

## Comparison in Hair Coat Characteristics and Physiological Parameters of Jersey Cows in Up Country Wet Zone and Dry Zone Modified Climate.

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### ABSTRACT

This study is aimed to investigate the variation in hair coat characteristics and physiological parameters of pure Jersey cows in up country wet zone and low country dry zone environment modified farm in Sri Lanka. For this study, 30 milking cows (high and low yielders, non-pregnant) from each farm were selected to obtain the data. Dry and wet bulb temperatures of both farms were taken at morning (9.00a.m.-12.00p.m.), noontime (12.00p.m.-1.00 p.m.) and evening (1.00p.m.-3.00p.m.) of the day to calculate the relative humidity (RH), dew point temperature and temperature humidity index (THI). Climograph was drawn to determine the related thermal zones for the animals of both farms. Hair coat thicknesses (mm), average hair length (mm), number of hairs per unit area (number of hair per square cm), hair angle to the skin surface (inclination angle in degrees), skin fold thickness (mm) were measured to obtain hair coat characteristics data. As physiological parameters, respiratory rates, heart rate, pulse rate, (per min.) and rectal temperature (C<sup>0</sup>) were measured. Data underwent the analysis of Levene's test for equal variances and the means were compared by using paired t-test by considering level of significance as 5% using MINITAB and SPSS. Correlations of regression between each physiological parameter with hair inclination angles were analyzed. Relative humidity and temperature humidity index (THI) in Dayagama farm was ranged between (87%-95%) and (69.4-70.5) respectively; while it was (87%-93%) and (77.8- 90.5), respectively in Ridiyagama farm. According to the THI interpretations, the milking cows of Dayagama farm were more comfortable than the Ridiyagama farm according to the critical level of THI (72). According to the drawn Climograph Dayagama milking cows were in thermal comfort zones while Ridiyagama cows were in high-temperature zone. The mean values of hair coat thickness (2.85±0.76 vs 5.65± 1.67), hair inclination angle (14.45±4.49 vs 23.63±8.08) and skin fold thickness (11.14±2.26 vs 9.73±2.06) Ridiyagama and Dayagama farms, respectively) were significantly different from each other. Average hair length (13.0 ± 2.83 vs 14.73± 4.1) and hair density (1396±597.23 vs 1445.7±651.20) were not significantly different. Except for mean values of rectal temperature (38.48±0.40 vs 38.27±0.4), heart rate (70.43±6.78 vs 64.66±6.84), pulse rate (66.40±6.77 vs 60.66±6.84) and respiratory rate (54.40±9.07 vs 41.12±6.25) were significantly higher in cows of Ridiyagama farm. The farm level comparison between high yielders and low yielders for each hair coat character and physiological parameter did not show any significant difference. The climatic condition of Dayagama farm was considerably comfortable for the milking cows than the modified climatic condition in Ridiyagama farm. Hair coat parameters of cows showed a considerable variation based on its living climate. Yield between two farms cannot be compared due to differences in parity, management, etc. However, cows in both farms are able to maintain homeothermy by adapting to the region.

**Keywords:** Bioclimatology, Climograph, Haircoat characteristics, Jersey.

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