



QUALITY OF MILK PRODUCTION OF THE HOLSTEIN COWS DEPENDING ON DIFFERENT FACTORS

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ABSTRACT

Studies have revealed that despite the selection, the Holstein cows have a high genetic potential of milk production and in all lactations it is good in the specific conditions of the hot climate of Uzbekistan. The milk production level of German cows for the first lactation was 6511.2 kg of milk with a fat content of 3.84%, the Dutch — 6653.0 kg with fat content of 3.95%, and local breed — 6495.2 kg with a fat content of 3.95%. All mature cows retained high milk production, for III lactation and older it was 7112.5 kg and 3.90%, 7266.0 kg and 3.90%, 6847.5 kg and 3.94%, respectively. The yield of Dutch breeding cows was higher for 1 lactation by 141.80–157.8 kg, for III lactation and older by 153.5–418.5 kg, the yield of milk fat by 12.8–6.3 kg, respectively, of indicators peers of German and local selection. The cows of the studied selections combined well with high milk yield and fat content. The level of 4% milk for the studied lactation in all cows was quite high and testified to its good nutritional value. Holstein cows of different breeds are distinguished by a strong dairy type. For I lactation, for every 100 kg of live weight, 1,159.0–1265.5 kg of milk was produced, for III lactation and older - 1200.0–1308.6 kg.

It is revealed that milk productivity depends on the level of live weight of cows. The increase in body weight of cows in all groups provides an increase in milk yield, milk fat yield, milk yield of 4% milk. Milk productivity is interrelated with the duration of the service period. In group I, cows with a service period of 91–100 days were more productive, in group II, 81–90 and in group III, up to 80 days. The use of Holstein cows for the production of milk is effective and ensures an increase in its production, the creation of highly productive dairy herds and the production of high-quality maintenance stock.

KEYWORDS: *Holstein breed, herd, milk yield, milk, fat, selection.*

INTRODUCTION

In the further development of animal husbandry, the improvement of breeding, productive, reproductive, technological qualities of breeding livestock, the creation of highly productive herds, increasing the volume

of livestock production, widespread use of the genetic potential of productivity of the leading breeds of the world's gene pool is of particular relevance. Currently, the Holstein is the world's highest production dairy animal. Cows of this breed are distinguished by exceptionally high milk productivity, specific qualities of the udder, adaptation and various soil and climatic



conditions, high feed allowance, dairy products and other valuable breeding characteristics [1-6]. In this regard, the study of the productive qualities of Holstein cows in relation with various factors is of great scientific and practical importance in the further improvement of their economically useful traits [7-9].

The aim of the research work was the study and analysis of the productive qualities of the Holstein breed of different selection in conjunction with various factors. The objectives of the research included determining the level of milk productivity of cows of different breeding, depending on various factors.

MATERIALS AND METHODS

Three groups of mature cows were selected for research. The first group consisted of cows obtained from cows imported from Germany, in the second group

- Holland ones and in the third group from local selection cows. In each group there were 20 cows. Studies have been conducted in the “Kuyi Chirchik sut bulogi” breeding farm of the Low Chirchik district of the Tashkent region. Productive indicators of cows were studied by general received methods in zootechnics. Cows were kept in the same condition, nutrition was the same too, milk productiveness, a live mass as well as physiologic state were considered.

RESULTS AND DISCUSSION

The milk productivity is one of the main indicators assessing the breeding value of cows. Table 1 shows the milk productivity of cows for the first lactation.

Table 1
Milk productivity and body weight of cows per I lactation

Indicators	Groups					
	I		II		III	
	$\bar{X} \pm S\bar{x}$	Cv, %	$\bar{X} \pm S\bar{x}$	Cv, %	$\bar{X} \pm S\bar{x}$	Cv, %
Milk yield (kg)	6511,2±106,9	7,16	6653,0±110,2	7,22	6495,2±85,5	5,74
Fat content in milk (%)	3,84±0,02	1,36	3,95±0,014	1,54	3,95±0,01	1,53
Milk fat yield (kg)	250,0±4,78	8,37	262,8±3,95	6,63	256,5±2,63	4,47
4% fat-corrected milk(kg)	6250,7±110,0	7,67	6569,8±100,0	6,61	6414,0±65,1	4,43
Yield of 4% milk per 100 kg of body weight (kg)	1214,9±103,2	7,5	1142,8±98,9	6,8	1230,6±68,7	4,9
Bodyweight (kg)	514,5±11,7	9,88	574,0±18,8	14,3	521,2±11,3	9,49

As seen from Table 1, cows of European breeding in the conditions of Uzbekistan showed a rather high potential for milk production. The level of milk yield in cows of group II was, respectively, 141.8 and 157.8 kg, the yield of milk fat — by 12.8 and 6.3 kg, the yield of 4% milk — by 319.1 and 155.8 kg higher, than cows I

and III groups. For every 100 kg of body weight, cows of group I produced 106.5 and 19.0 kg of milk more than peers of groups II and III. We studied the productivity of cows and for II lactation (table 2).

