Milk productivity of red steppe cows of different genotypes

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Abstract. In this article, the role of the livestock industry in the national economy, one of the modern advanced breeding farms. Organization, composition of the herd, keeping and care of cattle, productivity indicators and feeding conditions of "Bakht" farm, specialized in breeding, belonging to Karshi district, Kashkadarya region, were analyzed. At the same time, milking planning, proper care of cows during rest period (dry) and preparation for calving, feeding of dairy cows with valuable nutrients, complete milking technology. It was studied that the establishment of a dairy farm, timely artificial insemination and rational keeping of cows have become the main goal of the farm and have a positive effect on the economic efficiency of the livestock industry. The use of Red Desert cows in the herd by crossbreeding with Angler bulls helps to increase the milk production of the cows. Due to the increase in the blood percentage of the Angler breed, the milk yield of cows also increases. Cows with the Angler breed genotype give more milk per 100 kg of live weight than purebred cows, which indicates the efficiency of their use in dairy herds.

1 Introduction

In order to strengthen the breeding base and create high-yielding herds in the cattle breeding of our republic, cattle belonging to breeds of different productivity are brought from European countries with developed cattle breeding. These cattle have high genetic potential for productivity. But they show their productivity only in the conditions of full nutrition and optimal care. Rapid development of cattle breeding is important in meeting the needs of the population with dairy products.

It is necessary to carry out selection-breeding work at a high level, to provide cattle with full-value feed for further development of this industry.

In the development of the sector, the President of the Republic of Uzbekistan No. PQ-4243 of March 18, 2019 "On measures to further develop and support the livestock sector", No. PQ-4576 of January 29, 2020 " "On additional measures of state support for the livestock industry" No. PQ-121 of February 8, 2022 "Measures for further development of

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livestock breeding and strengthening of the livestock feed base "On" decisions and regulatory documents related to this activity can be included, which serve to a certain extent in the development of the coal industry.

The red desert breed of cattle is one of the leading breeds planned in our country.At the time, it had a positive effect on improving the breeding and productivity qualities of local zebu cattle. Currently, it is grown in Khorezm, Bukhara, Navoi, Kashkadarya regions and Karakalpakstan.Cattle belonging to this breed are distinguished by high adaptability to hot climate conditions, good enough milk yield of cows, good reproductive function and other valuable characteristics. A number of scientific and research works have been carried out in our republic and in foreign countries to increase the productivity of this breed, create their productive herds, and improve the breed, and the results are recommended for production. But the increase in the population's need for food products requires further increase in the volume of livestock products, and this requires the improvement of breeding and productivity qualities of purebred breeds. In recent years, in order to achieve this goal, Angler breed bulls have been used to improve and increase the productivity of the corresponding Kyzyl Desert breed in cattle breeding [1-3]. As a result, the study of the productivity qualities of the offspring obtained from such crossbreeding is of urgent importance in improving the breed and creating high-yielding milk herds. [4-5].

Breeding work with Red Desert cattle is aimed at increasing their milk yield, fat content in milk, and eliminating deficiencies in body structure.

In the improvement of these breeds, not only full-value nutrition, but also improvement of selection-breeding work, especially the wide use of breeding bulls with improving breed category, evaluated by the quality of their offspring, and the creation of families of high-yielding cows in herds and high-yielding herds of breeding bulls are important scientific- is of practical importance.

The development of methods of creating a new herd of productive cows on the basis of different selection groups is of particular importance not only for improving the breeds, but also for increasing their number and expanding their distribution area. Therefore, in recent years, scientific research aimed at improving the breed, productivity, fertility and other selection characteristics of cattle in farms with breeding category is of urgent importance. Modern innovative technologies occupy a special place in further expanding the scope of such research.

2 Materials and methods

Today in the modern advanced farms of our republic, intensive development of cattle breeding, production of products based on the demand of world standards and improvement of its quality are carried out at the required level. Our research was carried out at one of such farms, the "Bakht" farm, specialized in breeding, belonging to Karshi district, Kashkadarya region. This farm specializing in breeding was established in 2001, and from this year, bred cattle began to be brought.

The land of the farm consists mainly of gray soils, the total land area is 363 hectares. Of this, 205 ha or 56.5 percent for all years, irrigated land, 102, 95, 84, ha, or 281; 26.2; 23.1 percent of agricultural land, from 10 ha, or 2.8 percent of pastures from 29 ha, or 7.9 percent of perennial trees, 17; 24; 35 ha, or 4.7; 6.6; 9.6 percent are private estates.

The area allocated for fodder corresponds to 0.33 ha per head of cattle raised on the farm. This indicates that there is an opportunity to feed cattle on the farm at the level of demand and create a solid feed base (Table 1).

Table 1. The total land area of the farm and its use, ha.

Indicators	Years		
	2021 year	**2022 year**	**2023 year**
Total land area	363	363	363
Irrigated lands	205	205	205
Agricultural land	102	102	84
Meadows	10	10	10
Perennial trees	29	29	29
Private farms	17	24	35

At present, in the modern advanced farms of our Republic, cattle of the angler breed are bred from breeds with high productivity and breeding potential, characteristic of the world's gene pool. "Bakht" farm, specialized in breeding, breeds purebred red desert breed and Angler cattle with high genetic potential brought from Germany. The total number of cattle of this breed in the farm is 624, of which 180 or 28.9 percent are milk cows. (Table 2)

Table 2. Cattle herd composition in the farm.

