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RESULTS OF THE TARGETED SELECTIVE AND BREEDING WORK OF THE SIMMENTAL RED-AND-MOTLEY BREED OF DAIRY CATTLE

Abstract. The article presents the characteristics of selective-breeding work with the "Ertis" red-and-motley cattle of the Simmental breed created by scientists of the KazSRIAB&FP LLP, on the basis of improving the Simmental breed of cattle in the direction of raising dairy productivity using the gene pool of imported servicing bulls.

The aim was to summarize the results of targeted selective and breeding work for the period after approbation of animals of the new "Ertis" red-and-motley dairy type of cattle of the Simmental breed by the example of the herd of Kirov LLP, as well as the current state of their productivity.

The average indices of productivity of the main selection traits were taken into account, such as milk yield for 305 days of lactation, fat and protein percentage, live weight, and also their average duration of productive use. Where the percentage of fat and protein was determined by modern devices on the analyzers of the integrated milk quality system (Milkoscan FT+, Fossomatic FT+) and statistical data were processed according to standard methods.

As a result, for the period 2009 - 2016, a significant increase in the productivity of cows was achieved, the average milk yield for 305 days in lactation in the herd was increased by 2089 kg or 54.4% (from 3829±42.3 to 5928±27.8).

According to the last completed lactation, the average milk yield per cow for 305 days by the first lactation was 5040.1±65.16 kg of milk (n=108), by the second - 5814.1±49.66 kg (n=385), by the third and older lactation 6269.7±37.76 kg (n=410).

The average duration of productive use of cows was 2.8 lactations (lim 1-9), of which the third and older lactations were 45.4%.

Thus, the targeted selective and breeding work to improve the productive qualities of the "Ertis" red-and-motley type of cattle of the Simmental breed in the Kirova LLP is quite profitable and acceptable for further breeding and its selection preservation.

Keywords: breed, intra-breed type, cow, milk, lactation, gene pool, productive longevity, selection.

Introduction. Currently, one of the main methods of improving low-productive breeds of dairy cattle is the use of the gene pool of foreign high-yielding livestock breeds. One of the key tasks should be the creation of genotypes of dairy cattle, which combines the high dairy productivity of the world's breeding achievements with the preservation of the adaptive potential of the gene pool of domestic breeds.

With the aim of qualitative transformation of the Simmental breed of cattle in the direction of increasing the dairy productivity and improving the morphofunctional properties of the udder, in the breeding zone of the breed since 1986, under the scientific supervision of the researchers of KazSRIAB&FP LLP, large-scale works on the use of imported servicing bulls of the intensive dairy breeds: Montbeliarde, Holstein red-and-motley, German red-and-motley and Ayrshire.

As a result of many years of work, by the efforts of scientists and practitioners, in 2009 a new intra-breed "Ertis" red-and-motley dairy type of Simmental breed was created and tested. According to the data of the researchers [1-3], during the approbation of the "Ertis" red-and-motley cattle, in contrast to Simmental animals, it exceeds the milk yield, on average for all lactations by 1500 kg, or 73% by the first

lactation, 57 % - by the second, for 46% - by the third and older. In comparison with the original gene pool of the mother breed (56th volume of the SSB of Simmental breed), this superiority is 95%, or more than 100 kg of milk per lactation. As for live weight and fat content in milk, cows conform to the Simmental breed standard; the indicators of development of young animals in all age periods are also at the level of the standard of the breed or exceed it.

A positive shift is also achieved in the selective improvement of the morphofunctional properties of the udder, its suitability for machine milking. More than 2/3 of the cow population of the created dairy type have a bath- and cup-shaped udder, which is 1.7 times larger than in the original Simmental breed. More than 30% increased the intensity of milk yield and at present is 1.42 kg/min.

The main array of the created population is represented by animals of strong and solid constitution, with a sufficient broad and deep chest, a harmonious physique close to the dairy type. The colour is predominantly red and mottled. The adaptability to long-term maintenance in the arid dry-steppe zone is preserved.

The aim of the work was to summarize the results of targeted selective and breeding work for the period after approbation of animals of the new "Ertis" red-and-motley dairy type of cattle of the Simmental breed on the example of the herd from Kirova LLP.

