ТВАРИННИЦТВО

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DEVELOPMENT OF HEIRFERS AND DAIRY PRODUCTIVITY OF COWS, DOUGHTERS OF DIFFERENT SIMMENTAL BREED BULLS

Scientific-economical experiment on animals of Simmental cattle combined (dairy-meat) breed was carried out in TzOV «Litynske». A retrospective analysis was conducted and the milk productivity of cows and daughters of different bulls was studied. The growth of repair heifers, half-sisters by father was studied.

The genealogical structure of the herd in TzOV «Litynske» is represented by three lines. To improve the genealogical structure of the herd, selected cows and heifers of mating age in the period from 2017 to 2020 were inseminated by purebred elite bulls, in particular: Imago 9727 (Redad's line 711620016.77), Wikht 75771 (Horror's line 809706945.79) of German breeding and Obrii 938 (Streif's line 120081.78) of Austrian breeding.

The growth and development of young Simmentals of combined (dairy-meat) breed of three lines was studied. Live weight was quite high in animals of all studied lines, which is typical for animals of Simmental combined breed. However, in all the studied periods there is a trend of higher live weight in heifers, daughters of the bull Imago 9727.

Studies have shown that the formation and manifestation of milk productivity signs of cows was significantly influenced by their parents and belonging to the line. Thus, the analysis of the obtained data shows that the daughters of the bull Imago 9727 are characterized by higher milk productivity.

Thus, yields of the first-born cows were 4297 kg of milk. In the first-born cows of other comparable groups this figure was lower by 983 kg, or 22.9 % (daughter of Wikht 75771), 279 kg, or 6.5 % (daughter of Obrii 938).

The advantage by yield for the second lactation was observed in cows, daughters of the bull Imago 9727. Yield was higher by 740 kg, or 16.0 % (daughter of Wikht 75771), 392 kg, or 8.5 % (daughter of Obrii 938).

Among adult cows, the predominance by yield was also observed in the offspring of the bull Imago 9727. The difference compared to the daughters of Wikht 75771 and Obrii 938 was 634 kg, or 12.2 % and 534 kg, or 10.3 %.

The fat content in milk in the studied groups ranged from 3.69–3.87 % for the first, 3.74–3.83 % for the second and 3.71–3.85 % for the third lactation. The coefficient of variation in the milk yield was in the range from 19.8 to 48.0 %, the fat content in milk – 6.0–13.5 %.

Keywords: cows, heifers, simmental combined breed, line, breeding, lactation, milk productivity.

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Розвиток телиць та молочна продуктивність корів, дочок різних бугаїв симентальської породи

У ТзОВ «Літинське» проведено науково-господарський дослід на тваринах великої рогатої худоби симентальської комбінованої (молочно-м'ясної) породи. Проведено ретроспективний аналіз та вивчено молочну продуктивність корів, дочок різних бугаїв. Вивчено ріст ремонтних телиць, напівсестер за батьком.

Генеалогічна структура стада ТзОВ «Літинське» представлена трьома лініями. Для поліпшення структури стада відібраних корів та телиць парувального віку у період з 2017 до 2020 р. осіменяли чистопородними елітними бугаями, зокрема: Імаго 9727 (лінія Редада 711620016,77), Вікхт 75771 (лінія Хоррора 809706945,79) німецької селекції та Обрій 938 (лінія Стрейфа 120081,78) австрійської селекції.

Вивчено ріст та розвиток молодняку симентальської комбінованої (молочно-м'ясної) породи трьох ліній. Жива маса була досить високою у тварин усіх досліджуваних ліній, що є характерним для симентальської комбінованої породи. Однак у всі досліджувані періоди спостерігається тенденція більшої живої маси у телиць, дочок бугая Імаго 9727.

Проведеними дослідженнями встановлено, що на формування і прояв ознак молочної продуктивності корів помітний вплив мали їх батьки та належність до лінії.

Аналіз отриманих даних свідчить, що вищою молочною продуктивністю характеризуються дочки бугая Імаго 9727. Так, надій корів-первісток становив 4297 кг молока. У корів-первісток інших порівнюваних груп означений показник був меншим на 983 кг, або 22,9 % (дочки Вікхта 75771), 279 кг, або 6,5 % (дочки Обрія 938).

