

Features of Lactation Period of Cows of Different Breeds and Co-Breeds

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Annotation: The lactation period is a critical physiological phase that directly affects the overall productivity and reproductive efficiency of dairy cattle. This study focuses on the distinctive characteristics of the lactation period among cows of various pure breeds and crossbreeds. Through comparative analysis, the research evaluates key indicators such as the duration of lactation, peak milk yield, persistency, and milk composition across different genetic groups. The study includes Holstein, Simmental, and crossbred cows maintained under uniform feeding and housing conditions. Results indicate that breed significantly influences lactation traits, with Holstein cows demonstrating higher peak yields and Simmental cows showing more stable lactation curves. Crossbreeds displayed a balanced profile, often combining the advantageous traits of both parental breeds. These findings emphasize the importance of breed selection and crossbreeding strategies in optimizing lactation performance and improving

overall herd efficiency in dairy farms.

Keywords: breeds and co-breeds, to have different economic characteristics, Productivity, milk yielding capacity/ ratio, Holstein breed

INTRODUCTION

"Strategies of the actions on five priority areas of development plan of the Republic of Uzbekistan for the period of 2017-2021". Special attention is paid to meet the growing demands of population, gradually development of agricultural production, further strengthening of country's food security ambitions, increase in the production of environmentally friendly products, accelerated development of livestock. Particular attention is paid to the growing demand for livestock products. One of the current priorities is to increase meat, milk, eggs, fish and other products in the country's food market. In this regard, special attention is paid to improve the features of breed and productivity of livestock. One example is the livestock sector, which has evolved in recent years to improve livestock production, which is the main livestock sector, and to improve its gene pool:

A fact is that about 70,000 units of cattle, such as Holstein breed, Phlegfix and red-steppe cattle breeds were imported from developed countries such as the Republic of Belarus, Ukraine, Poland, Austria, Germany, the Netherlands, Hungary, Sweden and other countries in order to improve the livestock reproduction based on modern requirements.

These breeds are widely used together with hybrid breeding, as well as for pure cross-breeding. This breeding method allows to improve existing breeds and create new ones, as hybrids of the first generation of hybrids are exposed to "heterozygous" process, which increases livestock life and its resistance to various environmental impacts and, most importantly, increases their productivity.

It is well known that today more than a thousand cattle breeds are cultivated in different natural and climatic conditions of the world. Among these breeds, the genus Holstein breed, which belongs to the global gene pool, is noted for its high milk productivity.

As a result of efficient use of the Holstein gene pool, there have been created productive herds, animal populations and even new breeds in different areas and regions. The breed is used effectively in the Republic of Uzbekistan. There are about 500 breeding farms to reproduce Holstein breed, and only in Samarkand region there are about 100 of such kind of farms. The study of the economic usefulness of the signs of pure and different genotype of the offspring of this breed determines topicality of the topic.

The methods and materials

The research was carried out within the planned theme and the experimental part was carried out at “Siyob Shavkat Orzu” cattle-farm in Taylak district of Samarkand region. There were chosen 90 units of breeding cattle for the experiment, which belong to the same breed and co-breeds, i.e. similar in origin, the same in body weight and had the same lactation period. The group I consisted of purebred Black and White Holstein breeds. The first (F1) and second (F2) groups consisted of hybrid offsprings, the fourth group included the German breeds, the V group included the cattle from Polish breeder and Holstein breeds from Holland. The number of cows in the experimental groups was 15 animal units in all groups, where the conditions of feeding and keeping the animals were the same. It is very important to study the lactation period of cows when assessing the milk productivity and milk quality. Keeping in mind, we have analyzed these issues in terms of breeding in this article.

Results and Discussions

The analysis shows that the selecting of cattle depends on outer appearance and body. But these features can't help to define livestock yield. Therefore, special calculations were made to determine the milk-yields of cows. That is, there was carried out milk monitoring every 10 days 3 times a month during a year. The cows are milk made at AFIMILK, the milking department of the cattle farm to determine the amount of milk that is taken while breastfeeding. The milk lasting qualities was equal to 105.9 in the cows of the experimental group I. Proportions of cows in the experimental group II, III, IV, V and VI were as follows: 103,8; 102,6; 101,9; 100,4 and 101,4 or the difference between equivalents are: 2,1; 3,3; 4,0; 5,5 and 4,5.

