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The Role of Nutrition in Increasing Milk Productivity of Breeding and Breeding Cows

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Annotation: This article examines the feeding, care, use, and productivity of cows in order to fully realize their genetic potential, and the nutrition factor is a factor that determines the vital activity of animals. The level of productivity of animals, the quality of reproduction, their health and the quality of their breeding and breeding are directly related to the level of feeding and the quality of the feed. The origin and productivity of the cows in the experimental groups were determined using the primary zootechnical documentation available on the farm. The feeding and care conditions of the cows in all experimental groups were the same. The milk yield of the cows was monitored every 10 days using the AFIMILK milking machine, the fat content of the milk was determined once a month by the Gerber method, and the protein was determined by the Keldal method once a month.

Keywords: livestock, breed, holstein, milk, quality opportunity, offspring, seed, productivity, selection, milk fat, milk protein, nutrition.

Introduction: Cattle breeding is a leading branch of animal husbandry and plays an important role in providing the population with quality food products such as milk and meat. Today there are more than 1,000 breeds of cattle in the world. In the Netherlands, Israel, Germany, Denmark and the United States, where the cattle industry is developed, the average annual milk yield per cow is more than 8000-10000 kg. It has a fat content of 4.5-5.0%. In order to further develop the

industry, special attention is paid to the effective use of semen of bulls of the world gene pool with genetic potential in artificial insemination, improving the milk yield and fertility of cows, breeding cows that meet the requirements of modern production technologies.

In many countries, the world's leading research centers are developing and improving the scientific basis for the use of genotypes of valuable cattle breeds, as well as science-based technological solutions based on the study of the breeding characteristics of breeds. Effective use of Holstein pedigree bulls of American and Canadian selection has resulted in strengthening the heredity of cows, increasing milk yield and improving quality. As a result of comprehensive and effective selection work, new breeds are being created.

Materials and methods: Our research was carried out in the conditions of the farm "Siyob Shavkat Orzu" in Samarkand region, which specializes in cattle breeding.

Cows were selected for 6 groups of 15 heads each, based on similarity traits, including origin, breed, pedigree, age, live, weight, maternal milk yield, and paternal breed.

Group I is the original black and white cows. I and II category off spring of white and black cows of groups II and III obtained by crossing with Holstein bulls. Group IV includes the German breed of Holstein breed, Group V includes the Polish breed of Holstein breed, and Group VI includes the first category of cows of the Dutch breed.

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The milk yield of the cows was monitored every 10 days using the AFIMILK milking machine, the fat content of the milk was determined once a month by the Gerber method, and the protein was determined by the Keldal method once a month.

Results obtained and their analysis: The full realization of the genetic potential of cows occurs under the conditions of adequate feeding and care. If the development of an organism is determined by heredity, the living conditions make it happen. It is known that although the genetics of animals are approximately the same, the process of formation of one or another trait as a result of environmental conditions (feeding, care, use, etc.) is not the same.

Their milk yield and physiological condition were taken into account.

It should be noted that the farm has a year-round feeding regime, in which juicy, raw and some concentrated feeds are grown on the farm, the following

Table 1 shows the composition of the total feed ration for Holstein cows belonging to different breeds of purebred Holstein black-and-white cows of different genotypes.

Table 1. Feed consumption of cows in the experimental groups during I-lactation (average per 1 head).

Nutrients and their nutritional value	Group					
	I		II		III	
	kg	feed unit	kg	feed unit	kg	feed unit
Alfalfa hay	610,0	268,4	610,0	268,4	610,0	268,4
Straw	915,0	183,0	915,0	183,0	915,0	183,0
Cotton slut	305,0	82,4	610,0	164,7	305,0	82,4
Senage	1220,0	427,0	1525,0	533,8	1830,0	640,5
Silage	7930,0	1586,0	7930,0	1586,0	9150,0	1830,0
Beets	3060,0	518,5	3355,0	570,3	3660,0	622,2
Cornmeal	915,0	1207,8	1067,5	1409,1	1372,5	1811,7