Перевагу за надоєм за другу лактацію відзначено в корів, дочок бугая Імаго 9727. Надій був вищим на 740 кг, або 16,0 % (дочки Вікхта 75771), 392 кг, або 8,5 % (дочки Обрія 938).

Серед повновікових корів перевагу за надоєм спостерігали також у нащадків бугая Імаго 9727. Різниця порівняно з дочками Вікхта 75771 та Обрія 938 становила 634 кг, або 12,2 % і 534 кг, або 10,3 %.

Вміст жиру в молоці за досліджуваними групами становив 3,69–3,87 % за першу, 3,74–3,83 % за другу та 3,71–3,85 %, за третю лактацію. Коефіцієнт

варіації за рівнем надою був у межах від 19,8 до 48,0 %, вмісту жиру в молоці – 6,0–13,5 %.

Ключові слова: корови, телиці, симентальська комбінована порода, лінія, розведення, лактація, молочна продуктивність.

Introduction. The problem of increasing productivity in livestock is determined by the conditions of feeding, maintenance, exploitation of animals and genetic factors, the ultimate goal of which is the improvement of breeding and productive qualities.

Ensuring the growing population's demand for milk and meat requires the breeding of competitive combined breeds of cattle with a high level of milk and meat productivity [1, 3, 11, 26, 27]. This can be achieved by obtaining animals capable of consuming a large amount of roughage and paying for it with high productivity, good reproductive capacity, precociousness and excellent adaptation qualities. Such a breed is the Simmental with a highly developed volume and muscularity of the cows' body, a satisfactorily developed, easy-going udder, and a strong set of limbs.

Simmentals are one of the classic, oldest and most famous breeds in the world.

During the time of its development and improvement, the Simmental breed became widespread in almost all continents. Due to high universal productivity, good health, fertility, endurance, unpretentiousness and adaptability to maintenance technologies, wide use for industrial crossbreeding, they make it an unrivaled asset of the world gene pool [6, 13, 29, 35].

The Simmental breed, which successfully combines milk and meat productivity, occupies one of the leading places in the countries of the world [28]. Only in European countries there are about 36 million heads, which is about 22 % of all Simmental cattle in the world. The use of the global genetic potential of Austrian Simmentals made it possible to increase the milk productivity of cows of Ukrainian breeding. The milk productivity of the European population is at the level of 5000–6700 kg of milk, with a fat content of 3.83–4.18 %, although the record-breaking cows have a productivity of 10000 kg of milk per lactation [4, 15].

The competitive advantages of Simmentals are a long period of economic use, resistance to leukemia and udder mastitis, high fertility, adaptability to any production and climatic conditions, suitability for tethered and untethered, stable and pasture conditions [22, 32]. Along with the quantitative assessment of milk productivity for farms specializing in

Simmental breeding, the quality of milk (protein and fat content) is also important. Milk has high cheese qualities: a high protein and fat composition compared to other types [7, 23, 25].

The greatest advantage of the Simmental breed was seen in its versatility, a combination of such characteristics as high milk yield and milk fat, excellent growth energy and meat quality.

Based on the results of previous studies, it was established that the Simmental breed has high potential for increasing milk productivity; according to the number of record-breaking cows, it occupies one of the first places among other breeds [5, 18].

The extreme farming conditions in many regions of Ukraine also confirm the need for the selection of the Simmental breed of the combined type [30].

Preservation of the genetic potential of the Ukrainian Simmental will make it possible to strengthen the domestic livestock industry, both in increasing the quantity and improving the quality indicators of raw materials and products.

The main task of the dairy industry is to increase the milk productivity of cows to the genetically programmed limit. For this purpose, new technologies are developed and implemented, new breeds are created and existing breeds are improved. Dairy farming has gained the greatest development in countries where, along with the biological features of livestock, a complex of genotypic and paratypic factors that shape milk productivity are taken into account.