It is clear that the best results were observed in Dutch cows. The milk yield index is well-proportioned to the number of cows in the experimental group: 43,3-96,6; 49,7-95,3; 57,6-96,8; 69,9-97,6; 70,8-97,7; 70,5-97,1 animal units.

Increase in milk productivity was observed in all cows in the experimental group during 3 months of lactation period. However, the cows of Holstein breed of Dutch selection of group IV were giving milk at the amount of 1117,7 kg during the 3 months of lactation period.

Table #1

The features of lactation period in cows of experimental group (n=15)

I – Lactation period	Groups																	
	I			II			III			IV			V			VI		
	Milk rate , kg	The steadiness ratio of in-milk	of decreasing of milk rate in	Milk rate , kg	The steadiness ratio of in-milk	of decreasing of milk rate in	Milk rate , kg	The steadiness ratio of in-milk	of decreasing of milk rate in	Milk rate , kg	The steadiness ratio of in-milk	of decreasing of milk rate in	Milk rate , kg	The steadiness ratio of in-milk	of decreasing of milk rate in	Milk rate , kg	The steadiness ratio of in-milk	of decreasing of milk rate in
I	269,9	100	50,3	377,3	100	57,9	466,8	100	66,7	767,8	100	73,4	788,6	100	77,1	842,1	100	75,3
II	438,7	162,3	81,7	561,6	148,8	86,3	662,7	142	94,7	982,8	128	94	984,9	124,9	96,3	1026,4	121,9	91,8
III	536,8	122,4	-	650,9	115,9	-	699,9	105,6	-	1045,8	106,4	-	1022,9	103,8	-	1117,7	108,9	-
IV	518,7	96,6	96,6	620,4	95,3	95,3	677,6	96,8	96,8	1021,1	97,6	97,6	999,7	97,7	97,7	1000	97,1	97,1

																8 5, 2		
V	496, 2	95,6	92,4	574, 9	92,7	88,3	640, 2	94,5	91,4	989,9	96,9	94,6	962	96,2	94	1 0 3 9, 7	95, 8	93
VI	453	91,3	84,4	532, 9	92,7	81,9	600, 8	93,8	85,8	943	95,2	90,1	923	88,8	90,2	9 9 7, 7	95, 9	89,2
VII	413, 8	91,3	77,1	503, 8	94,5	77,4	572, 6	95,3	81,8	908,2	96,3	86,8	894,5	96,9	87,4	9 6 8, 6	97, 1	86,6
VIII	362, 7	87,6	67,6	455, 8	90,5	70	531, 9	92,9	75,9	861,6	94,9	82,4	854	95,4	83,5	9 2 0, 4	95	82,3
IX	302, 6	-	56,4	387, 8	-	59,6	461, 2	-	65,9	795,8	-	76,1	783,4	-	76,6	8 5 2, 3	-	76,2
X	232, 3	-	43,3	323, 6	-	49,7	403, 4	-	57,6	730,8	-	69,9	724,9	-	70,8	7 8	-	70,5

																7, 8		
As per in- milk perio d	4025	105,9	-	4989	103,8	-	5717	102, 6	-	9046, 8	101,9	-	8937, 9	100,4	-	9 6 3 7, 9	10 1,4	-

