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COMPARATIVE CHARACTERISTICS OF FLECKVIE AND JERSEY HEIFERS IN TERMS OF GROWTH, DEVELOPMENT AND FORMATION OF PRODUCTIVITY IN THE CONDITIONS OF THE ARTSAKH REPUBLIC

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Abstract

Studies have shown that in terms of growth intensity from birth to fertilization, fleckvie animals exceeded jerseys by 20.5% and live weight by 47.8%.

According to the results of the first lactation, the average milk yield of the firstborn cows in fleckvie breed was 3810 4.55%, and in jersey breed - 2810 kg and 5.61%, respectively or the fleckvie breed animals exceeded the Jersey by 34.6%. At the same time, according to the content of milk oil, they lost to jersey by 4.5 kg.

Imported heifers were more susceptible to blood parasitic diseases, especially piroplasmosis.

Therefore, it is guaranteed to carry out a zootechnical-economic assessment of the imported breeds which will allow to discover the potential for crop production due to heredity.

***Key words*:** Lactation, pregnancy, intensity, heredity, piroplasmosis.

Introduction

The Republic of Artsakh is an agrarian country the economy of which is based on agriculture with its two traditional branches: crop production and animal breeding.

Taking into account the fact that the development of agriculture is generally based on the use of living organisms - plant and animal biological characteristics, it is necessary to develop an appropriate program aimed at maximizing their potential for crop production due to heredity.

The latter is the basis for maintaining the health of the population, full realization of its biological, physiological and hereditary features.

Providing the population of the country with the necessary quantity of high quality dairy products is considered to be the main task of milk producers and dairy processors.

The Caucasian gray breed, which is widespread in the country and has a dairy orientation, is well adapted to the local climatic conditions and successfully combines dairy and meat production. The genetic potential of lactation varies between 3000-3500 kg. Therefore, the pedigree breeding work should be aimed not at the radical transformation of this breed, but at the improvement of certain features, in particular, the increase of productivity, the improvement of the breast by the method of pure breeding as well as by interbreeding.

Recently the government of the country has been paying close attention to improving pedigree work by importing purebred animals of high-yielding foreign breeds.

In particular, initially in the Khnapat pedigree of Askeran region of the republic 66 heifers and also 100 heads of fleckvie and jersey heifers were imported. The process of importing later became continuous giving priority to the fleckvie-jersey breeds.

According to the offer of the Food and Agriculture Organization of the United Nations (FAO) under the auspices of the United Nations, the priority will be given to the combined breed (dairy) breeds which are considered to be more competitive with narrowly specialized dairy breeds. In this respect, the fleckvie breed can be considered more promising than the mentioned breeds, and according to the results of Kh.M. Simonyan's and others research in the Republic of Armenia, it is more expedient to use the animals of American breed as a breeder in the Caucasian gray herds (1). The Jersey breed has a purely milky direction. Its genetic potential is 3000-3600 kg with 5% fat in milk. At the same time, it should be taken into account that it has insufficiently developed meat features.

In this regard, it is necessary to carry out a zootechnical-economic assessment of the imported breeds by creating conditions for normal feeding and care which will contribute to the maximum realization of their potential production.

The most important prerequisites for the assessment of the breed are milk yield, meat characteristics, reproductive capacity as well as suitability for the requirements of industrial technology.

Research results

The scientific and economic experiment was organized and held at Khnapat's pedigree station in Askeran region of the Artsakh Republic in 2019-2020.

According to the principle of similarity, 5 heads of fleckvie -jersey animals were selected; scientific research was carried out from birth to the end of the first lactation.

Throughout the experiment, the tested animals were found in the same feeding and care conditions on the farm.

Data on the growth intensity of the live weight of the tested animals from birth to fertilization are given in Table 1.

Table 1

Live mass dynamics from birth to fertilization

Race	Number of animals	Weight at birth (kg)	0 - 6 months		6-12		12-18		From 18 to fertilization	
			Live weight, kg	Average daily weight gain, g	Live weight, kg	Average daily weight gain, g	Live weight, kg	Average daily weight gain, g	Live weight, kg	Average daily weight gain, g
Fleckvie	5	30	130	556	235	583	339	578	473	647
Jersey	5	17	99	456	186	483	279	517	320	540

According to the data in Table 1, the live weight of the tested heifers at birth was 30 kg for the fleckvie breed and 17 kg for the jersey breed. At the beginning of fertilization, the weight was 473 and 320 kg respectively, according to the breeds.

The average daily weight gain from birth to fertilization was 593 g for fleckvie animals, 492 g for jerseys or 20.5 % more and 47.8 % for live weight.

More rapid growth was observed in the animals of both breeds from 18 months before fertilization, amounting to 647 g of fleckvies and 540 g of jerseys.

One of the most important prerequisites for the assessment of breeds is their reproductive capacity due to the first fertilization and birth age as well as pregnancy rates, which can be seen from the data in Table 2.