Object and methodology. Scientific research was conducted in Kirova LLP in the Pavlodar region on the breeding herd of the "Ertis" red-and-motley type of cattle of the Simmental breed. The documents of primary zootechnical and pedigree records served for the analysis of productivity.

The milk yield was determined by monthly control milk yield with conversion to 305 days of lactation, the fat and protein content in milk was determined by modern devices on the analyzers of the integrated milk quality system (FOSS electric, Denmark).

The class composition of cows was identified in the course of livestock judgement during the year according to the instructions for the bonitation of dairy and dairy-meat cattle [4].

Analysis of the traits of cows for dairy productivity and the duration of productive longevity were processed by methods of variation statistics using the MS Excel computer program [5].

Results of the research. In consequence of targeted selective and breeding work with the Kirova LLP herd, a significant increase in the productivity of cows was achieved in 8 years after the approbation of the "Ertis" new red-and-motley dairy cattle type of Simmental breed (table 1).

Table 1 – Growth dynamics of average milk yield of cows in the herd

#	Years	Number of cows, heads	Average milk yield per cow, kg	Difference by years	
				kg	%
1	2009	572	3839 ± 42,3		
2	2010	898	3825 ± 33,1	- 14	- 0.4
3	2011	763	4003 ± 37,5	+ 178	+ 4.8
4	2012	532	4046 ± 35,1	+ 43	+ 1.2
5	2013	459	4570 ± 38,8	+ 524	+ 12.9
6	2014	618	4924 ± 51,5	+ 342	+ 7.7
7	2015	797	5234 ± 56,6	+ 310	+ 6.3
8	2016	903	5928 ± 27,8	+ 694	+ 13.3

Thus, the average milk yield for 305 days in lactation in the herd increased by 2089 kg or 54.4% (from 3829±42.3 to 5928±27.8). However, it should be noted that the dynamics of increasing the milk yield of cows from year to year have been uneven. This is due to the natural and climatic conditions of certain years and maintenance conditions since the main milk yield is obtained in the summer pasture period.

The modern herd of Kirova LLP by average milk yield per cow exceeds the average indicator for Pavlodar oblast by 3274 kg or 128.6% of milk (5828 - 2554 kg) (table 2).

According to the last completed lactation, the average milk yield per cow for 305 days was 5040.1±65.16 kg of milk (n=108) by the first lactation. By the second lactation it was 5814.1±49.66 kg

Table 2 – The modern characteristics of cow productivity in the context of lactation

#	Lactation period	n	Milk yield for 305 days of lactation, kg		Fat, %		Protein, %		Live weight, kg	
			X ± m	Cv	X ± m	Cv	X ± m	Cv	X ± m	Cv
1	1 lactation	108	5040.1 ± 65.16	13.4	3.92 ± 0.01	2.3	3.31 ± 0.00	1.1	431.9 ± 1.88	4.5
2	2 lactation	385	5814.1 ± 49.66	16.8	3.93 ± 0.00	2.2	3.32 ± 0.00	1.4	475.2 ± 1.40	5.8
3	3 lactation and older	410	6269.7 ± 37.76	12.2	3.94 ± 0.00	2.5	3.26 ± 0.01	3.4	571.9 ± 1.43	5.1
4	Total:	903	5928.4 ± 90.10	15.8	3.93 ± 0.01	2.4	3.29 ± 0.01	2.6	514.0 ± 5.87	11.9

(n=385), by the third and older ones - 6269.7±37.76 kg (n=410), the fat content of milk, according to lactations respectively: 3.92%; 3.93%, 3.94%, protein content - 3.31%; 3.32%; 3.26%, live weight - 431.9±1.88; 475.2±1.4; 571.9±1.43 kg.

Of the total cow population of the herd, 77 animals were selected for breeding group according to the exteriors and productive qualities, their average yield was 7787.7±25.15 kg, fat in milk - 3.96±0.01%, protein 3.219±0.01 % and live weight - 524.1±5.85 kg.

The main indicator of animal adaptation to local conditions of maintenance and feeding is the duration of the productive longevity of cows. The process of intensification of dairy cattle breeding is accompanied by a significant reduction in the period of economic use of cows. According to many researchers in Canada, the USA, Russia, the productive use of cows does not exceed 2-3 lactations [6-9].