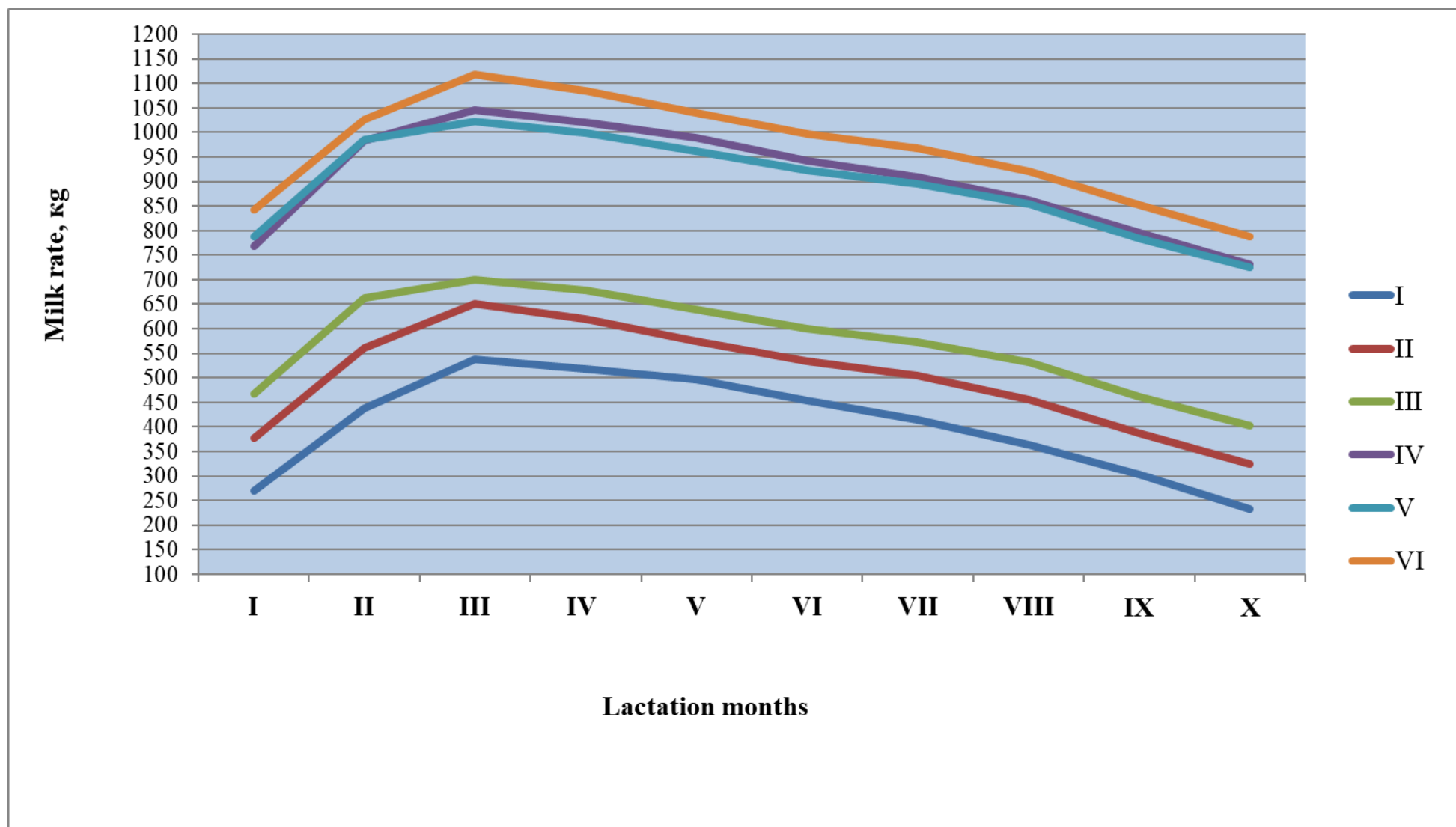


Table #1. Curve changes of lactation period in I-lactation group of experimental groups

According to these indicators they can be compared to their herd mates. I, II, III, IV and V pilot groups respectively: 580,9 кг (P<0,001) or 51,9%, 466,8 кг (P<0,001) or 41,7%, 417,8 кг (P<0,001) or 37,3%, 71,9 кг (P<0,001) or 6,4% and 94,8 кг (P<0,001) or 8,4% behind.

The overbalance on milk yield during in-milk period belongs to cows of IV group of the experimental cows. The milk yield of cows of that group was equal to 9637,9 кг. It was the highest milk rate compare to their herd mates: 5613,2 кг (P<0,001), 4648,9 (P<0,001), 3920,8 кг (P<0,001), 591,1 кг (P<0,001), 700,0 кг (P<0,001).

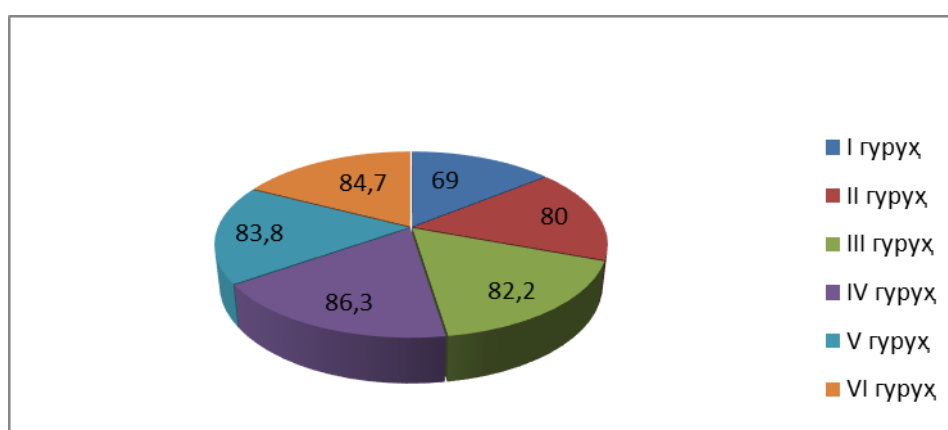


Figure #1. Steady milk productivity of milk rate of cows in experimental group %.

