

“St. Kliment Ohridski” University - Bitola

HORIZONS

INTERNATIONAL SCIENTIFIC JOURNAL

SERIES B

**Natural Sciences and Mathematics, Engineering
and Technology, Biotechnology, Medicine and
Health Sciences**

Year X

Volume 1

August 2014

For the publisher: Prof. Zlatko Zhoglev, PhD, Rector

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ISSN 1857- 8578

Print: AD Kiro Dandaro-Bitola, printing copies: 200

IMPROVING MILK QUALITY BY USING INDIVIDUAL MILK CONTROL¹⁴

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Abstract

By using individual milk control, it is examined the influence of individual milk control on milk quality. The examination took place at one little farms, which is located near Bitola. Milk examples were taken from each cow on the farm, and also one milk example from all of the cows on the farm (group milk example). We also wrote down the amount of day milk production and number of lactation for all cows. All examination process lasted three months. Each month were taken milk examples from the examined farms. The goal of this examination was to find out the cows (individuals) which milk has negative influence on the milk quality produced from all cows on the farm.

Key words: individual control, somatic cells, quality, milk;

Introduction

The aim of each farmer is to improve the milk quality (primarily to improve its chemical composition and to reduce the number of somatic cells and microorganisms found in milk). By improving the milk quality, it is also improved the financial profitability of milk production. Poor milk quality reduces the purchase price of milk, so producers have lower incomes, which do not satisfy them. Individual milk control represents a significant part in the process of production of high quality and hygienic correct milk.

¹⁴ original scientific paper

Material and methods

Milk examples were taken from each cow on the farm, and also one milk example from all of the cows on the farm (group milk example). We also wrote down the amount of day milk production and number of lactation for all cows. All examination process lasted three months. In this part it is very important to properly perform the process of taking the milk examples. Taking milk examples incorrectly it affects the correctness of the results. The number of somatic cells were examined using microscopic referent method and fluoro-opto-electronic method ISO 13366-3:199 using the appliance SOMASCOPE, DeltaInstruments-Holland.

Results and discussion

The farm that was examined in this study had ten cows and each of them during the quarterly survey was in lactation. In the following table No.1 are the results from the first examination.

Table No.1: Results of examined parameters on the farm (first examination)

Cow (No.)	Number of somatic cells SCC/ml	Number of lactation	Amount of milk (daily)
1	1 801 000	1	17.8
2	601 000	2	12.3
3	439 000	1	24.1
4	374 000	3	10.6
5	367 000	2	13.2
6	352 000	3	19.3
7	293 000	1	19.1
8	282 000	2	22.4
9	135 000	2	17
10	114 000	1	19
Total: 10 cows	Group milk example (SCC/ml):	Average of lactation:	Total amount of milk (daily):
	473 000	1.80	174.80

From the Results of examined parameters on the farm in the first examination, we can see that from ten cows, three of them (cow No.1, No.2 and No.3) had higher number of somatic cells in ml than the limit of somatic cells of 400.000/ml. The group milk example from all cows had value of 473 000 somatic cells/ml. By using individual milk control, all milk

producers can detect all individuals from the herd which cause an increase in the average number of somatic cells

We've detected clinical mastitis (cow No.1). We've immediately began a process of healing with cow No.1. We've also detected subclinical mastitis (cow No.2 and cow No.3). We've also began process of healing with this two cows.

In one week period, we took milk examples again from each cow, and we've got positive result from the treatments of mastitis (reduction in somatic cells, as shown in the following table No.2).

After treating the three critical cows we had changes in the number of somatic cells in the milk form all cows (from 473 000 SCC/ml, before treatment, 308 000 SCC/ml after treatment).

Table No.2: Hygienic condition of milk after treatment of critical cows

Cow (No.1)	Number of somatic cells SCC/ml	Number of somatic cells after treatment of critical cows	Average value of SCC after treatment of critical cows
1	1 801 000	383 000	Cows: No.1, No.2 and No.3 are successfully cured
2	601 000	415 000	
3	439 000	391 000	
4	374 000	365 000	
5	367 000	379 000	
6	352 000	353 000	
7	293 000	288 000	
8	282 000	271 000	
9	135 000	133 000	
10	114 000	111 000	
Total: 10 cows	Group milk example (SCC/ml): 473 000		Group milk example (SCC/ml): 308 000

In the following table No.3 are written the results from the second examination that was made in the farm.