No	Groups	Number of heads	
		head	**%**
1	Pedigree bulls	4	0.6
2	Milk cows	180	28.9
3	Weaned cows	70	11.2
3	Bullshit	60	9.6
4	Bodies from 1 to 2 years old	85	13.6
5	Bodies up to one year old:	87	13.9
6	Calves up to 6 months:	138	22.2
	a) male	59	9.5
	b) female	79	12.7
	total	624	100

In the farm, on average, 15 kg of milk is obtained from each head of cow, and 30 kg of milk from record holders. More than 10,000 kg of milk is produced from each cow during lactation. Milking is organized 3 times a day, milking is programmed in a computer system, created in recent years, 3-cycle milking made in Russia"BARBAROS DOUBLE OIL" program is used. 12 cows are milked at a time in the milking hall. Milk fat is on average 3.7-3.8%.

In order to increase the milk productivity of cows in the farm, and to use them at a high level, dairy cows were grouped according to milk productivity and a feed ration was prepared. Cows are mainly fed the same type of mixed feed. This mixed feed is prepared with a MIXER device, and its composition consists of silage, silage, alfalfa, corn grain, wheat, cotton meal, salt, chalk, premix (Bonza Plex 7).

Food is distributed 3 times a day before the morning, afternoon and evening milking.

In the farm, 85 calves are obtained from every 100 cows. Breeding male calves are cared for up to 2 months and sold to farmers and personal assistants of the population and farms.

In the farm, 8 barns were built to protect cattle from the heat of the day in summer and from the cold in winter. For keeping cattle of different groups in the summer, grazing areas built on the farm are used. Animal feeding and watering troughs have been built in the

production areas. In the economy, the experience of the countries with developed cattle breeding, the working methods of the pioneers and scientific achievements have been fully implemented.

At the "Bakht" breeding farm specializing in breeding, selection-breeding works, zoo-veterinary activities are carried out on time, and product production and its quality fully meet the requirements of world standards.

It is known thatAngler cattle were created in Germany, on the Angelni Peninsula, by improving local brown-red cattle. The first information about the Angler breed of cattle began to be reported from the 19th century. Cattle of this breed have a special place in the creation of the Danish red breed, and through it in the creation of the Latvian brown, Lithuanian red, Estonian red, red desert breeds. Angler cattle are of great importance among the world's dairy breeds due to their genetic productivity potential, and are characterized by their high productivity and good adaptability to various natural and climatic conditions.

In our research, we selected a total of 30 first-born cows from purebred Red Desert and hybrid cows of different genotypes obtained by crossing cows of this breed with Angler breed bulls, 10 cows per group, and measured their milk yield until the end of lactation. we asked The cows selected for the experiment were taken into account for their genetic origin, live weight, age, feeding and living conditions of the cows. The indicators such as milk yield, live weight, milk yield coefficient of the cows were measured using generally accepted zootechnical methods. studied.

3 Results and Discussion

There is no doubt that milk is an invaluable product for the human body, both in its pure state and in its finished products obtained from its processing. That is why milk is the most important source of nutrition from ancient times until now. It contains more than 100, about 200 useful nutrients, including more than 30 fatty acids, 20 amino acids, 3 types of milk sugar, 12 vitamins, more than 40 minerals, etc.

It is known that cow's milk makes up more than 80% of the milk consumed by the population around the world. In the republic, this indicator is equal to 98-99%. But its amount is much lower than the level of demand. According to the method of our research work, we studied the milk yield during lactation of cows that are sharply different from each other by genetic origin, and presented the obtained data in Table 1 below.From the research, we can conclude that milk yield and quality indicators of cows definitely depend on their genotype (Table 3).

Table 3. Milk yield and live weight of experimental cows, kg (n=10).

Indicators	Genotypes					
	Purebred Red Desert		½ according to angler breed		¾ according to angler breed	
	X±Sx	Cv,%	X±Sx	Cv,%	X±Sx	Cv,%
Milk yield, kg	3175.4±39.8	6.25	3423.0±43.7	11.33	3487.1±89.6	13.5
Fat in milk, %	3.73 ± 0.04	1.77	3.73 ± 0.01	1.53	3.74 ± 0.03	1.18
Protein in milk, %	3.43±0.03	1.45	3.41±0.01	1.67	3.40±0.01	1.34
Milk fat yield, kg	118.4 ± 1.39	5.91	127.6 ± 1.71	11.83	130.4 ± 3.1	11.7
Milk protein yield, kg	108.9±2.81	6.10	116.7±2.48	10.70	118.5±3.43	11.30
4% milk, kg	3046.7 ± 34.2	5.91	3284.3 ± 40.7	11.86	3351.1 ± 54.9	12.5
Live weight, kg	475.7 ± 1.51	1.58	482.0 ± 1.01	1.87	487.5 ± 1.60	1.72
Dairy coefficient	667.5 ± 8.05	6.03	710.1 ± 9.65	12.0	715.3 ± 17.80	12.83

When we analyzed the data in Table 3, it showed that the milk yield of cows with the ½ genotype of the Angler breed was 247.6 kg (7.79%), and the milk yield of the cows with

the ¾ genotype of this breed was 311.7 kg (9.81%), milk. fatness 9.2 kg and 12.0 kg, milk 4% milk 237.6 and 304.4 kg, live weight 5.3 and 6.3 kg, milk yield 42.6 and 47.8 kg, respectively. was found to be significantly higher than their inbred peers.

