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IMPROVEMENT OF BREED COMPOSITION OF LOCAL LOW-PRODUCTIVE ANIMALS BY BIOTECHNOLOGICAL METHODS

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Abstract

In order to meet the population's demand for livestock products, the State Program for Livestock Development has been developed in the country. The main objective of the program is to improve the breed composition of animals, increase livestock production, and make more efficient use of fodder reserves, grazing and pasture areas by applying new models of farming in the country. Therefore, special attention should be paid to breeding work in existing livestock farms, and ways of getting more meat and milk from each cow should be explored. For this purpose, the productivity of the existing animal gene pool can be improved through the use of biotechnological methods in animal husbandry.

Keywords: livestock production, breed improvement, breeding, biotechnological methods, grazing and pasture areas.

Development of animal breeding by intensive methods is the most important task facing scientists and specialists working in this field. Because the most important and qualitative needs of the population in protein are satisfied in the sphere of animal husbandry. Therefore, to provide the population with ecologically clean products of animal husbandry in our republic there is a great need for scientific research. Studies show that by using biotechnological methods in animal husbandry, it is possible to increase the productivity indicators of the existing gene pool of animals [1].

To improve the sexual composition of animals and eliminate infertility, artificial insemination and embryo transfer are used, which are considered the most progressive methods in the world practice [3].

By applying artificial insemination, it is possible to improve the sexual composition of the livestock, prevent diseases born during natural mating, combat infertility and increase the economic efficiency of the farm. As a result of application of artificial insemination, the possibility and conditions for wide use of highly productive bulls are created.

Local livestock breeding does not meet the needs of the population in livestock products, as local livestock is low-yielding and unproductive, and the percentage of milk fat is high. It is quite well adapted to natural-climatic and economic conditions. Therefore, as a Scientific Research Institute of Animal Husbandry, we set a goal to fertilize with seeds of highly productive bulls of Simmental breed by biotechnological methods of low-productive local breeds grown in our republic, and as a result we created highly productive bulls of Simmental breed. productive bulls of Simmental breed of Azerbaijan [7].

Productivity growth will create conditions for increasing farmers' incomes and improving their financial well-being. For this purpose, various methods are used in our republic [4; 5].

The first one is the importation of highly productive hybrid animals from foreign countries for breeding work in the republic, in order to improve the breed composition of the breed. Keep in mind that the importation of highly productive breeds of cows from foreign countries cannot last long, because the breeds brought from abroad are expensive, and the ability to adapt on the territory of the republic is relatively low, these animals are not well adapted to the local environment and have certain difficulties. This reduces their productivity and economic efficiency.

Secondly, in order to improve the breed composition of the herd, biotechnological methods are used to inseminate low-productive animals in farms with the seeds of highly productive bulls. For this purpose, since 2016, research and development works have been carried out in the rural farm located in the village of Mollajalili in Goygol district. The goal is to increase the productivity of low-productive local breeds available in our farm and improve the breed composition, inseminate them with the seeds of Simmental bulls of meat and dairy breed, purchase fourth-generation pomace animals. As a result, to create a breeding herd of highly productive crossbred cows.

Simmental breed is considered one of the oldest breeds in the world. Simmental breed was first brought to Azerbaijan in 1903. Later crossbreeding was carried out to increase fertility and productivity of local cattle and played an important role in improving the productive qualities of local cattle [2].

The research work is carried out in the farm of an individual entrepreneur located in Mollajalili village of Goygol district. During the selection period, 20 local cows in the farm were inseminated with the seeds of Simmental bulls from May 2016 and F1 and F2 crossbred calves were obtained. The pomies have the ability

to grow faster with intensive calf development compared to calves from local stock. F2 male pups reach a live weight of 550-600 kg at 18 months of age, whereas domestic pups have a live weight of 300-350 kg. F2 males are fattened at 18 months of age, slaughtered and cost-effectiveness studied.

Comparative indicators of the body size of F₁ and F₂ progeny animals obtained from insemination with the semen of local bulls and Simmental bulls

S.s	Body measurements	Local cattle 180113	Cow F ₁ 625593	Cow F ₂ 809210
1	Withers height	115	130	134
2	Heart girth	167	175	185
3	Chest width	40	43	45
4	Left length of the body	153	156	160
5	The straight length of the body	141	145	150
6	The width of the forehead	23	22	25
7	The height of the forehead	45	48	49
8	İncik qucumu	17	19	20
9	Rump width	43	45	48
10	Rump height	121	134	137

Scientific research conducted by Nazarov M.V., Gorpichenko E.A. and Govrilov B.V. (2018) was conducted according to the method "Artificial insemination of farm animals" [6].

