

# Study on The Milk Quality Parameters in Three Farms From Sălaj County

Camelia RĂDUCU<sup>1</sup>, Vioara MIREȘAN<sup>1</sup>, Aurelia COROIAN<sup>1\*</sup>, Ciprian POP<sup>1</sup>, Cristian Ovidiu COROIAN<sup>1</sup>, Daniel COCAN<sup>1</sup>, Luisa ANDRONIE<sup>1</sup>

<sup>1</sup>Faculty of Animal Science and Biotechnologies, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Mănăștur Street, 400372, Cluj-Napoca, Romania

\* corresponding author: coroian.aurelia@gmail.com

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## Abstract

Milk quality is influenced by many factors including rank lactation. This study aims to present the evolution of the main quality parameters of milk as the fat, protein, lactose, dry matter and the number of somatic cells for the first five lactations in Bălțată Românească breed during twelve official controls, starting in June 2015 until the month of April 2016. The biological material studied was represented by three herds of dairy cows in three farms from Sălaj County (Crasna, Marin and Bodia villages). Analyzing qualitative parameters of milk obtained from the herds in lactation 1 during the 12 controls, there was a percent of 3.58% fat, 3.05% protein, 4.49% lactose and 8.48% dry substance and less than 100,000 cells/mL for SCC. in Crasna farm. These parameters varied over the five lactations, the highest values being ranked in lactation five. Herd from Marin farm presented a fat content of 4.44% in lactation 2, while the lowest percentage of fat was recorded in lactation 3 (3.66%). Regarding the protein, the highest percentage was obtained in lactation 2 (3.70%) and the lowest in lactation 1 (3.39%). In the farm from Bodia the values were intermediate between the two other farms. Lactation rank affects milk quality, so in lactation 1 there were recorded the lowest values of quality parameters of milk. Somatic cell count was under 100,000 for all three farms, suggesting a good health status of the herds.

**Keywords:** *milk, fat, protein, lactose, NCS*

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## INTRODUCTION

The national program for improving the quality of raw cow's milk and timing of actions to achieve compliance with Community legislation sets clear objectives and measures needed to be taken. In order to process raw milk and comply with criteria of quality and food safety the Regulations (CR) of European Parliament and the Council no. 853/2004 laying down specific hygiene rules for foods of animal origin. Milk quality is still one of the most problematic issues in Romanian cow farms, especially the hygienic dependent parameters. In spite of severe regulations on the milk chain and increasingly number of controlled farms, there is much to be done. The most important progresses have been made by medium and big size farms. Somatic cell count is one of the main indicators of milk hygienic quality (Velea *et al.*, 2012; Barreto *et al.*, 2013). Here we analyzed the milk quality of

three medium size farms from Transylvania which applies similar technology and nutrition of their livestock.

## MATERIALS AND METHODS

Biological material under study is the herds exploited in three farms in Sălaj County: Farm Breda Francisc from Crasna; farm Florian Oprea from Marin village, respectively Farm Aurelian Bujor from the village of Bodia, all registered in official control of production. The research results were statistically processed for T test and interpreted, noticing a slight increase in the parameters analyzed during the five lactations.

Sampling was done by the method of periodically individual control at an interval of 28 days, alternatively night-morning. In this study were taken into account controls carried out from June of 2015 until April of 2016. In this period were

**Tab. 1** Milk quality indices analyzed in the three farms from Sălaj County

Indices (%)	Lactation rank	Farm		
		Breda Francisc	Oprea Florian	Bujor Aurelian
Fat	1	3.58±0.04	4.05±0.03	4.15±0.02
Protein		3.05±0.02	3.39±0.01	3.46±0.02
Lactose		4.49±0.02	4.90±0.05	4.66±0.01
Dry matter		8.48±0.01	9.23±0.01	9.01±0.02
SCC (ml <sup>-3</sup> )		197.33±28.55	68.10±11.97	62.08±47.73
Fat	2	4.04±0.04	4.45±0.05	4.07±0.02
Protein		3.20±0.02	3.70±0.01	3.42±0.01
Lactose		4.92±0.01	4.69±0.01	4.70±0.02
Dry matter		9.11±0.02	9.23±0.03	9.13±0.01
SCC (ml <sup>-3</sup> )		152.08±59.43	204.17±25.29	171.58±61.70
Fat	3	4.12±0.01	3.66±0.01	4.25±0.02
Protein		3.36±0.04	3.53±0.01	3.38±0.02
Lactose		4.61±0.01	4.19±0.04	4.58±0.01
Dry matter		8.96±0.02	8.41±0.01	8.82±0.01
SCC (ml <sup>-3</sup> )		280.75±45.43	136.08±31.61	175.58±18.22
Fat	4	4.88±0.05	4.09±0.03	4.26±0.03
Protein		3.16±0.02	3.53±0.01	3.38±0.01
Lactose		4.59±0.01	4.60±0.01	4.90±0.01
Dry matter		8.56±0.03	9.24±0.01	9.14±0.01
SCC (ml <sup>-3</sup> )		387.08±91.60	187.75±39.79	118.33±85.91
Fat	5	4.45±0.05	4.10±0.03	4.54±0.06
Protein		3.70±0.01	3.53±0.01	3.33±0.01
Lactose		4.69±0.01	4.60±0.01	4.84±0.02
Dry matter		9.23±0.01	9.24±0.03	9.14±0.01
SCC (ml <sup>-3</sup> )		290.75±95.34	247.33±41.97	156.83±23.44
Fat	Average	4.21±0.02	4.06±0.03	4.25±0.03
Protein		3.29±0.02	3.53±0.01	3.39±0.02
Lactose		4.66±0.01	4.59±0.02	4.73±0.01
Dry matter		8.86±0.02	9.07±0.02	9.04±0.01
SCC (ml <sup>-3</sup> )		245.40±64.07	168.69±30.26	137.88±47.41

carried out 12 checks at a herd of 26 cows from Breda Francis farm; 29 cows from Oprea Florian farm and 30 cows from Bujor Aurelian farm.

## RESULTS AND DISCUSSION

Depending on milk quality parameters analyzed in this study: fat, protein, lactose and dry matter, the best milk quality has been recorded in Aurelian Bujor farm, followed by Oprea Florian farm and respectively Francisc Breda farm. The diet used in those three farms was similar, silage based nutrition and stabulation on shelter.

There were highly significant differences ( $P < 0.001$ , confidence interval 0.95) between the three farms for somatic cells count and for dry matter, while for protein percentage and fat level

the differences were significant ( $P < 0.05$ ). The most relevant differences occurred up to third lactation and were almost absent in lactations 4 and 5 respectively.

## CONCLUSION

The number of somatic cells is dependent on many factors, but the results of this study and analyzing the farms we can say that hygienic conditions during milking and animal health have a positive impact on milk quality. Analyzing the total number of somatic cells (SCC) in the period June 2015 - April 2016, over five lactations, we can conclude that all the milk samples met to the EU requirements. It was found that farmers are concerned about the health and maintenance

of cows exploited for milk production. Quality parameters of milk were similar to all farms with much higher differences in young animals, while starting with fourth lactation these differences become almost zero.

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