It is recognized that milk productivity depends on many geno- and paratypic factors [9, 10, 12]. Studies by a number of authors have proven that increasing the productivity of dairy cattle depends significantly on quality selection, evaluation and intensive use of breeding bulls based on breeding value, both in terms of milk productivity and exterior type [16, 24, 31]. Selection of bulls for herd reproduction is an important and responsible measure, since the heredity of breeders in the genetic improvement of breeds is extremely high [2, 20, 33].

According to many scientists, the formation of milk productivity of first-born cows depends 80–90 % on the breeding value of sire parents and only 10–20 % on the genetic potential of mothers [34]. In Finland, breeding bulls undergo a strict evaluation system for the productivity of their daughters, health, reproductive and other functional qualities [21]. Therefore, both abroad and in our country, when selecting young animals, the father is given more importance than the mother. With this in mind, it is

necessary to constantly monitor the issue of the effectiveness of using bulls to increase the productivity of daughter cows.

The aim of our research was to determine the influence of breeding bulls of different origins on the formation of milk productivity of their daughters in the conditions of breeder "Litynske" of Drohobytskyi district, Lviv region, based on the processing and analysis of breeding and zootechnical records.

Materials and methods. The research was carried out in the conditions of breeding center "Litynske" of Drohobytsky district, Lviv region. The object of study was the Simmental breed of milk-meat productivity. The analysis included information entered in the farm database about cows that lactated in the herd during 2017–2020. An electronic database of the breeding purpose of the Simmental breed in the milk and meat area of productivity was formed with a retrospective of 4 years for 97 variables. The results of the grading of Simmental cattle of the milk and meat productivity direction were also used.

In order to identify the best breeders based on the information database, an assessment of milk productivity in the herd over the last 4 years was carried out.

To improve the genealogical structure of the herd during 2017–2020, selected cows and heifers of mating age were inseminated with purebred elite bulls, in particular: Imago 9727 (Redada line 711620016,77), Vikht 75771 (Horrora line 809706945,79) of German selection and Obrii 938 (line Streifa 120081.78) of Austrian selection (Table 1).

1. Characteristics of breeding bulls of the Simmental breed

Bull's alias, inv. number	Line	Productivity					
		Father's mother			Father's father's mother		
		yield, kg	fat content, %	milk fat, kg	yield, kg	fat content, %	milk fat, kg
Imago 9727	Redada	9460	3,8	359	6791	4,1	277
Vikht 75771	Horrora	7963	3,94	314	5836	3,96	231
Obrii 938	Streifa	7341	4,2	308	7581	3,89	295

Feed costs per 1 kg of increase in live weight of young animals amounted to 16 kg per head. 39.9 tons per cow per year were fed.

The dynamics of live weight growth, average daily gains of heifers obtained from breeders of different lines were analyzed. Live weight and growth were studied from birth to 9 months of age. Weighing was carried

out at the same time of day. On the basis of weighing, the average daily gain of live weight was calculated according to the formula:

$$R = (W_t - W_o) / t_2 - t_1,$$

where: W_t and W_o are final and initial live weight, kg;

t_2 and t_1 – age at the end and beginning of the period, days.

Live weight of cows was studied at 2-3 months of lactation by weighing.

The milk productivity of cows was determined for 305 days of lactation by the control milking method, the fat content in milk was determined by the Gerber method.

The magnitude and direction of the relationship between quantitative traits were calculated using the correlation coefficient.

Biometric analysis of the obtained data was performed using Microsoft Excel software [14, 19].

Results and discussion. Purebred breeding of Simmental cattle of the dairy and meat direction of productivity is carried out in the breeding center "Litynske" of the Drohobytsky district, Lviv region. With the evaluation of breeding bulls according to the quality of the offspring for their effective use in the selection process.

The role of the breeder in dairy cattle breeding consists in the mass distribution of the heredity of his mother, or rather, the female ancestors of the maternal side of the pedigree.

At the "Litynske" farm, the selection and breeding work to increase the genetic potential of animals is being improved on the basis of the wide use of Simmental breeders of the Lviv Research and Production Center "Zakhid plemresursy".

