Somatic Cell Score (SCS) Profile from Gir First-Lactating Cows in Brazil

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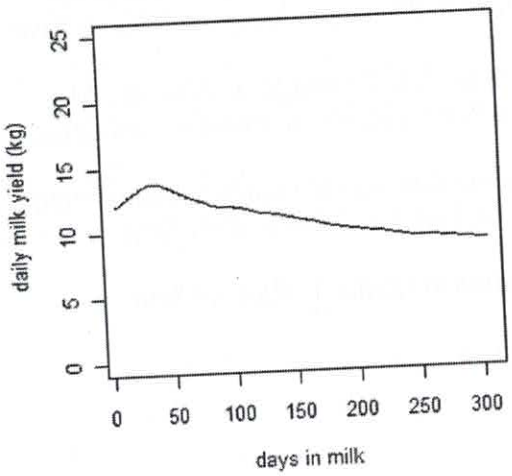
Gir breed is an important genetic resource for tropical milk production systems. This work aims to investigate by means of exploratory and descriptive analyses the relationship between the average trends of daily milk yield and somatic cell score during lactation focusing on the perspectives of selection to mastitis resistance. First lactation records of 1,785 cows belonging to 200 herds were obtained from the National Improvement Program of Dairy Gir database. Milk samples were monthly collected in the test-day and were evaluated to milk composition and quality. The analysis of milk composition (protein, fat, lactose, total solids) was made electronically by near-infrared absorbance spectroscopy and somatic cell count by the method of flow cytometry. In exploratory analyses, we used the smoothing method by Lowess (locally weighted scatterplot smoothing), which is a regression model useful for non-parametric trend graph. Daily milk yield and SCC averages were 12 kg and 367.000 cells/ ml, respectively. The results showed a strong and negative association (r = -0.88) between milk yield and SCS along lactation, therefore, increased values of SCS would be expected for animals with decreased values of milk yield within this population. A positive and moderate correlation (0.22) was observed between SCS and days in milk, showing increased values of SCS along the lactation period.

Key Words: Animal breeding, Mastitis, Selection, Zebu cattle

INTRODUCTION

Mastitis remains one of the major diseases in dairy herds, causing large economic losses to the entire milk production chain. Therefore, strategies to reduce mastitis are important in decreasing costs and improving the quality of production (Koivula et al, 2005). In addition to mastitis and udder infection level there are several factors that influence SCC as season, parity, stage of lactation, daily milking frequency, breed and age of the animal. SCC increases with progressing lactation regardless of whether the cow is infected or not (Dohoo and Meek, 1982; Hagnestam-Nielsen et al., 2009). It could be explained by a "concentration effect", since the total number of somatic cells secreted into the milk remains constant but the milk yield declines (Kamote et al. 1994). Because of negative correlation between milk yield and SCC, some authors believe that high-producing cows within herds have an increased risk of getting mastitis. This risk is further increased with continued selection for higher milk production unless selection against mastitis is included in selection strategies (Ingvartsen et al., 2003). SCC is the most useful indicator of subclinical mastitis and has been used as an indirect measure of mastitis resistance. A high prevalence of subclinical mastitis it was registered in Gir Cows (Porcionato et al., 2010, Malek dos Reis et al., 2011). Given the importance of SCC and few researches with Gir cows, the objective of the present study was to evaluate the profile of SCS along first lactation, and its relationship with milk yield.



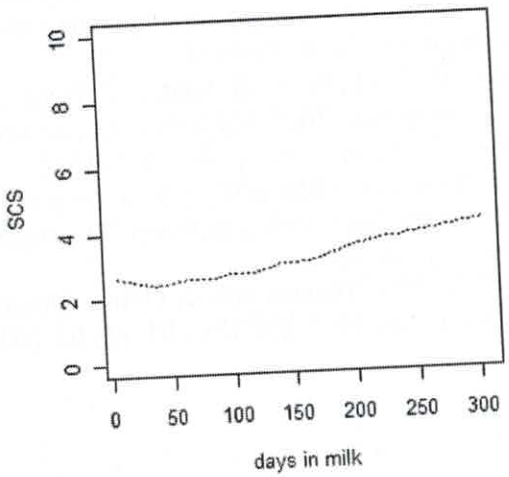


Figure 1 Milk yield (kg) in different days of lactation in primiparous cows
Figure 2 Somatic cell score in different days of lactation in primiparous cows

IMPLICATIONS

More studies investigating the relationship between SCC and milk yield are relevant to guide researches with Gir cows, including new characters and analyses, aiming at researches about mastitis resistance and selection criteria of the National Improvement Program of Dairy Gir.

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