performance in the herd under grazing pattern followed in Madurai district and the pulikulam cattle reared in the household pattern in Sivagangai districts were chosen to carry out the study.

2. Materials and Methods
For comparative lactation performance analysis of milk yield in pulikulam cattle 50 animals maintained in the herd in Madurai and 50 animals maintained in the house hold system in Sivagangai district were selected. Milk yield was recorded (Figure: 1). Twice in a month in five selected pulikulam herds in Ilamanoor, Sanampatti, Vadipatti. Pottapanayur and Melakkal areas of Madurai districts (10 animals per herd) were chosen and these animals are maintained by the Pulikulam herders only on grazing system. Most of the herd animals are sharing the same type of grazing pasture during migration period. In Sivagangai district 50 numbers of

Puilkulam cows in Karupur, Panyampatti, Pudupatti, Udaiyanathapuram and Kilathiri villages were selected for the study. Pulikulam cattle reared by the farmers with a minimum of ten animals to a maximum of 30 animals maintained in a household were chosen in Sivagangai district (Figure: 2). Pulikulam cows after grazing were supplemented with the available concentrate according to the milk yield by the owners. Overall from 100 pulikulam cows a total of 280 milk recordings were carried out in morning and evening time. Milk recording was started from the birth of the calves to till drying of the animals. Hand milking was practiced. Calves are allowed to suckle for a few seconds and then milking was carried out. Since some of the amount of milk was suckled by the calf before the start of the milking, the recorded milk quantity will be considered as partial milk yield as per Okanath (1992) [7]. The maximum number of cows selected for this study was in Second (39%), Third (21%), First (25%), Fourth (9%) and Fifth and above (6%) lactation were chosen.

Fig 1: Milk recording in Pulikulam herd of Madurai district.

Fig 2: Milk recording in Pulikulam cows of Sivagangai district

3. Results and Discussions

The estimated partial average daily milk yield, the partial total milk yield estimated in Madurai and Sivagangai districts and the partial average daily milk of pulikulam cows were furnished in the following Table.1.

Table 1: The Estimated month wise average partial morning and evening milk yield of Pulikulam cows.

S. no	Lactation in month	Morning partial milk yield (Average monthly yield in kilograms)	Evening partial milk yield (Average monthly yield in kilograms)
1.	First month	227.08±0.16	154.87±0.12
2.	Second month	286.86±0.12	212.07±0.09
3.	Third month	251.82±0.13	171.19±0.07
4.	Fourth month	184.18±0.07	128.62±0.08
5.	Fifth month	159.69±0.09	106.46±0.06
6.	Sixth month	125.34±0.12	87.46±0.09
7.	Seventh month	72.46±0.14	49.18±0.09

3.1 Statistical analysis

The calculated data on total partial pulikulam cattle herd milk yield reared under only grazing on the pasture system in Madurai district and the total partial milk yield of pulikulam cows reared in households with grazing along with concentrates were analysed with the help of SPSS software version1 6.0. the overall average partial milk yield estimated in 100 numbers of pulikulam cows in Madurai and Sivagangai districts were 316.107±0.79 kg and 349.09±0.94 kg It is showing significant difference (p<0.05) between Madurai and Sivagangai districts. It is mainly due to the concentrate given to the cows in Sivagangai district. It is strongly supported by (Matthewman. 1993) [6] that the cows are more constant in milk production if feeding is improved. Apart from improving milk yield, the duration of milk production may also be prolonged by proper feeding of lactating cows under the

partial milking system. More over Dhiman *et al.* 1997 [2] reported a positive effect of supplementation on milk production in cows. Cotton seed cake and sesame oil meal fed to lactating N'Dama cows in the Gambia significantly increased milk yield (Little *et al.* (1994) [5]. Concentrates have also been used to achieve improvements in milk yield (Aston *et al.* 1998) [1]. The calculated mean daily partial milk yield in pulikulam cattle observed was 1.5838 kgs. which is lower than Umblachery cattle -1.99 kg Rajendran 2007 [9]. The minimum and maximum pulikulam daily cow milk yield observed under the field condition was 0.412 kg and 2.884 kg respectively. But it is almost lower than the umblachery cows milk yield ranged from 0.400 kg to 4.750 grams (Rajendran 2007) [9] and alambadi cows it was observe a higher daily milk yield of 5.65 kg (S Parameswari *et al* 2021) [11].

4. Conclusion

Pastoralists are the breed savior and maintain the integrity of the breed. But their livelihood should be supported by getting more return of money from their livestock. Pulikulam pastoralists are not following any regular milking habit and they allow the calf to suckle the milk and milking is practiced only for their own daily requirements. From our study it was observed that pulikulam cows reared under suitable concentrate supplement has given more milk than raising in herds with grazing alone. There is a high demand and high price for indigenous cows milk and suitable awareness for the pastoralist is needed for initiating the regular milking habits in the herd may improve their livelihood status of the pulikulam pastoralists. According to their economic status where ever required supplement feeding of concentrates to pulikulam lactating herd animals may improve the genetic make use of pulikulam cows.

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6. Conflict of Interest

No conflict of interest relevant to this study was reported.

7. References

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