Thus, such valuable breeder bulls as Imago 9727 (Redada line 711620016.77), Vikht 75771 (Horrora line 809706945.79) and Obrii 938 (Streifa line 120081.78) had a breeding value index of +986, +970 and +976 kg in accordance. The productivity of their mothers is: Imago 9727 – 9.4 thousand kg of milk with a fat content of 3.8 %, Vikhta 75771 – 7.9 thousand kg of milk with a fat content of 3.9 % and Obrii 938 – 7.3 thousand kg of milk with a fat content 4.2 %.

The largest share of the total number of cows, 53 %, is represented by the daughters of the bull Imago 9727, the daughters of the bulls Vikhta 75771 and Obrii 938 – 16 % and 31 %, respectively (Fig. 1).

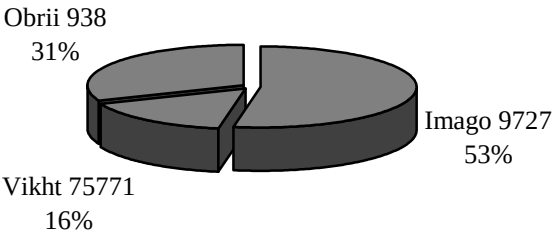

Fig. 1. Genealogical structure of the herd of TzOV «Litynske» (2017–2020)

The intensity of growth and development is determined by the change in live weight over a certain period of time, which is the most important economic feature, since, other things being equal, fast-growing animals consume less feed per unit of growth than slow-growing ones, and reach economic maturity faster [8, 17].

Animals of the Simmental combined breed belong to medium maturity and are characterized by long growth.

It was established that the live weight of heifers of different lines at birth ranged from 34.3 to 36.5 kg (Table 2). Redada 711620016,77 – 36.5 kg were the largest animals born. It should be noted that the heifers of the three lines developed well, the live weight was quite high and corresponded to the complex classes of "elite" and "elite-record" according to the evaluation.

However, according to the conducted research, it was established that according to the dynamics of growth of live weight of the heifer, the daughters of the bull Imago 9727 (line Redada 711620016,77) outperformed their peers, the daughters of the bull Vikhta 75771 (line Horror 809706945,79) and Obrii 938 (line Streifa 120081,78) during the entire period from birth to 9 months.

Thus, the live weight of the daughters of the bull Imago 9727 was: at birth – 36.5 ± 0.4 kg, at 3 months – 108.0 ± 0.7 kg, in 6 months – 173.6 ± 1.3 kg, in 9 months – 232.8 ± 2.9 kg. In the heifers of the compared group, the determined indicator at birth was lower than the indicator of the daughters of bull Vikht 75771 and Obrii 938: by 1.1 kg (3.0 %) and 2.2 kg

(6.0 %), respectively, in 3 months – by 1.2 kg (1.1 %) and 2.0 kg (1.9 %), in 6 months – by 2.5 kg (1.4 %) and 1.8 kg (1.0 %), in 9 months – by 2.9 kg (1.2 %) and 2.5 kg (1.1 %) ($P < 0.01$).

2. Live weight of heifers depending on age and belonging to the line (M ± m)

Age, months	Live weight	
	M ± m	C_v, %
line Redada 711620016,77		
At birth	36,5 ± 0,4	7,7
3 months	108,0 ± 0,7	3,3
6 months	173,6 ± 1,3	4,0
9 months	232,8 ± 2,9	6,6
line Horrora 809706945,79		
At birth	35,4 ± 0,7	8,3
3 months	106,8 ± 0,9	3,5
6 months	171,1 ± 2,1	4,8
9 months	229,9 ± 3,5	6,0
line Streifa 120081,78		
At birth	34,3 ± 0,33	6,1
3 months	106,0 ± 2,30	3,2
6 months	171,8 ± 4,21	3,8
9 months	230,3 ± 5,63	4,2

The highest average daily gains of heifers were noted in the period from birth to three months, in different lines they ranged from 779 to 797 g. With age, a tendency to decrease this indicator was observed in the period from three to nine months. The heifers obtained from the breeder of Redada line 711620016,77 grew more intensively.