The average duration of productive use of cows in the herd of Kirova LLP was 2.8 lactations (lim 1-9), while the number of animals of the 3rd and older lactation was 45.4% (table 3).

Table 3 – Average duration of productive use of cows

#	Lactation	n	Milk yield for 305 days, kg		Fat, %		Protein, %		Live weight, kg	
			X ± m	Cv	X ± m	Cv	X ± m	Cv	X ± m	Cv
1	1 st	108	5040.1 ± 65.16	13.4	3.92 ± 0.01	2.3	3.31 ± 0.00	1.1	431.9 ± 1.88	4.5
2	2 nd	385	5814.1 ± 49.66	16.8	3.93 ± 0.00	2.2	3.32 ± 0.00	1.4	475.2 ± 1.40	5.8
3	3 rd	184	6244.8 ± 61.28	13.3	3.94 ± 0.01	2.6	3.31 ± 0.00	1.8	568.5 ± 2.33	5.6
4	4 th	159	6326.6 ± 53.97	10.8	3.94 ± 0.01	2.7	3.23 ± 0.01	4.1	576.9 ± 2.06	4.5
5	5 th	19	6366.4 ± 175.62	12.0	3.92 ± 0.02	2.7	3.24 ± 0.03	3.5	572.9 ± 6.23	4.7
6	6 th	24	6227.9 ± 161.07	12.7	3.93 ± 0.02	1.9	3.18 ± 0.03	4.1	562.5 ± 5.41	4.7
7	7 th	8	5918.5 ± 185.33	8.9	3.96 ± 0.04	2.7	3.16 ± 0.04	3.4	570.0 ± 8.24	4.1
8	8 th	15	6170.5 ± 214.97	14.7	3.94 ± 0.02	1.7	3.24 ± 0.03	3.3	578.0 ± 7.63	5.1
9	9 th	1	5276.0		3.89		3.20		560.00	

From the analysis of the studied cows of the herd, it was established that full-grown cows (3rd lactation and older) show the greatest productivity - 6269.7±37.76 kg in the range of 5276-6326 kg.

In the age aspect, the fat and protein content in milk is not significantly different. The live weight showed an increase with age of the animals from 431.9 to 570.0 kg.

Thus, from the obtained data it follows that the targeted selective-breeding work to improve the productive qualities of the "Ertis" red-and-motley cattle of the Simmental breed is quite profitable.

Duration of productive use of cows of the herd of the Kirova LLP is acceptable for further breeding and its selection conservation.

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СИММЕНТАЛ ТҰҚЫМЫ СҮТТІ МАЛЫ ҚЫЗЫЛ-АЛА ТҮРІНІҢ МАҚСАТТЫ СЕЛЕКЦИЯЛЫҚ-АСЫЛДАНДЫРУ ЖҰМЫСЫНЫҢ НӘТИЖЕЛЕРІ

Аннотация. Мақалада симментал ірі қара мал тұқымын жақсарту мақсатында сүт өнімділігін көтеру үшін, шетелдік өндіріші-бұқалардың генофондын қолдану арқылы "ҚазМШЖШӨҒЗИ" ЖШС ғалымдарының ғылыми жетекшілігімен құрылған симментал тұқымының "Ертіс" қызыл-ала түрінің малдарымен селекциялық-асыл тұқымдық жұмыстары жүргізілгендігі жайлы сипаттама берілген.

Алдыға қойылған мақсат болып, симментал тұқымының жаңа "Ертіс" қызыл-ала сүтті мал түрлерін сынақтан өткізгеннен кейінгі кезеңде мақсатты селекциялық-асылтұқымдық жұмысының нәтижелерін қорытындылау, сондай-ақ олардың өнімділігінің қазіргі жай-күйі есептелді, мысал ретінде "Киров" ЖШС мал табыны алынған.