During the research, the care of animals is carried out according to the subject calendar plan. Their feeding and housing are regularly monitored. In winter, the animals are kept in stable conditions and are taken out

for a walk every day. In summer, it is grazed in the common field of the village. The fodder is obtained by purchase.

Animals of experimental and control fattening groups are fed the same fodder during the day, 14 kg of fodder per 1 head, the cost of fodder consumed per month is 145.2 manat.

Table 1.

Feed ration of fattening male calves during the day

The name of the bait	Amount, kg	Value, manat
	2,0	0,80
Barley groats	1,0	0,30
Wheat bran	1,50	0,66
Cottonseed meal	0,50	0,22
Corn grits	8,0	2,4
Alfalfa grass	1,0	0,46
Imishli bait	14,0	4,84

F2 crossbred heifers were fertilized in 2022 and 6 F3 crossbred calves were obtained from them. Calves weighed 38-42 kg at birth and are healthy. There are no signs left of the local goods due to the color shades.



Pic. 2. 6-month-old F₁ and F₂ crossbred female calves



Pic.3. F₃ crossbred calves born on the farm

The live weight, height and development of purchased calves are even faster compared to calves born from local cows. Hybrids have higher growth dynamics than their parents. Crossbreeds are environment-tolerant, quick-growing, efficient use of feeding, disease-resistant, and create a foundation for the creation of a new breed of cattle. Their meat yield is higher than that of local cattle.



Pic.1. 18-month-old native and F2 crossbred male calves

Table 2.

Comparative indicators of economic efficiency of the obtained results, n = 1

S/s	Indicators	Local	Half breed	Difference
1	Feed consumed during 6 months, kg	2520	2520	-
2	Live weight of male calves, kg	330	640	310
3	Meat, kg	165	352	187
4	Meat smoke in %	50	55	-
5	Cost of feed, man., in 6 months	871,2	871,2	-
6	1 kg. selling price of meat, man	12	12	-
7	Income from the sale of meat, man	1980	4200	2220
8	Economic income, man	1108,8	3328,8	2219,2

During the month, 1072.4 liters more milk was obtained from crossbred animals than local animals. Compared to local cattle, cross-bred animals retain the ability to give milk regularly. That is, 24-25 l per day. milk is milked. Although feeding is similar in native and crossbred animals, native animals decrease their milk production over time, while crossbred animals continue to produce the same amount of milk regularly.

Table 3.

Comparative indicators of milk milked from local and hybrid animals during the month

s/s	Indicators	In local, For 2 cattle	Half-breed, For 2 cattle	Difference
1	Feed consumed in 1 month, kg	2160	2160	-
2	Milk yield in 1 month, liters	422,2	1494,6	1072,4
3	Cost of feed, man	395,28	395,28	-
4	Selling price of 1 liter of milk, man.	0,65	0,65	-
5	The income obtained from the sale of milk in 1 month, man	274,43	971,49	697,06

As a result:

1. A large difference in meat yield was achieved. The live weight of male calves of each age group at 18 months of age was 330 kg, whereas the live weight of male steers at 18 months of age of F2 hybrids was 640 kg, respectively.

2. Meat yield was 50%, in grivet cattle after slaughter 165 kg of pure meat was obtained, in pomace cattle this index was 55%, i.e. 352 kg.

3. 1108.8 manats of domestic products and 3328.8 manats of mixed animals were obtained from the sale of meat, taking into account the cost of fodder.

4. 2219.2 manat more income was obtained from the hybrid calves after fattening than from local male calves.

5. During the study, 422.2 liters of milk was given from two local cows and 1494.6 liters of milk from the hybrid cows in 1 month.

6. The cost of fodder eaten by the local animals during 1 month is not covered by the income from the sale of milk from these animals. Here 163.0 manat was

damaged. However, the 697.06 manat of the crossbred animals were better than two heads in this respect.

7. In one month, two crossbred animals purchased milk 1072.4 liters more than the local animals, income of 697.06 manat more was obtained.

At the next stage of research work, it is planned to obtain 4th generation crossbred calves. Thus, a breed of Azerbaijani Simmental cattle will be created that is disease resistant, fast maturing, efficient in feed utilization and able to transmit its characteristics from generation to generation.

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