Among the breeding traits of cows, the most important is yield. The analysis of data on the milk productivity of Simmental cows (Fig. 2) indicates a change in the amount of milk yield with the age of the animals, as well as with years of keeping. There is an increase in milk yield from the first to the third and older lactations: 975 kg in 2017, 1057 kg in 2018, 1345 kg in 2019, and 1443 kg in 2020. This trend of increasing milk yield of cows with age corresponds to the physiological capabilities of animals [12, 13, 20, 23].

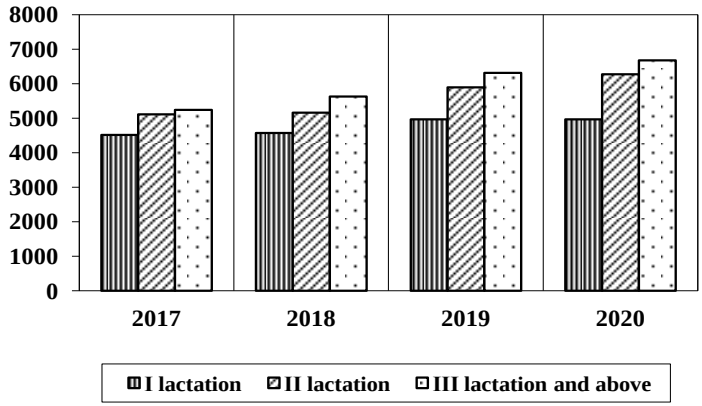

Fig. 2. Milk productivity of cows in TzOV «Litynske» (2017–2020)

Also, the yield of milk has increased in lactations over the years. Thus, from 2017 to 2020, an increase in milk yield is observed: the first lactation by 453 kg, the second by 1160 kg, the third by 1183 kg. Replacement of low-yielding cows of the main herd with intensively bred first-borns with higher genetic potential ensured an increase in milk yield in all lactations.

The statistical analysis that was conducted established that the average yield increased by 22.4 %, 20.9 % and 6.8 %, respectively, during the years under study.

Taking into account individual characteristics, the best representatives of the type were selected for the breeding group. For a number of years, the percentage composition of the tribal nucleus fluctuated between 58.3–68.5%. This ratio of the breeding nucleus to the total herd ensures a high selection differential and qualitative improvement of the mother herd due to selection. It should be noted that there is a tendency to increase the percentage of the breeding nucleus with each subsequent year, which is explained by the increase in the class of animals. Thus, of the entire bonitized herd according to the studied years, class elite and elite-record correspond 59.1 % (2017), 66.7 % (2018), 73.7 % (2019) and 80.7 % (2020).

The analysis of obtained data shows that the daughters of the bull Imago 9727 are characterized by higher milk productivity. Thus, the yield of the first-born cows was 4297 kg of milk (Table 3). In first-born cows of other compared groups, the determined indicator was lower by 983 kg, or 22.9 % (daughters of Vikhta 75771, at $P < 0.001$), 279 kg, or 6.5 % (daughters of Obrii 938, at $P < 0.05$).

The advantage in milk yield of cows during the second lactation was noted in daughters of bull Imago 9727. Yield was higher by 740 kg, or 16.0 % (daughters of Vikhta 75771, at $P < 0.01$), 392 kg, or 8.5 % (daughter of Obrii 93, $P < 0.05$).

Among full-aged cows, the superiority in terms of milk yield was also observed in the offspring of the bull Imago 9727. The difference compared to the daughters of Vikhta 75771 and Obrii 938 was 634 kg, or 12.2 % and 534 kg, or 10.3 % ($P < 0.05$).

With higher lactation, the highest milk yields were also observed in the offspring of the bull Imago 9727. The difference compared to the daughters of Vikhta 75771 and Obrii 938 was 529 kg, or 9.4 % ($P < 0.05$) and 70 kg, or 1.2 %.

The fat content in milk according to the studied groups ranged from 3.69–3.87 % for the first, 3.74–3.83 % for the second and 3.71–3.85 % for the third lactation. The coefficient of variation for milk yield ranged from 19.8 to 48.0 %, the fat content in milk 6.0–13.5 %.