Thus, regardless of the genotype of the cows in the experiment, their lactation, i.e., the milking period, was uniform, of course, crossbred cows of the III-group achieved a slight advantage over their counterparts.

When studying this or that productivity in all types of livestock, their live weight is definitely taken into account. Because many selection characteristics of animals change depending on the live weight indicator.

That's why the milk production coefficient is an important indicator in the assessment of milk productivity. This indicator is determined based on the level of live weight. It is desirable to determine the live weight of dairy cows before lactation, during the dry period of cows that have been weaned for 5-6 months, i.e. 8-9 months, and in the 3rd month of lactation after giving birth. Because the most convenient way to assess the general physiological state of the cow's organism after calving and calving is to know their live weight and clinical status.

When evaluating cows for their milk yield, an indicator that is important and considered as the main selection characteristic is their milk yield coefficient.

Table 4 below shows the data on the milk yield of the experimental cows.

It should be noted that in zootechnical practice, one of the main parameters to be taken into account when evaluating dairy cows in terms of milk yield is 4% milk, milk fat per 100 kilograms of live weight. i and milk protein are indicators. That's why we determined the indicators corresponding to 100 kg of live weight and presented them in Table 4 below. It can be seen that there was a difference in milk yield of 4%, where crossbred animals were superior to their purebred counterparts.

According to the data in the table, in terms of milk yield per 100 kg of live weight, the offspring of Angler breed bulls are characterized by the best indicators.

Table 4. Milk production coefficient of experimental cows, (n=10).

Indicators	**groups**		
	I	**II**	**III**
	X±Sx	**X±Sx**	**X±Sx**
Milk yield, kg	3175.4±39.8	3423.0±43.7	3487.1±89.6
4% milk, kg	3046.7 ± 35.0	3284.3 ± 42.7	3351.1 ± 74.9
Live weight, kg	475.7 ± 1.51	482.0 ± 1.01	487.5 ± 1.60
Coefficient of milk production, kg	667.5 ± 8.05	710.1 ± 9.65	715.3 ± 17.80
For every 100 kg of live weight			
4% milk, kg	640.4	681.3	687.4
milk fat, kg	22.89	26.47	26.74

Milk yield per 100 kg of live weight of cows in the experimental group was 42.6 and 47.8 kg, respectively, 4% milk yield per 100 kg of live weight was 40.9 and 47.0 kg, milk fat was 3.58 and 3.85 was kg. Cows of group I have higher productivity than their peers.

It is known that when studying the milk yield of cows, it is appropriate to analyze them graphically. Therefore, in the image below, we have expressed the coefficient of milk production of cows. Here too, the superiority of hybrid cows is visible.

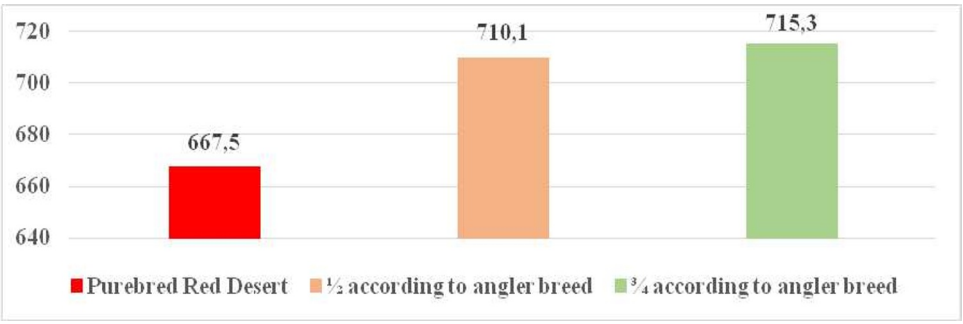

Fig. 1. Coefficient of milk yield of cows, (kg milk per 100 kg live weight).

4 Conclusion

Full use of the genetic potential of cows in terms of productivity, milk planning, proper care of dairy cows during the rest period (dry) and preparation for calving, complete valuable nutrition for dairy cows feeding, proper organization of milking technology, timely artificial insemination and rational keeping of cows have become the main goal of the farm. This had a positive effect on the economic efficiency of the livestock sector.Thus, the crossbred cows obtained as a result of crossbreeding pure-bred red desert cows with bulls of the Angler breed, typical of the world gene pool, increased the milk yield per 100 kg of live weight, which means that such cows shows that it is an important factor in efficient use and creation of high-yielding herds

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