

# DAIRY COW PRODUCTIVITY AND BLOOD CHEMICAL COMPOSITION DURING SPARGING FEEDING

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*В статье описываются результаты исследований по влиянию пивной дробины на молочную продуктивность и показатели крови коров.*

Providing the Russian population with dairy products of domestic production determines the food independence of the country, which directly depends on the national agro-industrial complex development. The possibility of increasing the animal productivity with the lowest production costs of agricultural products plays the important role.

Success of the dairy cattle development depends on the level of the animal feeding usefulness. We consider the feeding to be substantial, if the animals receive nutritious and biologically active substances in accordance with their needs. Substantial feeding contributes to the normal course of all physiological processes in the body producing products of high quality at minimum feed cost.

To improve the value of diets use some industrial wastes, in particular sparging, are used.

Sparging is obtained from the residues of barley raw materials after wort receiving. Shell and particles of grain endosperm are included into the composition of sparging. It has a rich texture, has a light brown color, sweet taste and smell of malt. Sparging is a valuable, widespread food in rations of agricultural animals.

It is established that brewing plant and departments annually collect about 1.2 million tons of sparging with humidity of 70 - 80%, and you can get 200 thousand tons of dry fodder from it.

The purpose of our research was to study the effect of sparging on milk production and the chemical composition of the blood.

## **Materials and methods of research**

Scientific and economic experiment was held in APC "Soloncy" of Krasnoyarsk Region Emelyanovskiy district, for milk cows of black-and-white breed.

To conduct this experiment four groups of cows on ten animals in each were formed by the principle of analogues. Duration of the experiment was 30 days. The content of animals from the control and experimental groups was identical. The productivity of animals was determined by the results of control milkings.

Lactating cows were fed with sparging produced by company «Baltik-Pikra» (Krasnoyarsk). The chemical composition was assessed by FSBO State agrochemical service centre «Krasnoyarsk».

Blood and milk analyses were conducted in the test center KGKU "Regional veterinary laboratory".

In the cow diets of experimental groups haylage was replaced by sparging. So in the 1st experimental group 14 kg of hay was replaced by 20 kg of sparging in the

2nd experimental group - 9 kg of hay - by 15 kg sparging; in the 3rd experimental group - 7 kg of hay - by 10 kg of sparging.

Cows of control group received the basic diet, which is shown in table 1.

*Table 1 - A diet for lactating cows, kg/head. per day*

Parametr	Hay, 8 kg	Straw, 2 kg	Haylage, 25 kg	Concentrates, 3 kg	Total:	Norm
1	2	3	4	5	6	7
Fodder units	3,6	0,62	7,5	3,5	15	14,6
Exchange energy, MJ	56	10,8	80	27,5	174,3	168
1. Dry substance	6,6	1,6	11,2	2,5	21,9	17,2
Crude protein, g	784	78	1350	399	2611	2245
Переваримый protein, g	304	34	600	219	1157	1460
Crude cellulose, g	2136	648	3700	151	6535	4130
Starch g	64	0	350	1545	1959	1975
Sugar, g	1120	8	250	78	1456	1315
Crude fat, g	192	34	325	60	611	465
Salt, g					90	90-105
Macronutrients, g						
Calcium	34,4	6,8	62,5	0,87	105	105
Phosphorus	12,7	2	20,7	1,02	36,4	75
Magnesium	14,4	2,2	35,5	0,54	153	27
Potassium	77,6	27,8	192	10,2	307,6	110
Sulfur	8	3,4	14	3,6	29	35
Trace elements, mg						
Iron	4456	282	2975	120	7833	1170
Copper	29,6	5,8	45	19,8	100,2	130
Zinc	131,2	52	202,5	69	454,7	875
Cobalt	3,52	1,4	9,8	0,21	14,96	10,2
Manganese	672	180	650	3	1505	875
Iodine	2,8	0,88	2,5	0,18	6,36	11,7
Carotene	160	4	750	3	917	656
Vitamin D, thousands of IU	2,8	0,01	4,0		6,01	14,6
Vitamin E, mg	240	0	1125	35,7	1400	585

## Research results

It was determined that the sparging contains 78,4% of the general moisture, 4,09% of protein, 3,7% of cellulose, 1,92% of fat, 0,82% of ashes, 11% of nitrogen-free extractive substances, 0,11% of phosphorus, 0,07% of calcium, 0,32% of sugar. One kilogram of the sparging contains 2,25 MDZh of the exchange energy.

Feeding conditions have a huge effect on the amount of milk yield and milk composition. At high-grade feeding and proper maintenance dairy efficiency of cows increases and significantly reduces the consumption of feed (table. 2).

*Table 2 - Results of research on feeding sparging milking cows*

Group	Daily average yield, kg/head.		Mass fraction of milk, %	
	in the beginning of the experiment	in the end of the experiment	fat	protein
Control	18,3	17,5	2,5	3,12
1-st experienced	18	25	2,5	3,10
2-nd experienced	18	19,6	2,3	3,08
3-rd experienced	18,2	12,5	1,5	3,11

Feeding cows with sparging in the dosage of 20 kg per head (1st experimental group) contributed to the increase in the average daily milk yield by 42.8% compared with the control group; in a dose of 15 kg per head. (2nd experimental) - by 12%. Feeding with sparging at a dosage of 10 kg per head (3 experimental group) has reduced the daily average yield by 4.6% compared with the control.

Mass fraction of fat in the control and the 1-st experimental groups was identical and made 2.5%; in the 2-nd and 3-rd experimental groups was lower by 0.2 and 1.0% respectively. Mass fraction of protein in all experimental groups slightly differed.

In the end of the experiment the chemical analysis of blood serum was conducted (table. 3).

*Table 3 - Results of the blood serum analysis*

Group	Parameter			
	calcium, mmol /l	phosphorus, mmol/l	total protein, g/l	carotin, mg%
Control	2,302	2,216	91,11	0,444
1-st experienced	2,214	2,242	94,02	0,518
2-nd experienced	2,16	1,994	96,692	0,5
3-rd experienced	2,412	2,098	98,886	0,496

The maximum content of phosphorus (2,242 mmol/l) and carotene (0,518 mg%) was in the blood of cows 1st experimental group and exceeded the control result of 1, 173% and 16.6% respectively.

Thus, feeding cows with sparging at a dose of 20 kg per head a day contributed to the increase of milk yield by 42,86% and the improvement of the blood chemical composition.

### **References**

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