The data indicate the existence of a certain influence of parents of different breeding values on the productivity of their daughters. With the growth of the breeding value of the breeding parents, the milk productivity of the first-borns also increases. Daughters of the breeder Imago 9727 (line Redada 711620016.77) with a breeding value of 986 kg had the highest yield, daughters of bull Vikht 75771 (line Horror 809706945.79) with a breeding value of up to 976 kg had the lowest yield.

It was established that the live weight of cows also depended on belonging to the line. In all experimental periods, except for higher lactation, cows, daughters of the bull Imago 9727, exceeded their peers in terms of live weight. Thus, the first-born daughters of the bull Imago 9727 outweighed their peers daughters of the bulls Vikht 75771 and Obrii 938 by 18.3 kg ($P < 0.001$) and 10.2 kg ($P < 0.01$), respectively. During the second lactation, daughters of bull Imago 9727 outperformed their peers, daughters of bull Vikht 75771 by 15.3 kg ($P < 0.001$). No significant difference in live weight was noted for the groups of daughters of bulls Imago 9727 and Obrii 938 during this period. During the third lactation, the daughters of the bull Imago 9727 outperformed their peers, the daughters of the bulls Vikht

75771 and Obrii 938 by 16.6 kg ($P < 0.001$) and 4.3 kg ($P < 0.01$), respectively. Daughters of the bull Obrii 938 dominated for higher lactation by live weight. However, considering that animals with different life spans were included in the analysis, the results are biased.

3. Milk productivity of daughters of different bulls in TzOV «Litynske»

Father	n	Yield, kg		Fat content in milk, %		Live weight, kg	
		M ± m	C_v, %	M ± m	C_v, %	M ± m	C_v, %
I lactation							
Imago 9727	162	4297 ± 90	26,7	3,87 ± 0,03	8,0	477,2 ± 2,13	5,9
Vikht 75771	42	3314 ± 246	48,0	3,79 ± 0,08	12,8	458,9 ± 3,54	5,0
Obrii 938	76	4018 ± 93	19,8	3,69 ± 0,03	7,7	467,0 ± 2,77	5,3
II lactation							
Imago 9727	162	4611 ± 90	26,2	3,83 ± 0,03	9,0	487,1 ± 2,27	6,2
Vikht 75771	30	3871 ± 202	28,6	3,78 ± 0,10	12,6	471,8 ± 5,29	5,9
Obrii 938	76	4219 ± 102	21,1	3,74 ± 0,04	9,0	486,8 ± 4,18	7,3
III lactation							
Imago 9727	152	5189 ± 97	23,0	3,85 ± 0,02	6,0	512,1 ± 3,24	7,8
Vikht 75771	24	4555 ± 207	22,3	3,83 ± 0,11	13,1	495,5 ± 6,48	5,5
Obrii 938	72	4655 ± 139	25,4	3,71 ± 0,06	13,5	507,8 ± 3,85	6,2
higher lactation							
Imago 9727	162	5652 ± 87	20,8	3,86 ± 0,02	6,6	508,8 ± 3,72	9,0
Vikht 75771	42	5123 ± 271	29,9	3,77 ± 0,06	9,1	500,6 ± 8,73	8,5
Obrii 938	76	5582 ± 148	24,4	3,79 ± 0,05	12,1	520,8 ± 6,25	10,2

High-yielding cows and record-breaking cows play an important role in breeding work. The presence of a sufficient number of highly productive animals in the breed and their use in herds reveals the breed's potential, contributes to increasing the genetic potential of herds and the effectiveness of selection and breeding work as a whole.

From 2017 to 2020, there were 22 record-breaking cows in the herd of TzOV Lytinske, which yield more than 6000 kg of milk, 68.2 % of them are daughters of bull Imago 9727 (Redada line 711620016,77).

Lifetime productivity of cattle is one of the important components of breeding work both in our country and abroad. Various researchers studied the question of the degree of genetic determination (influence of belonging

to a breed, lineage, family, paternal origin, etc.) of indicators of the effectiveness of lifelong use.

Currently, breeders-practitioners have a need to breed livestock that combines high milk yield with a long period of use. Interest in the study of this trait is determined by the following factors: it is genetically determined, its variability is related to the reaction of the genotype to environmental conditions, in addition, the productive use of cows is also of economic importance [22, 32].

