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Productivity of Cows in the Experimental Group with Black-and-White and Its Crossbreeds with Holstein Bulls

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Abstract:

This article presents data obtained during research on the milk productivity, milk composition, and milk fat yield of black-and-white cows and their crossbreeds with Holstein bulls, selected in Poland, Germany, and the Netherlands, resulting from the successful breeding using a valuable black-and-white bull and its offspring.

Keywords: Black-and-white bull, milk, productivity, lactation, selection, experimental group, milk fat.

Introduction

In recent years, in the context of international cooperation and in the Republic of Uzbekistan, there has been a trend towards improving the breed and productivity characteristics of black-and-white bulls in order to utilize efficiently the gene pool of these bulls, unique to the world. It is essential to emphasize that the successful use of this bull in various countries is increasing through the import of its descendants, which are obtained through mating and crossbreeding, and through the application of modern breeding and selection methods.It should be noted that the two alleles of black and red color are present in this bull. Black-colored bulls are often used to enhance the beneficial traits of black-and-white cows, while red-colored bulls are used to improve the productive features of Simmental and other breeds.

Research Object: The research focuses on black-and-white cows (Group I) and their first (Group II) and second (Group III) generation offspring obtained by crossbreeding with Holstein bulls. Additionally, black-and-white cows from Germany (Group IV), Poland (Group V), and the Netherlands (Group VI) selected by breeding were chosen.

Research Objective: The aim of the research is to analyze the live weight indicators, milk quantity during lactation, milk fat yield, and milk protein yield of cows belonging to different genotypes.

Results and Analysis: Our research results indicate that black-and-white cows selected in Germany, Poland, and the Netherlands have higher milk productivity compared to black-and-white bulls and crossbreeds with different genotypes (Table 1).

The analysis of this table indicates that in the I-experimental group, cows produced an average of 4024.7 kg of milk during lactation. This is significantly lower in comparison to their counterparts in the II, III, IV, V, and VI experimental groups, showing reductions of 964.3 kg ($P<0.01$) or 25.0%, 1692.4 kg ($P<0.01$) or 42.1%, 5022.1 kg ($P<0.001$) or 124.9%, 4913.2 kg ($P<0.001$) or 122.1%, and 5613.2 kg ($P<0.001$) or 139.5%, respectively. It appears that the highest milk yield is observed in cows belonging to the Dutch selection, reaching 9637.9 kg. These indicators, in relation to cows from the German and Polish selections of Holstein cattle, show significant differences of 591.1 kg ($P<0.05$) or 6.5% and 700 kg ($P<0.01$) or 7.8%, respectively.

Similarly, cows from the Dutch selection outperform both black-and-white (I-group) and various genotypes of the same breed (II, III-group) in terms of milk production: 4648.9 kg ($P<0.001$) or 93.2% and 3920.8 kg ($P<0.01$) or 68.6% improvement, respectively.

The crossbreeding of cows belonging to the black-and-white bull with the Holstein cow, the first and second generations obtained an advantage over the purebred black-and-white cow. There is no significant difference observed in the group-level parameters of fat and protein in milk composition. Evaluating cows based on the 4% fat-adjusted milk is considered the most convenient and objective method for assessing dairy productivity.

The study reveals that cattle belonging to the Gollandiya and Germaniya selection significantly outperform others. In terms of black-and-white Holstein cows, their milk production is notably higher, with a 24.6% increase, reaching 945.9 kg ($P<0.01$) and 44.6% increase, reaching 1716.1 kg ($P<0.01$).

The key indicator reflecting the quality of milk production is the yield of milk fat and milk protein. High-level milk fat yield was observed in Gollandiya-selected Holsteins, reaching 383.5 kg. In this regard, they outperformed their counterparts in I, II, III, IV, and V experimental groups by 149.3%, 100.1%, 72.4%, 7.3%, and 8.4%, respectively.