Негізгі селекциялық белгілердің орташа өнімділік көрсеткіштері ескерілді, атап айтқанда, 305 күн ішіндегі сауым, май мен ақуыз пайызы, тірі салмағы, сондай-ақ өнімді пайдаланудың орташа ұзақтығы. Мұнда май мен ақуыз пайызы сүт сапасының интеграцияланған жүйесінің (Milkoscan FT+, Fossomatic FT+) анализаторларында қазіргі заманғы аспаптармен анықталған және жалпы қабылданған әдістемелер бойынша деректерді статистикалық өңдеу жүргізілді.

Нәтижесінде 2009 жылдан 2016 жылға дейінгі кезеңде сиырлардың өнімділігі айтарлықтай жоғарылап, сиырдың орташа сауымы 305 күнге табын бойынша 2089 кг немесе 54,4% ($3829 \pm 42,3$ -тен $5928 \pm 27,8$ -ге дейін) өсті.

Соңғы аяқталған лактация бойынша сиырға орташа сауым 305 күн ішінде бірінші лактация бойынша $5040,1 \pm 65,16$ кг сүтті ($N=108$), екіншісінен $5814,1 \pm 49,66$ кг ($N=385$), үшінші және одан жоғары лактация бойынша $6269,7 \pm 37,76$ кг ($N=410$) құрады.

Сиырларды өнімді пайдаланудың орташа ұзақтығы 2,8 лактация (lim 1-9) құрады, оның ішінде 3-і және одан жоғары лактация 45,4%.

Осылайша, "Киров" ЖШС табындағы симментал тұқымының "Ертіс" қызыл-ала түрі асыл тұқымды малдарының өнімділік сапасын жетілдіру бойынша мақсатты селекциялық-асылтұқымдық жұмысы тиімді және де оны одан әрі өсіру мен оны селекциялық сақтау үшін қолайлы.

Түйін сөздер: тұқым, тұқым ішіндегі түр, сиыр, сүттілік, лактация, генофонд, өнімді ұзақ өмір сүру, селекция.

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РЕЗУЛЬТАТЫ ЦЕЛЕНАПРАВЛЕННОЙ СЕЛЕКЦИОННО-ПЛЕМЕННОЙ РАБОТЫ КРАСНО-ПЕСТРОГО ТИПА МОЛОЧНОГО СКОТА СИММЕНТАЛЬСКОЙ ПОРОДЫ

Аннотация. В статье дана характеристика селекционно-племенной работы с красно-пестрым типом скота «Ертіс» симментальской породы созданного под научным руководством ученых ТОО «КазНИИЖ и К», на основе совершенствования симментальской породы крупного рогатого скота в направлении повышения молочной продуктивности с использованием генофонда импортных быков-производителей.

Целью явилось обобщение результатов целенаправленной селекционно-племенной работы за период после апробации животных нового красно-пестрого молочного типа скота «Ертіс» симментальской породы на примере стада ТОО «Кирова», а также современное состояние их продуктивности.

Были учтены средние показатели продуктивности основных селекционных признаков, такие как, удой за 305 дней лактации, процент жира и белка, живая масса, а также их средняя продолжительность продуктивного использования. Где, процент жира и белка определяли современными приборами на анализаторах интегрированной системы качества молока (Milkoscan FT+, Fossomatic FT+) и проведена статистическая обработка данных по общепринятым методикам.

В результате за период с 2009 по 2016 гг. достигнуто значительное повышение продуктивности коров, средний удой коровы на 305 дней в лактации по стаду повысился на 2089 кг или 54,4% (с $3829 \pm 42,3$ по $5928 \pm 27,8$).

По последней завершенной лактации, средний удой на корову за 305 дней составил по первой лактации $5040,1 \pm 65,16$ кг молока ($n=108$), по второй $5814,1 \pm 49,66$ кг ($n=385$), по третьей и старше лактации $6269,7 \pm 37,76$ кг ($n=410$).

Средняя продолжительность продуктивного использования коров составила 2,8 лактации (lim 1-9), из них 3-й и старше лактации 45,4%.

Таким образом, целенаправленная селекционно-племенная работа по совершенствованию продуктивных качеств красно-пестрого типа скота «Ертіс» симментальской породы стада ТОО «Кирова» вполне выгодны и приемлемы для дальнейшего его разведения и ее селекционного сохранения.

Ключевые слова: порода, внутривидовый тип, корова, молочность, лактация, генофонд, продуктивное долголетие, селекция.

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