Table 2

Reproductive traits of Fleckvie and Jersey heifers

Race	The age of the first fertilization, days	Duration of pregnancy, day	The age of the first birth, day
Fleckvie	747	282	1029
Jersey	616	278	893

In terms of pregnancy duration, the experimental groups were characterized by indicators close to each other which fluctuated within the physiological norm.

The average age at first birth was 1029 days or 34.3 months for fleckvie animals and 747 days or 24.9 months for fertilization. If we compare it with similar figures of heifers imported from Austria, we can conclude that the heifers received on the spot had a 4.7-month extension of the first gestational age. Such a phenomenon is due to the conditions of incomplete feeding, lack of proper care and behavior accepted at the pedigree station. In the case of the Jersey breed, these figures were 20.5 and 29.8 months, respectively.

The general indicators of racial assessment are milk production during lactation, milk quality, especially fat and protein content.

Dairy production was calculated using test milking three times a month, the results of which are listed in Table 3.

Table 3

Dairy production of tested animals by days and months

Race	Breastfeeding by lactation months																				Daily product during lactation, kg
	I		II		III		IV		V		VI		VII		VIII		IX		X		
	er day	er month	er day	er month	er day	er month	er day	er month	er day	er month	er day	er month	er day	er month	er day	er month	er day	er month	er day	er month	
Fleckvie	15,4	462	18	540	15,8	474	14,6	438	13,6	408	12,6	378	11,6	348	10,2	306	8,6	258	6,6	198	3810
Jersey	11,6	348	13	390	12,4	372	11,4	342	10,4	312	9,4	282	8,4	252	7,4	222	6	180	4,2	126	2830

The average lactation in lactating animals was 3810 kg, jersey - 2830 kg. The firstborn cows of the fleckvie breed surpassed the jersey by 980 kg or 34.6 % in milk yield.

The highest milk yield per day was observed in animals of both breeds in the second month of lactation. The latter weighed 18 kg in fleckvie animals and 13 kg in jerseys. Fluctuations in milk levels were observed in both breeds and group animals. The highest milk yield during lactation was observed for the fleckvie breed, N2498, at 4,200 kg, and for the Jersey breed, N2638, at 3,300 kg.

Assessing the quality of milk in terms of lactation, the fat and protein content was determined in animals of different breeds.

The results of the study are presented in Table 4.

Table 4

Fat and protein content in the milk of animals of different breeds

Race	Milk yield, kg	Milk fat content,%	Protein content,%	100 g of fat contains protein, g
Fleckvie	3810	4,05	3,50	86,4
Jersey	2830	5,61	4,08	72,7

As can be seen from Table 4, the relatively high milk fat content of jersey animals is relatively high in protein, with 72.7 g of protein per 100 g of fat.

There was a certain difference in the ratio of these indicators of the fleckvie breed and 86.4 g of protein was accounted for per 100 g of oil.

A general indicator of milk productivity and fat content can be considered the content of milk fat in terms of milk received during lactation (Table 5).

Table 5

Milk fat content in lactating cows of different breeds

Race	Milk yield, kg	Milk fattiness, %	Milk oil content, kg
Fleckvie	3810	4,05	154,3
Jersey	2830	5,61	158,8

The data in Table 5 show that although the Jersey animals were 980 kg inferior to the fleckvie breed in terms of milk yield, they surpassed it by 4.5 kg in the amount of milk fat.

According to the literature, the jersey breed has a limited use of pure breeding. It is mainly used in cross-breeding in commercial farms, cross-breeding jersey bulls with low-fat cows where high-fat milk is successfully inherited from first-generation hybrids. Thus, in a number of farms of the Russian Federation, according to N. Burlakov and according to D. Startz (2), the crossbreeding with the purebred race contributed to the increase of milk fat in mixed breeds by 25.3, 33.9 and 28.8 kg.

According to A. Soldatov (4), under the conditions of normal feeding and care jersey animals are easily adapted to climate change showing a rather high productivity, revealing the genetic potential of the product specific to the breed. According to the data registered in the pedigree books, the milk yield of Jersey cows in the first lactation was 2893 kg -5.83 %, in the second - 3396 kg and 5.11 %, in the third- 3553 kg and 6.65%. The results of our research on milk quality assessment are somewhat different from the data obtained by K. Markova and others (3). Thus, according to the results of the studies of the mentioned author, in the first lactation, the milk yield of the firstborn cows of the purebred jersey breed was 3038 kg, the milk fat content was 5.87 % and the protein content was 4.08. 100 g of fat contained 69.5 g of protein.

The pediatric veterinary service has conducted some studies on the adaptive characteristics of imported animals. In particular, according to the results of the researches of the first director of the pedigree, veterinarian K. Narimanyan, some peculiarities in terms of climate adaptation were observed among the animals.

They were more susceptible to parasitic diseases of the blood, especially piroplasmosis.

Pedigree animals have developed the chronic infectious disease as necrobacteriosis, which is of microbial origin, characterized by purulent diagnoses of skin and tissues, leading to decline. The latter was not observed in local animals. The Holstein-Frisian tribes were especially sensitive to him.