It is known that the effectiveness of selection work with dairy and mixed breed cattle largely depends on the duration of economic use of cows. Simmentals, as noted by Y. Z. Siratskyi (1992) and D. T. Vinnychuk (1994), are characterized by productive longevity.

We established that in the "Litynske" breeder, the life expectancy of Simmental cows of the milk-meat productivity direction was 4.07 lactations in the daughters of bull Imago 9727, 4.29 in the daughters of Vikht 75771, and 4.93 in the daughters of Obrii 938 (Table 4).

Moreover, the variability of this indicator was high in – 56.45 %, 71.26 % and 23.70 %, respectively. Lifetime milk yield was 18,392 kg for daughters of bull Imago 9727, 18,320 kg for daughters of Vikht 75771 and 21,579 kg for daughters of Obrii 938. The average fat content in milk was 3.84 %, 3.83 % and 3.80 %, respectively. Moreover, the variability of this indicator was 4.60 %, 2.89 % and 2.80 %, respectively.

4. Productive use of Simmental cows, daughters of various bulls in TzOV «Litynske»

Indicator	Father		
	Imago 9727	Vikht 75771	Obrii 938
Number of animals	142	43	84
Lifetime, lactation	4,07 ± 0,17	4,29 ± 0,55	4,93 ± 0,28
Lifetime productivity, kg	18392 ± 750	18320 ± 2722	21579 ± 1327
Average fat content, %	3,84 ± 0,01	3,83 ± 0,02	3,80 ± 0,01

Among various forecasting methods, the genetic and statistical ones, which are based on calculations of heritability coefficients, correlation, regression of milk productivity traits, etc., occupy an important place.

In Simmental cows, daughters of different bulls, the relationship between the signs of milk productivity was established: yield × fat content in milk, yield × live weight (Table 5). The obtained regularities confirm the

calculated correlation coefficients. We established positive correlation coefficients r = 0.14–0.40 between milk yield and live weight. That is, with an increase in the live weight of animals, milk yield increased.

Instead, in all experimental groups, the relationship between milk yield and milk fat content has negative values in the range of -0.01...-0.33, which is also a completely natural phenomenon.

5. Correlation between the main indicators of cows, daughters of different bulls

Lactation	n	Yield, kg × fat content, %	Yield, kg × live weight, kg
Daughters of the bull Imago 9727			
First	162	-0,05	0,22
Second	162	-0,01	0,16
Third	152	-0,01	0,20
Higher	162	-0,01	0,25
Daughters of the bull Vikht 75771			
First	42	-0,10	0,40
Second	30	-0,33	0,17
Third	24	-0,25	0,15
Higher	42	-0,21	0,39
Daughters of the bull Obrii 938			
First	76	-0,05	0,14
Second	76	-0,28	0,15
Third	72	-0,01	0,16
Higher	76	-0,02	0,21

Conclusions. In the "Litynske" breeder, a significant part of the herd's genealogical structure is represented by daughters of the bull Imago 9727 (Redada line 711620016,77), the share of which was 53 %.

The studied heifers of the Simmental breed during the growing period were noted for good indicators of live weight. In all age periods, according to this indicator, they prevailed over the breed standard. However, the superiority of the heifers, daughters of the bull Imago 9727 in terms of live weight compared to their peers from other studied lines, was established. Thus, their live weight was: at birth – 36.5 kg, at 3 months – 108.0 kg, in 6 months – 173.6 kg, at 9 months – 232.8 kg.

The results of the research indicate that the daughters of the bull Imago 9727 are characterized by higher milk productivity. Thus, the yield

of the first-born cows was 4297 kg of milk. In first-born cows of other compared groups, the determined indicator was lower by 983 kg, or 22.9 % (daughters of Vikht 75771), 279 kg, or 6.5 % (daughters of Obrii 938).

From 2017 to 2020, there were 22 record-breaking cows in the herd of TzOV Lytinske, which yielded more than 6000 kg of milk, 68.2 % of them are daughters of bull Imago 9727 (Redada line 711620016,77).

The use of purebred elite bulls of foreign selection in the genetic process makes it possible to significantly increase the genetic potential and productivity of the herd.

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