Soybean meal	76,3	91,5	122,0	146,4	152,5	183,0
Sunflower seed	91,5	94,3	61,0	62,8	152,5	157,1
Wheat groats	305,0	387,4	91,5	116,2	152,5	193,7
Diamani phosphate	30,5	X	30,5	X	45,8	X
Feeding unit	X	4846,3	X	5040,7	X	5972,0
Alternating power, MDj	51246,43	X	53304,16	X	62538,13	X
dry matter, kg	6744,03	X	7014,83	X	8230,02	X
crude protein, kg	1141,98	X	1187,84	X	1393,61	X
digestible protein, kg	615,71	X	640,43	X	751,37	X
crude oil, kg	222,35	X	231,30	X	271,34	X
raw fiber, kg	1671,04	X	1738,13	X	2039,23	X
nitrogen-free extractives (AEM), kg	2693,14	X	2801,30	X	3286,54	X
calcium, kg	77,88	X	81,01	X	95,04	X
phosphorus, kg	28,50	X	29,64	X	34,78	X
Alfalfa hay	1220,0	536,8	1220,0	536,8	1220,0	536,8
Straw	915,0	183,0	915,0	183,0	915,0	183,0
Cotton slut	762,5	205.9	915,0	247,0	762,5	205,9
Senage	2440,0	854,0	2440,0	854,0	2440,0	854,0
Silage	10675,0	2135,0	10675,0	2135,0	10675,0	2135,0
Beets	4270,0	725,9	4270,0	725,9	4270,0	725,9
Cornmeal	1830,0	2415,6	1830,0	2415,6	1830,0	2415,6
Soybean meal	183,0	219,6	183,0	219,6	183,0	219,6
Sunflower seed	213,5	219,9	213,5	219,9	213,5	219,9
Wheat groats	1220,0	1549,4	1220,0	1549,4	1311,5	1665,6
Diamani phosphate	45.8	X	45.8	X	45.8	X
Feeding unit	X	9045,1	X	9086,2	X	9161,3
Alternating power, MDj	95648,83	X	96083,66	X	96877,82	X
dry matter, kg	12587,39	X	12644,61	X	12749,13	X
crude protein, kg	2131,46	X	2141,14	X	2158,84	X
digestible protein, kg	1149,18	X	1154,40	X	1163,94	X
crude oil, kg	415,00	X	416,89	X	420,33	X
raw fiber, kg	3118,90	X	3133,08	X	3158,97	X
nitrogen-free extractives (AEM), kg	5026,60	X	5049,45	X	5091,18	X
calcium, kg	145,37	X	146,03	X	147,23	X
phosphorus, kg	53,19	X	53,43	X	53,87	X

Feed consumption of cows in the experimental groups during I-lactation (average per 1 head).

The data in Table 1 show that during the first lactation, the cows of the I, II and III experimental groups consumed the same amount of alfalfa hay and straw, while the cotton slugs from the I-experimental group were purebred black-and-white cows. Their counterparts in the II and III experimental groups consumed 305.0 kg less than the Holstein first and second generation cows, respectively. There was no difference in this type of feed from cows in experimental groups I-III. The difference in haylage, beets, corn, soybeans, in favor of the present generation is 305.0 kg or 27.2 percent and 610.0 kg or 50.0 percent, 295.0 kg or 9.6, respectively. percent and 600.0 kg or 19.6 percent, 152.5 kg or 16.7 percent and 457.5 kg or 50.0 percent, 45.7 kg or 60.0 percent and 76.2 kg or 100.0 percent. Silage was consumed in equal amounts by cows in Experimental Groups I and II. Cows in Experimental Group III consumed sunflower meal more than their counterparts in Experimental Groups I and II, respectively: 61.0 kg or 66.7% and 91.5 kg or 150.0% more, respectively. Cows in Experimental Group 1 consumed 213.5 kg or 233.3% and 152.5 kg or 100.0% more wheat, respectively, than in Group II and III.

The lowest overall nutrient intake during lactation was observed in purebred black-and-white cows in Experiment Group I, with 4,846.3 feed units.

Holstein cows of different breeds of the original breed consumed the most feed, cows of group VI, with a nutrient content of 9161.3 feed units. This is 116.2 feed units or 1.3 percent and 75.1 feed units or 0.8 percent more than their peers in group IV and V, respectively.

Analysis of feed consumption of purebred and Holstein-bred black-and-white cows of different breeds with different genotypes, 852.3 feed units or 17.1%, 1743.5 feed units or 34.9% less feed than purebred showed that they consumed.

When comparing the cows of the IV-V-VI-experimental groups in terms of feed consumption, the Dutch selection cows of the VI-experimental group compared their cows with the IVvaV-group cows accordingly: 815.3 feed units or 8.8%, 876, Showed that they consumed more than 3 feed units or 9.5 percent feed units.

Table 2. The percentage of rations in the rations of cows in the experimental groups

Types of feed	I–Lactation (n=15)					
	Groups					
	I	II	III	IV	V	VI
Alfalfa hay	5,6	5,4	5,9	5,9	5,9	5,8
Straw	3,7	3,6	2,7	2,0	2,2	2,1
Cotton slut	1,8	3,3	2,5	2,2	2,8	2,2
Senage	8,9	10,6	9,5	9,7	9,4	9,3
Silage	32,7	31,4	25,6	23,6	23,4	23,3
Sweet beets	10,7	11,3	8,5	8,0	7,9	7,9
Cornmeal	25,0	28,0	20,9	26,7	26,6	26,4
Soybean meal	1,8	2,9	1,6	2,4	2,4	2,4
Sunflower seed	1,9	1,2	2,8	2,4	2,4	2,4
Wheat groats	7,9	2,3	20,0	17,1	17,0	18,2
Total:	100,0	100,0	100,0	100,0	100,0	100,0

Table 2 below shows the composition of the rations of the cows in the experimental group in relation to the nutrient content. When analyzing the data in the table, it became clear that the consumption of alfalfa hay in the diet in both lactations was dominated by cows of experimental groups IV, VI, III, V, ie, the alfalfa hay they consumed The nutrient content ranged from 5.9 to 6.6 feed units.

