
Milk Composition of Dairy Cattle Breeds in Senegal

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Abstract

Milk is rich in protein, energy and essential micro-nutrients and its availability contributes to food and nutrition security. To improve milk production, mostly in terms of quantity but also in terms of quality, in Senegal, cross-breeding traditional breeds (such as the Zebu Gobra) with newly introduced breeds (Guzerat, Holstein Friesian, and Montbeliard, amongst others) has become common in some regions.

This study takes place in the general framework of the project, "Senegal Dairy Genetics". The overall objective of the project is to determine the most suitable dairy cattle breeds for low-input, small to medium scale, dairy producers' households in Senegal. The present study contributes to this overall objective by determining and comparing the milk composition of the various dairy cattle breeds found within the project sites.

Milk samples were collected from 241 lactating dairy cows belonging to 97 households in two regions of Senegal (Thies and Diourbel), during the period September to December 2013 which is the wet season when feed availability is high. Animals were classed into 4 groups based on their breed-type: group 1 comprising animals that are pure-bred ancient Zebu (such as the Zebu Gobra and Zebu Maure), group 2 comprising animals that are 75% ancient Zebu and 25% recently introduced Zebu (such as Guzerat), group 3 comprising animals that are 50% ancient Zebu and 50% recently introduced taurine (such as Holstein Friesian and Montbeliard), and group

4 comprising animals that pure-bred recently introduced taurines. The number of milk samples per group was 132, 38, 56 and 15 for groups 1, 2, 3 and 4, respectively. The milk component analyses were carried out in the field, using a portable milk analysing device (Lactichek Analyzer[®]). Results were obtained for the percentages of fat, solids-not-fat (SNF), protein and lactose; density and freezing point were also obtained. Each sample was analysed three times for machine repeatability and the average of these measures was used. The different groups were compared using Student's t-test in SPSS[®] 20 software.

Across all groups, average percentages (\pm SD) of 5.05 \pm 1.56; 9.86 \pm 0.60; 3.65 \pm 0.21; 5.47 \pm 0.31 were obtained for fat, SNF, protein and lactose, respectively. The milk content of cows in group 3 versus 4 clearly differed by all their components ($p < 0.05$). Conversely, the milk of cows in group 1 and 2 was very similar in all their components. These latter differed from cows in group 3 only by their fat content; a higher level of fat content was found for animals of group 3 (5.75 \pm 1.89). Cows of group 3 also had the lowest levels of both SNF (9.53 \pm 0.57) and protein (3.52 \pm 0.21).

The four dairy cattle breed groups derived from this study differ with regards to their milk composition.

Keywords:

Dairy cattle, Crossbred, Milk composition, Senegal