Table 2
Milk productivity and body weight of cows per II lactation

Indicators	Groups					
	I		II		III	
	$\bar{X} \pm S\bar{x}$	Cv, %	$\bar{X} \pm S\bar{x}$	Cv, %	$\bar{X} \pm S\bar{x}$	Cv, %
Milk yield (kg)	6867,5±83,8	5,32	6860,0±97,6	6,20	6698,5±67,5	4,39
Fat content in milk (%)	3,90±0,02	2,27	3,94±0,03	3,13	3,92±0,02	2,16
Milk fat yield (kg)	267,8±3,90	6,34	270,3±4,35	7,02	261,2±2,93	4,86
4% fat-corrected milk (kg)	6695,0±97,6	6,34	6757,1±108,8	7,02	6531,0±73,2	4,86
Yield of 4% milk per 100 kg of body weight (kg)	1265,8±68,1	24,4	1166,2±28,5	10,8	1240,2±23,7	8,37
Bodyweight (kg)	528,9±11,2	9,22	579,4±30,4	23,2	540,1±9,2	7,84

In lactation II, milk yield and milk fat yield in groups I and II were characterized by similar rates and they exceeded milk yield by 169 and 161.5 kg, respectively, and milk yield by 6.6 and 9.1 kg of cows

of group III. The yield of 4% milk in cows I and II groups was 164 and 226.1 kg higher than the peers of group III. We continued to study the dynamics of milk production of cows in the context of lactation (table 3).



Table 3
Milk productivity and body weight of cows per III and older lactation

Indicators	Groups					
	I		II		III	
	$\bar{X} \pm S\bar{x}$	Cv, %	$\bar{X} \pm S\bar{x}$	Cv, %	$\bar{X} \pm S\bar{x}$	Cv, %
Milk yield (kg)	7112,5±68,1	5,32	7266,0±53,9	3,23	6847,5±147,7	4,39
Fat content in milk (%)	3,90±0,02	2,27	3,90±0,017	1,86	3,94±0,014	2,16
Milk fat yield (kg)	277,4±2,91	6,34	283,3±2,17	3,33	269,8±5,77	4,86
4% fat-corrected milk (kg)	6934,7±72,7	4,57	7084,4±54,2	3,32	6744,8±144,4	9,32
Yield of 4% milk per 100 kg of body weight (kg)	1347,8±33,5	11,32	1234,2±26,7	9,81	1294,7±32,3	11,34
Bodyweight (kg)	543,5±13,6	10,9	605,5±17,4	12,5	546,1±10,2	8,14

Analysis of the data in Table 3 shows that the yield of cows of group II is 153.5 and 418.5 kg (P <0.01), the yield of milk fat is 5.9 and 13.5 kg, (P <0.05), milk yield 4% milk - by 149.7 and 339, 6 kg (P <0.05), body weight - 62 and 59 kg higher than that of groups I and III cows. The highest yield of 4% milk per 100 kg of body weight was observed in the group I of cows, which produced 100 kg of body weight, respectively, by 113.6 (P > 0.01) and 53.1 kg more than their peers of II and III groups. The yield of I, II and III groups of cows for III

lactation as compared with I lactation increased respectively by 601.3 kg (9.23%), by 613.0 kg (9.21%), 352.3 kg (5.42 %) and they showed a fairly high genetic potential of milk production.

We studied milk production depending on various factors. Table 4 shows the results of studying the productivity of cows in conjunction with the body weight.

Table 4
The Dependence of milk productivity of cows of experimental groups III of lactation and older on body weight