The level of straw consumption in the ration was observed in cows of the I, II, III experimental groups and ranged from 3.2 to 3.7 feed units.

There were no significant differences between the groups in terms of nutrients, such as cottonseed meal, haylage, beets, maize, and sunflower seeds. However, for wheat bran, the difference in nutrient content of the feed consumed by the cows in the experimental group during I-lactation ranged from 7.9 to 20 feed units.

This significant intergroup difference suggests that it depends on the genotype of the cows in the experiment and its milk yield.

Animal development is a chain of continuous changes in quantity and quality.

In our study, we determined the live weight of cows that differed by genetic origin and presented them in Table 4 below.

Table 4 shows that before artificial insemination, the live weight of cows, dominated by Dutch selection cows in Experiment Group VI, was 470.7 kg. This is 84.0 kg ($P < 0.01$) or 21.7 percent,

61.3 kg (P <0.01) or 15.0 percent, 58.3 kg, respectively, compared to cows in other groups. (P <0.01) or 14.1 percent, 45.2 kg (P <0.05) or 10.6 percent, 49.7 kg (P <0.05) or 11.8 percent more.

In the next period of the study, the live weight of cows in group VI was 763.2 kg, and the weight of cows in experimental groups I, II, III, IV, V was 281.4 kg (P <0.001). or 58.4 percent, 244.9 kg (P <0.001) or 47.3 percent, 193.8 kg (P <0.001) or 34.0 percent, 149.5 kg (P <0.01) or 24, percent, 58.5 kg (P <0.01) or 8.3 percent behind. In general, Holstein cows of different breeds were distinguished by their high live weight. Their offspring also weigh 36-40 kg. had a live weight and was able to grow rapidly.

A study of the growth of cows in the experimental groups revealed that the Dutch selection of cows grew faster than those in the other experimental groups.

Table 3. Information on live weight (kg) of cows in the experimental groups, (X±Sx)

Groups	Live weight of experimental cows, kg (n=15)	
	I-lactation	
I	386,7±4,6	425,9±4,2
II	409,4±3,9	432,4±4,7
III	412,4±5,8	442,0±5,3
IV	425,5±6,1	501,7±7,8
V	421,0±7,9	569,3±10,2
VI	470,7±8,3	582,6±7,9

In assessing the level of growth, development and body composition of cows of different genetic origins, it is important to determine their external characteristics.

An analysis of the data in the table showed that the body size of the original Holstein cows was higher than that of purebred and Holstein black-and-white cows.

The distinctive feature of Holstein cows, which are imported and effectively bred in our country, is close to other populations of this breed in the world.

One of the main factors related to the milk yield and characteristics of cows is the genetic factor of the animals. This indicator is formed as a result of individual breeding work with each breed.

The analysis of this Table 5 showed that the cows in Experiment Group I yielded an average of 4024.7 kg of milk during lactation, which is proportional to the cows of the same age in Experimental Groups II, III, IV, V and VI. : 964.3 kg. (R <0.01) or 25.0 percent, 1692.4kg. (R <0.01) or 42.1 percent, 5022.1 kg. (R <0.001) or 124.9 percent, 4913.2 kg. (R <0.001) or 122.1 percent and 5613.2 kg. (R <0.001) or 139.5 percent less. It can be seen that the highest milk yield was in the Dutch selection cows, which amounted to 9637.9 kg. This figure corresponds to the milk yield of purebred Holstein cows of German and Polish selection: 591.1 kg. (R <0.05) or 6.5 percent and 700 kg. (R <0.01) or 7.8 percent more. The same applies to the Dutch selection of purebred black-and-white (Group I) and its cows of different genotypes (Group II, III): 5613.2 kg (R <0.001) or 139.5 percent, 4648.9 kg (R <0.001) or 93.2 percent, 3920.8 kg (R <0.01) or 68.6 percent.

In terms of milk yield, the first- and second-generation cows, which were obtained by crossing the black-and-white breed with the Holstein bull, had an advantage over the original black-and-white breed. It is known that the most convenient and objective method is to evaluate the milk yield of cows by converting them to 4% milk. Pure Holstein cows, especially from the Dutch and German breeds, also dominated this indicator.