Similarly, in terms of milk protein yield, VI experimental group cows exceeded others by 143.1%, 95.6%, 70.1%, 6.9%, and 8.2% compared to I, II, III, IV, and V groups, respectively

Milk yield of experimental cows(n=15)

Indicators	Groups					
	I		II		III	
	$\pm S_x$	Sv,%	$\pm S_x$	Sv,%	$\pm S_x$	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
Proten index of milk, %	3,33±0,006	0,60	3,34±0,005	0,60	3,35±0,0045	0,51
4%fat milk	3843,9±45,8	4,40	4789,8±79,6	6,10	5560,0±148,4	9,90
Fat yield of milk, kg	153,8±1,8	4,40	191,6±3,2	6,10	222,4±5,6	9,40
Proteyn yield, 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	-
And non-fat dry milk residue %	8,6±0,13	-	8,5 ±0,01	-	8,4±0,008	-

continuation

Indicators	Groups					
	I V		V		VI	
	X±S_x	Cv,%	X±S_x	Cv,%	X±S_x	Cv,%
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
Proten index of milk, %	3,37±0,005	0,59	3,37±0,005	0,59	3.38±0,003	0,30
4%fat milk	8933,5±118,8	4,90	8847,1±134,8	5,60	9588,6±190,6	7,30
Fat yield of milk, kg	357,3±4,7	4,90	353,9±5,4	5,60	383,5±7,6	7,30
Proteyn yield, 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	-
And non-fat dry milk residue %	8,4±0,005	-	8,4±0,008	-	8,3±0,005	-

In conclusion, the cattle in the experimental group demonstrated higher milk productivity due to their adherence to standard animal husbandry practices. The results indicate that Holstein cattle from the Gollandiya selection contribute significantly to improving milk yield and enhancing the morpho-functional characteristics of the cattle population.

References:

1. Gulmurod o‘g, Pardayev Ro‘ziboy, et al. "O ‘ZBEKISTONDA CHORVA MOLLARI BOSH SONINING BUGUNGI HOLATI VA RIVOJLANISH ISTIQBOLLARI." *AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI* (2023): 71-77.
2. Tursunmurodovich, Raximov Utkir, et al. "RESPUBLIKAMIZDA CHORVACHILIK VA PARRANDACHILIKDAN OLINGAN MAHSULOTLAR." *AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI* (2023): 1-6.
3. Tursunmurodovich, Raximov Utkir, et al. "TAJRIBA GURUHIDAGI GOLSHTIN SIGIRLARNING I-LAKTATSIYADA OZUQANI SUT BILAN QOPLASH DARAJASI." *AGROBIOTEXNOLOGIYA VA VETERINARIYA TIBBIYOTI ILMIY JURNALI* (2023): 176-182.
4. Пардаев, Р. Г., et al. "ТАЖРИБАДАГИ БУҚАЧАЛАРНИ ОЗИҚЛАНТИРИШ." *AGROBIOTEXNOLOGIYA VA VETERINARIYA TIBBIYOTI ILMIY JURNALI* (2022): 830-833.
5. Пардаев, Р. Г., et al. "ТАЖРИБАДАГИ БУҚАЧАЛАР ИСТЕЪМОЛ ҚИЛГАН ОЗУҚАСИНИ ТИРИК ВАЗН БИЛАН ҚОПЛАШ ХУСУСИЯТЛАРИ." *AGROBIOTEXNOLOGIYA VA VETERINARIYA TIBBIYOTI ILMIY JURNALI* (2022): 826-829.
6. Бойбулов, Б. Ш., Р. Г. Пардаев, and Қ. Э. Мусурмонов. "ҚОРАМОЛЧИЛИКНИ РИВОЖЛАНТИРИШДА ТЎЙИМЛИ ОЗИҚЛАНТИРИШ, АСРАШ ВА СУНЪИЙ ҚОЧИРИШНИНГ АҲАМИЯТИ." *AGROBIOTEXNOLOGIYA VA VETERINARIYA TIBBIYOTI ILMIY JURNALI* (2022): 528-530.
7. Nomozova, O., R. Pardayev, and E. Shaptakov. "TAJRIBA GURUHIDAGI SIGIRLARNING PUSHTDORLIK KO ‘RSATKICHLARI." *INTERNATIONAL CONFERENCES*. Vol. 1. No. 13. 2022.