It is obvious that the cows, which belong to German breeding in the IV experimental group, had the highest level of steadiness (86.3%), while the lowest level of steadiness was shown by the cows, related to pure breed of black and white (69%). In our research we took into account and analyzed the maximum daily amount of milk yield of the cows in experimental groups and these data are shown in Figure #2.

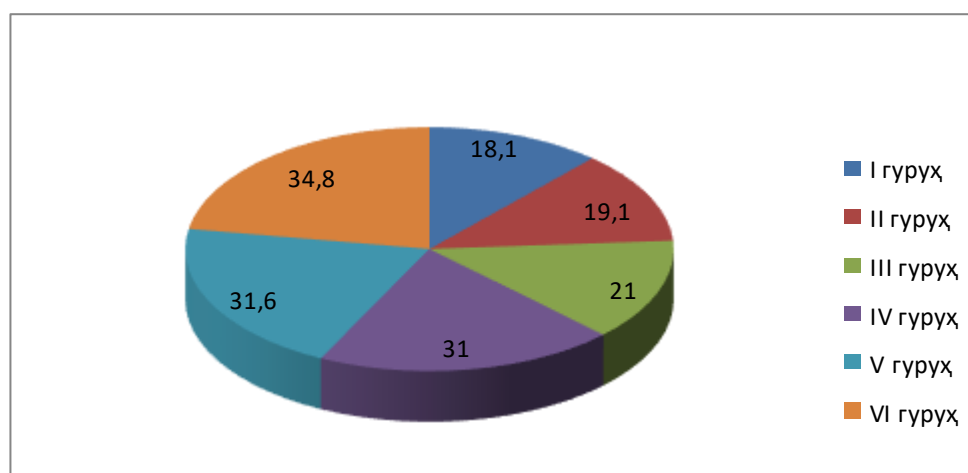


Figure #2. The highest milk yield of cows in lactation period, kg.

As it is shown in Figure #2, the highest daily milk productivity was observed in cows of group IV, which belong to Dutch breeding and it was equal to 34.8 kg. According to this rate, these cows have a higher preference than their herd mates I, II, III and V experimental groups as follows: 16,7 kg ($P<0,01$) or 48,0%, 15,7 kg ($P<0,01$) or 45,1 %, 13,8 kg ($P<0,01$) or 39,6%, 0,8 kg ($P<0,01$) or 2,2% and 3,2 kg ($P<0,01$) accordingly or 9,1 %.

Conclusion. The features of lactation period of imported Holstein breeds, which are different breeds rather than geno type species of different selections, which were obtained by crossing of black and white and Holstein breeds.

It should be noted that it is necessary to provide cross-breeding of different breeds with adequate quality diets and to ensure proper preservation, keeping and management of animals using effective energy-saving technologies.

The list of used literature

1. I.Maksudov. Improving the technology of management of Black and white first-calf heifer breed in hot climates. Dissertation for the degree of D.Sc. in agricultural sciences. Tashkent, 1994, pages 15-20.
2. N.Narzullaev, U.Salimova. The productivity of cows of different breeds. Journal of Uzbekistan's agriculture. // 2004. Publication №2. Page 17.
3. M.H.Dosmuhamedova. conditions of tolerance to heat and milk productivity of cows with different genotypes of Holstein breeds. //Zooveterinary 2008. Publication №9, pages 30-31.
4. A.K.Kakharov, M.K.Narbaeva, Sh.E.Kurbonova, O.A.Mahmadiyorov. Zoocultural and economic efficiency of animal husbandry in production of Holstein breeds. // "Zooveterinary" 2013. Publication № 1. Pages 46-47.
5. A.K.Kakharov and others. The milk productivity of Black and white Holstein breed cows. // "Zooveterinary" 2015. Publication № 6. Pages 30-32.
6. J.N. Hujamov. The measures to increase milk productivity of cows of different breeds and co-breeds. // Dissertation for the degree of D.Sc. in agricultural sciences. Samarkand 2019, pages 12-14.