

RESEARCH REGARDING THE SOMATIC CELL COUNT AND THE MILK PRODUCTION FOR THE BLACK-SPOTTED COWS

CERCETĂRI STUDIUL PRIVIND NUMĂRUL DE CELULE SOMATICE ȘI PRODUCȚIA DE LAPTE LA TAURINE DE RASĂ BĂLȚATĂ CU NEGRU

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Researches demonstrate once again that the most accepted criteria for indicating the udder health state in a dairy cow farm are the somatic cell count and the quality milk production. Milk with a somatic cells count about 200,000 cells/ml on average, fulfills all conditions regarding the allowance of the quality financial bonuses (by processors). By milking 3 times a day during summer and for a short period of time has as consequence the increase of the marketable milk output with 7.42% (from the 2nd day with 5.67% up to 10.7-13.29%), but also an improvement of the milk's chemical composition (% fat, % protein), clear superior to those registered in the same period of the precedent year.

Key words: qualitative and quantitative milk production, somatic cells count.

Introduction

The determination of the somatic cells count (SCC) gives the possibility to monitor and evaluate the udder health state. By comparing the somatic cells count of the farm cow population with the theoretical values, producers can identify the problems earlier and give the possibility of establishing of goals – measures for improving the quality and quantity of the milk production.

Materials and Methods

Researches were performed on 45 days duration (27.07.2006 – 07.09.2006), in a Holstein – Black-Spotted German cow farm, on a 93 heads cow population average.

Research is owed to the wish of maintaining and even increasing the marketable milk output at the highest quality level during the summer time of the year: July, August and September. According to the precedent years data, this period is generally characterized by decreases of the quantitative and especially qualitative individual and total milk production per farm and at the same time by increasing the somatic cells count.

Results and Discussions

The high productive potential of the cows raised in the studied farm, marked by a milk production over 7,500 kg (Table 1) on one hand, and on the other hand the necessity of maintaining or decreasing the somatic cells count at the lowest level possible, lead to undertaking this research regarding comparing: the milk production/cow, the marketable milk output/farm and the qualitative parameters (with important role in establishing the milk producer price) during 3 periodical examinations (28 days) in June, July and September.

Table 1
Quantitative and qualitative milk production registered in the last years

Year	No. of cows	Milked days	M. P. kg	Fat %	Fat -kg	Protein %	Protein kg	Fat+Pr kg
2006	112	295	7745	4.00	310	3.27	253	563
2005	120	299	7313	3.99	292	3.28	240	532

During 27.07.2006 – 07.09.2006, 3 milkings/day were carried out. This “procedure“ lead to an increase in the milk production starting in the first days with 5.67% up to 10.7-13.29% when compared to the 2 milkings/day period, and the air temperature was maintained at values specific to the period of year.

Analyzing Figure 1, there can be seen that after cessation of the 3 milkings/day technique, the marketable milk output had a little decrease (170 kg), and the milk quantity delivered in September was 4.89% lower when compared to August and only 50 kg higher when compared to the milk production delivered to the processors in June.

According to the comparative results, as shown in Table 2, the average milk production/cow/day was maintained at about 28 kg/day, but the milk content in fat and protein significantly increased, and the most important qualitative milk parameter, the SCC, registered the highest values in September (213000 cells/ml).

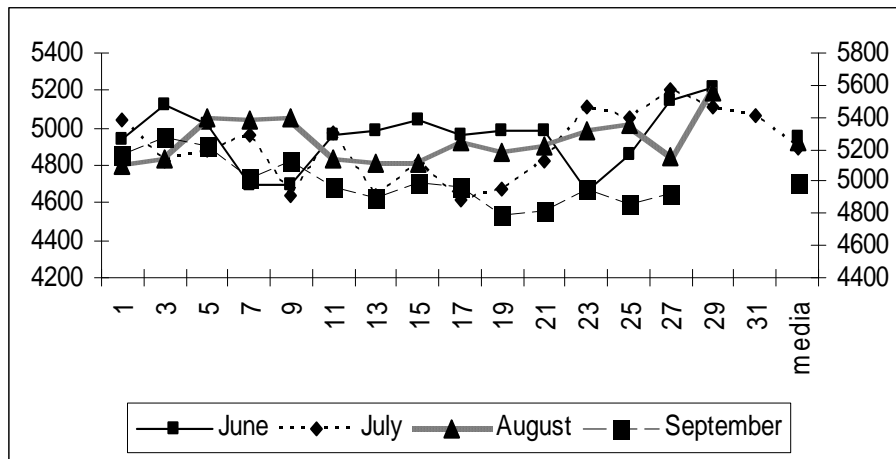


Figure 1. The marketable milk output

Table 2
Comparative results regarding the quantitative and qualitative milk parameters