One of the main indicators of the quality of dairy products is the consumption of milk fat and milk protein. High levels of milk fat were observed in Holstein cows of purebred Dutch breed,

which weighed 383.5 kg. According to this indicator, they compared their counterparts, cows of experimental groups I, II, III, IV and V, respectively: 229.7 kg (R <0.01) or 149.3%, 191.9 kg (R <0.01) or 100.1%, 161.1 kg (R <0.01) or 72.4%, 26.2 kg (R <0.05) or 7.3% and 29.6 kg (R <0.05) or 8.4 percent left behind.

In terms of milk protein consumption, cows in the VI-experimental group, respectively, compared to their counterparts, cows in the I, II, III, IV and V groups, respectively: 191.8 kg (R <0.01) or 143.1%. , 159.2 kg (R <0.01) or 95.6 percent, 134.3 kg (R <0.01) or 70.1 percent, 20.9 kg (R <0.05) or 6.9 percent and a high of 24.6 kg (R <0.05) or 8.2 percent.

Table4. Milk yield in 1st lactation of experimental cows. (n=15)

Indicators	Groups					
	I		II		III	
	$X \pm S_X$	S v,%	$X \pm S_X$	S v,%	$X \pm S_X$	S v,%
Live weight kg	446,6 ±5,1	4,3	471,4±8,5	6,8	521,9±6,9	5,1
Milk yield, kg	4024,7±45,1	4,10	4989,0±80,6	6,0	5717,1±152	9,80
Fat content of milk, %	3,82±0,006	0,55	3,84±0,007	0,67	3,89±0,007	0,67
Milk protein content, %	3,33±0,006	0,60	3,34±0,005	0,60	3,35±0,0045	0,51
4% milk content,	3843,9±45,8	4,40	4789,8±79,6	6,10	5560,0±148,4	9,90
Consumption of milk fat kg.	153,8±1,8	4,40	191,6±3,2	6,10	222,4±5,6	9,40
Milk protein consumption, kg	134,0±1,4	3,9	166,6±2,7	6,0	191,5±5,1	9,80
Dry matter	12,4±0,48	-	12,3±0,008	-	12,3±0,003	-
Residual Dry Milk Residue (DLP)%	8,6±0,13	-	8,5 ±0,01	-	8,4±0,008	-

Table 5 (continue)

Milk yield in 1st lactation of experimental cows. (n=15)

Indicators	Groups					
	I V		V		VI	
	$X \pm S_X$	S v,%	$X \pm S_X$	S v,%	$X \pm S_X$	S v,%
Live weight kg	563,0± 13,3	8,9	651,9±16,5	9,6	716,0±12,1	6,4
Milk yield, kg	9046,8±119,0	4,90	8937,9±137,5	5,70	9637,9±194,6	7,50
Fat content of milk,%	3,95±0,008	0,75	3,96 ±0,008	0,70	3,98±0,008	0,75
Milk protein content,%	3,37±0,005	0,59	3,37±0,005	0,59	3.38±0,003	0,30
4% milk content,	8933,5±118,8	4,90	8847,1±134,8	5,60	9588,6±190,6	7,30
Consumption of milk fat kg.	357,3±4,7	4,90	353,9±5,4	5,60	383,5±7,6	7,30
Milk protein consumption, kg	304,9±4,2	5,10	301,2±4,5	5,60	325,8±8,3	9,40
Dry matter	12,4±0,005	-	12,3±0.005	-	12,3±0.005	-
Residual Dry Milk Residue (DLP)%	8,4±0,005	-	8,4±0,008	-	8,3±0,005	-

The results of the consumption of milk fat and protein were also significantly different between groups. In this case, the Holstein cows of the Dutch selection showed positive results in relation to the original black-and-white cows of the I-II generation, and the Holstein cows of the Dutch selection in comparison with the Holstein cows of the German and Polish breeds. The difference in their favor was 50.0 kg (R <0.05) or 28.9 percent, 91.7 kg (R <0.01) or 53.0 percent, 27.6 kg (R <0.05) or respectively. 7.3 percent, 35.9 kg (R <0.05) or 9.8 percent, and 43.3 kg (R <0.01) or

28.6 percent, 77.4 kg (R <0.01) or 51.1 per cent, 23.3 kg (R <0.05) or 7.3 per cent, 29.2 kg (R <0.05) or 9.3 per cent.

Conclusion: Thus, the milk yield of the experimental cows was much higher than the pedigree standard due to the fact that they were fed and cared for in accordance with the requirements of zootechnics. The analysis of the obtained results revealed that the Holstein breed is indeed unique to the world gene pool and increases the milk yield of cows of the black-and-white breed and improves the morpho-functional properties of their udder.

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