Table No.3: Results of examined parameters on the farm (second examination)

Cow (No.)	Number of somatic cells SCC/ml	Number of lactation	Amount of milk(daily)
1	371 000	1	19.3
2	427 000	2	13.8
3	383 000	1	22.3
4	368 000	3	13.5
5	699 000	2	12.7
6	795 000	3	18.2
7	336 000	1	19.5
8	321 000	2	21.3
9	233 000	2	17.9
10	215 000	1	19.8
Total: 10 cows	Group milk example (SCC/ml):	Average of lactation:	Total amount of milk (daily):
	405000	1.80	178.30

The results from the second examination showed that the treatment of cows No.1, No.2 and No.3 was successful. The number of somatic cells which they produced is within the permissible with the exception of cow No.2. During the second examination in this farm was noticed an increase of somatic cells – cow No.5 (699 000 SCC/ml) and cow No.6 (795 000 SCC/ml). These cows haven't got any signs of visible mastitis, except increased number of somatic cells. We assumed presence of subclinical mastitis at these cows (No.5 and No.6). The dairy producer had no idea that these two cows have mastitis and milk produced from them, they've mixed it with whole milk, thereby decreasing its quality, and increasing the average number of somatic cells in milk produced from all cows. We've began process of healing with this two cows (No.5 and No.6). In one week period, we took milk examples again from each cow, and we've got positive result from the treatments of mastitis (reduction in somatic cells, as shown in the following table No.4).

After treating the three critical cows we had changes in the number of somatic cells in the milk from all cows (from 405 000 SCC/ml, before treatment, 335 000 SCC/ml after treatment).

Table No.4: Hygienic condition of milk after treatment of critical cows

Cow (No.)	Number of somatic cells SCC/ml	Number of somatic cells after treatment of critical cows	Average value of SCC after treatment of critical cows
1	371 000	368 000	Cows: No.5 and No.6 are successfully cured
2	427 000	411 000	
3	383 000	389 000	
4	368 000	359 000	
5	669 000	281 000	
6	795 000	385 000	
7	326 000	333 000	
8	282 000	290 000	
9	233 000	221 000	
10	215 000	212 000	
Total cows: 10 (ten)	Group milk example (SCC/ml):		Group milk example (SCC/ml):
	405 000		335 000

In the following table No.5 are written the results from the third examination that was made in the farm.

Table No.5: Results of examined parameters on the farm (third examination)

Cow (No.)	Number of somatic cells SCC/ml	Number of lactation	Amount of milk (daily)
1	335 000	1	19.5
2	378 000	2	14
3	372 000	1	23
4	283 000	3	14.7
5	239 000	2	14.5
6	391 000	3	19.3
7	333 000	1	20
8	299 000	2	22
9	315 000	2	17.5
10	311 000	1	20.3
Total: 10 cows	Group milk example (SCC/ml):	Average of lactation:	Total amount of milk (daily):
	331 000	1.80	184.80

The results from the third examination showed the health of the herd is significantly improved compared to the previous month. Cows No.5 and No.6 was successfully cured and that improve the quality of milk produced from all cows. The last month the number of somatic cells in group milk example was 335 000 SCC/ml, but after curing cows No.5 and No.6 the number of SCC/ml was reduced to 331 000/ml.

The condition of all dairy cattle in this farm in the third month of this examination was stable and all cows were in good health. Milk that has been produced was with good quality and had levels of somatic cells under the limit of 400 000 SCC/ml. In this situation we didn't took any measures, because we had no potential indication. In continuation hygiene in farm must to be maintained at high levels in order to produce milk with high quality. Hygiene is also important for the health condition of the herd.

The results are made according to the method that applied William L. Crist and his associates at the University of Kentucky, College of Agriculture. The results which they obtained in their investigation, corresponds with our results.

These presented data demonstrated the condition of the farm for a period of three months of research. We also found out the cows (individuals) which milk has negative influence on the milk quality produced from all cows on

the farm. By improving milk quality all dairy producers get more money per liter produced milk.

Conclusion

Using this individual milk control, in this examined farm we found out four cows with subclinical mastitis and one cow with clinical mastitis. We can see the positive site of using this individual milk control from the results which we've got during our process of examination:

In this farm, at the beginning the number of the somatic cells in the milk group example was 473 000/ml, and after three months that number was reduced to 331 000 somatic cells/ml.

By reducing the number of somatic cells in milk, respectively, is increased the amount of produced milk per cow. In the first month of the the examination, the daily amount of milk production was 174.8 liters, but after completion of individual milk control program, in period of three months, the daily amount of milk production was increased for 10 liters. With these presented information we can see the correlation between somatic cells number and the amount of milk production.

According to that individual milk control represents a significant part in the process of production of high quality and hygienic correct milk.

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