Parameters	June 28.06.06	July 26.07.06	August	September 07.09.06
Cows/farm	105	106	-	110
Cows in control	90	93	-	92
Cows in DOT	15	13	-	18
M.P. - kg/cows in control	24.2	24.7	-	23.5
M.P. - kg/milked cows	28.3	28.2	-	28.1
M.P. - kg Total/control day	2545.0	2619.8	-	2582.5
Fat %	3.68	3.78	-	4.10
Protein%	3.16	3.12	-	3.39
SCC (x1000)	177	206	-	213
Urea-ppm	259	220	-	237
Lactation state Milked days	174	165	-	170
Average M.P. delivered/2 days	4952.20	4890.80	5253.53	4996.64
Marketable milk output /month	74283	73362	78803	74950

The cause of the increasing somatic cells count is the number of cows at the beginning or at the end of lactation, which have a somatic cells count over the standard limits accepted by the European Union, on one hand, and on the other hand the sudden increase of the somatic cells count at 3 cows with over 1000000 cells/ml, compared to the last examination (Table 3). The sudden increase of the somatic cell count had as effect the decrease of the milk production in those cows.

Table 3

Fluctuations of SCC and the milk production registered in cows with over 400000 cells/ml

Cow	Calving date	Days in milk	Lact	Examination month – SCC(x1000)					
				September 07.09		July 26.07		June 28.06	
				SCC	M.P./day	SCC	M.P./day	SCC	M.P./day
777	21.10.05	321	1	582	21.2	361	23.2	918	22.6
719	11.08.06	27	2	741	22.8	410	23.2	1218	25.2
741	15.02.06	204	2	1660	23.4	450	28.4	478	29.2
743	03.05.06	127	2	1421	37.2	836	41.6	1086	44.8
718	19.12.05	262	2	220	29.2	424	30.6	116	28.2
708	02.07.06	67	3	227	38.2	1631	36.8	DOT	
702	02.03.06	189	3	225	22.0	1774	24.8	422	22.0
724	07.08.06	31	3	716	20.2	DOT		DOT	
723	04.09.06	4	3	923	36.8	DOT		DOT	
692	06.12.05	275	3	487	20.8	164	27.6	107	28.4
633	31.10.05	311	4	162	26.0	436	32.2	806	34.2
647	28.06.06	72	4	494	41.6	439	39.6	DOT	
630	28.11.05	283	4	1195	5.4	182	17.2	195	29.6
614	05.04.06	155	5	489	27.2	656	35.4	833	39.6
631	20.03.06	171	5	836	34.8	655	33.8	169	37.8
632	08.05.06	122	5	416	34.6	425	37.8	85	38.8
634	27.02.06	192	5	2527	24.2	1630	24.6	985	28.8
591	17.11.05	294	6	1020	23.6	198	22.6	277	22.2
Total >400000cells/ml				14		12		8	
Total <400000cells/ml				79		81		82	
Mean / farm >400000cells/ml X±sx				964.79 ±156.213	26.70 ±2.531	813.83 ±155.415	32.40 ±1.781	894.5 ±98.067	31.33 ±2.703
Mean / farm <400000cells/ml X±sx				234.73 ±4.652	28.32 ±0.749	217.95 ±4.916	27.54 ±0.773	256.89 ±6.692	27.98 ±0.821

Conclusions

1. The marketable milk output increases with the number of milkings per day, even for a short period of time.
2. The somatic cells count per farm is good – even very good, but cows with high individual SCC and which did not response positively to the treatment applied for 3 times should be culled.
3. Cows with high SCC are in the 3rd lactation and over, at the beginning or at the end of lactation. Adequate treatment should be applied before and during the drying off time, and if SCC remains high at the first examination after parturition, cows should be eliminated from herd.
4. There are recommended the early tracking down of the high SCC cows and improving the milk production quality per farm by using more frequently the MTC, by respecting with strictness of hygiene norms (housing, milking etc.), being well known that a cow in a medium farm (25-30 heads) has a contribution of 5-50% cells/tank.
5. Increasing the profit for the milk producer by the allowance of the financial bonuses – dividends by processors for a milk with low somatic cells count, is another reason for obtaining quality milk.

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Cercetările demonstrează încă o dată că cele mai acceptate criterii pentru indicarea stării de sănătate a ugerului într-o fermă de taurine specializate în direcția producției de lapte sunt numărul de celule somatice și producția de lapte de calitate. Laptele cu un conținut mediu de celule somatice la nivel de fermă de circa 200000 celule/ml, îndeplinește toate condițiile privind acordarea bonusurilor financiare de calitate (de către procesatori). Efectuarea unui număr de 3 mulsori /zi în perioada de vară și pe o perioadă scurtă de timp are ca și consecință creșterea producției de lapte marfă cu 7.42 % (din a-II-a zi cu 5.67 %, ajungând până la 10.7-13.29%), dar și o îmbunătățire a compoziției chimice a laptelui (% grăsime și % proteină), net superioare celor înregistrate în aceeași perioadă a anului precedent.

Cuvinte cheie: producția cantitativă și calitativă de lapte, celule somatice.