Body weight (kg)	Number of cows	Milk yield (kg)	Fat content in milk (%)	Milk fat yield (kg)	4% fat-corrected milk (kg)
Group I					
Up to 500	7	7180±57,9	3,87±0,04	277,8±5,0	6946,6±46,3
501-550	8	7030±116,9	3,93±0,03	276,3±3,4	6906,9±87,7
551-600	1	7780,0	3,90	303,4	7585,5
601-650	4	6900±190,0	3,92±0,05	270,5±4,7	6762,0±161,0
Group II					
Up to 520	1	7100,0	3,90	276,9	6922,5
521-570	8	7116,2±84,5	3,91±0,03	278,2±4,4	6956,1±71,3
571-620	5	7450±70,7	3,95±0,07	294,3±4,7	7356,9±61,4
621-670	2	7300±70,7	3,95±0,07	288,3±3,9	7208,7±55,7
671-720	1	6908,0	3,90	269,4	6735,3
721 kg and more	3	7510±152,1	3,87±0,04	290,6±6,2	7265,9±132,5
Group III					
Up to 500	5	6950±152,7	3,92±0,05	272,4±4,4	6811±125,3
501-550	7	6621,4±422,7	3,96±0,02	262,2±11,2	6555,2±325,1
551-600	5	7040±145,1	3,92±0,03	275,9±7,3	6899,2±115,4
601-650	3	6966,7±248,3	3,93±0,04	273,8±10,7	6844,8±203,7

The data in Table 4 show that in group I, the milk production of cows increases due to an increase in body weight up to 600 kg, then the yield decreases by 880 kg, in group II the increase in body weight up to 721 kg and higher provides an improvement in milk yield by 60-602 kg, the yield of milk fat 2.3-13.7 kg, milk yield 4% milk 57.2-343.4 kg.

In group III, cows with a body weight of up to 500 kg, from 551 to 650 kg, had similar milk productivity indicators and there were no significant intergroup differences. However, the yield of cows with a body weight of 551-600 kg was 418.6 kg, the yield of milk fat was 13.5 kg, the yield of 4% milk was 344.0 kg higher than that of peers with a body weight of 501-550 kg.



As for intergroup differences, cows of group II showed a more stable and at the same time high milk productivity. In full-aged cows of this group with a live weight of 721 kg and higher, the yield was significantly 610-543.1 kg higher than that of peers of groups I and III, respectively. In addition, the yield of II group cows with a given body weight was 60–602 kg higher than that of their peers with another weight in this group.

Thus, studies have shown that in Holstein cows, regardless of the origin in all lactations, an increase in

body weight contributes to an increase in milk yield, the yield of milk fat and milk yield of 4% milk. This indicates that the selection of cows in the herd, taking into account body weight, is an important event in the creation of highly productive dairy herds.

We have also studied the milk productivity of cows, depending on the duration of the service period (table 5).

Table 5
Productive indicators of cows of experimental groups for III lactation and older, depending on the duration of the service period ($\bar{X} \pm Sx$)

Indicators	Duration of the Service period, days			
	up to 80 days	up to 81-90	91-100	101 and more days
	Group I			
Number of cows	9	6	4	1
Milk yield (kg)	7012,2±107,4	7118,3±108,4	7357,5±185,5	6950,0
Cv, %	4,33	3,41	4,37	
Fat content in milk (%)	3,89±0,03	3,93±0,02	3,88±0,03	4,0
Cv, %	2,39	2,07	1,29	
Milk fat yield (kg)	272,8	279,7	285,5	278,0
4% fat-corrected milk (kg)	6819,4	6993,7	7136,8	6950,0
	Group II			
Number of cows	8	3	8	1
Milk yield (kg)	7265±110,8	7383,3±89,0	7212,5±83,7	7350,0
Cv, %	4,04	1,70	3,07	
Fat content in milk (%)	3,89±0,02	3,93±0,08	3,90±0,03	3,90
Cv, %	1,65	2,93	1,93	
Milk fat yield (kg)	282,6	290,2	281,3	286,6
4% fat-corrected milk (kg)	7065,2	7254,1	7032,2	7166,2
	Group III			
Number of cows	7	6	7	-
Milk yield (kg)	6957,1±98,9	6900±104,9	6692,8±482,4	-
Cv, %	3,48	4,0	16,1	
Fat content in milk (%)	3,97±0,02	3,93±0,02	3,91±0,03	-
Cv, %	1,23	1,31	1,76	
Milk fat yield (kg)	276,2	271,1	261,7	-
4% fat-corrected milk (kg)	6904,9	6779,2	6542,2	-

CONCLUSION

1. The Holstein cows of the European selection have a high genetic potential of milk production and are distinguished by the ability to display it quite high in the specific conditions of the hot climate of Uzbekistan.

2. It has been found out in studies that, regardless of origin, an increase in body weight of cows provides an increase in milk yield, milk fat yield, milk yield of 4% milk. This indicates that the use of selection and selection of livestock, taking into account live weight provides a qualitative improvement of dairy herds.

3. Milk productivity is interrelated with the duration of the service period. In Group I, the highest milk yield (7357.5) was characterized by cows with a

service period of 91-100 days, in II group – (7383.3 kg) 81-90 and in the III group - (7040.0 kg) up to 80 days. Accounting for these features in breeding work contributes to the development of highly productive dairy herds.



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