Mastitis is one of the most common mammalian diseases in imported animals. Jersey animals have a greater tendency in this regard.

One of the main problems of climate adaptation is the regulation of heat exchange between the organism and the "environment".

Conditions in Europe significantly differ from those in Artsakh in terms of temperature.

The average summer temperature in Europe ranges from 23 to 26°C, and in the conditions of Artsakh it is 36-40°C. The latter exceeds the body temperature. Under such conditions, the heat content of the animals decreases and the heat regulation is disturbed.

At the same time, it should be borne in mind that the implementation of measures related to acclimatization gives rise to additional costs with a negative impact on the quality of animal production and economic use.

Conclusion

1. In terms of growth intensity from birth to fertilization, Fleckvie animals exceeded jerseys. The average daily weight gain was 593 g for fleckvie heifers and 492 g for jerseys, or 20.5% for fleckvies and 47.8% or 320 kg for live weight, respectively.
2. From the point of view of reproductive traits, the animals of the jersey breed showed some precocity which is typical for the given breed. The age of the first fertilization was 20.5 months, the gestation period was 278 days, the birth age was 29.8 months. The indices of the fleckvie breed were 24.9 months, 282 days and 34.3 months, respectively.
3. According to the results of the first lactation, the average milk yield of the fleckvie was 3810 kg, the jersey - 2830 kg, or the animals of the flechvie exceeded the jersey by 980 kg or by 34.6%. At the same time, in terms of quality, the content of milk fat and protein was relatively high in milk of the jersey breed, making 5.61 and 4.08% and 4.05 and 3.5%, respectively. As a general indicator of lactation, the animals of the jersey breed with milk fat content exceeded the flekvie by 4.54 kg.
4. According to a study by veterinary specialists, pedigree animals imported from Europe were more susceptible to parasitic diseases of the blood, especially piroplasmosis, and developed the chronic infectious disease of necrobacteriosis, leading to declines.

Suggestions

1. To carry out zootechnical-economic assessment of imported breeds, creating conditions for normal feeding and care. Under conditions of malnutrition, it is impossible to identify the potential for productivity, which sometimes leads to the question of substituting one breed for another.
2. To guarantee the breeding of jersey to be combined with any breed of the dairy breed based on the results of our researches in the literature and the best experience. And in this connection, taking into account that the import of purebred animals gives rise to high material costs in rough

and mountainous climatic conditions it is expedient to breed the Caucasian gray breed combining dairy and meat production and at the same time rationally used pastures.

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ՏԱՎԱՐԻ ՖԼԵԿՖԻ ԵՎ ՋԵՐՍԵՅ ՑԵՂԵՐԻ ԵՐԻՆՋՆԵՐԻ ԱՃԻ, ԶԱՐԳԱՑՄԱՆ ԵՎ ՄԹԵՐԱՏՎՈՒԹՅԱՆ ՁԵՎԱՎՈՐՄԱՆ ՀԱՄԵՄԱՏԱԿԱՆ ԲՆՈՒԹԱԳԻՐԸ ԱՐՑԱԽԻ ՀԱՆՐԱՊԵՏՈՒԹՅՈՒՆՈՒՄ

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Շուշիի տեխնոլոգիական համալսարան

Ուսումնասիրություններով հաստատվել է, որ ըստ աճի ինտենսիվության ծնից մինչև բեղմնավորումը ընկած ժամանակահատվածում ֆլեկֆի ցեղի կենդանիները գերազանցել են ջերսեյ ցեղին 20,5 %-ով, իսկ ըստ կենդանի զանգվածի ՝ 47,8 %-ով:

Առաջին լակտացիայի արդյունքներով առաջնածին կովերի միջին կաթնատվությունը ֆլեկֆի ցեղի մոտ կազմել է 3810 4,05 % յուղայնությամբ, իսկ ջերսեյ ցեղի մոտ համապատասխանաբար՝ 2810 կգ և 5,61 %, կամ ֆլեկֆի ցեղի կենդանիները գերազանցել են ջերսեյին՝ 34,6 %-ով: Միաժամանակ ըստ կաթնայուղի պարունակության նրանք զիջել են ջերսեյին՝ 4,5 կգ-ով:

Ներկրված երինջները ավելի ընկալունակ են եղել արյան պարազիտային հիվանդությունների հատկապես պիրոպլազմոզի նկատմամբ:

Ուստի երաշխավորվում է կատարել ներկրված ցեղերի զոոտեխնիկական և տնտեսական գնահատում, որը հնարավորություն կընձեռնի նրանց մոտ բացահայտելու մթերատվության պոտենցիալ հնարավորությունները պայմանավորված ժառանգականությամբ:

Բանալի բառեր. լակտացիա, հղիություն, ինտենսիվություն, ժառանգականություն, պիրոպլազմոզ, կաթնատվություն:

СРАВНИТЕЛЬНАЯ ХАРАКТЕРИСТИКА РОСТА, РАЗВИТИЯ И ФОРМИРОВАНИЯ ПРОДУКТИВНОСТИ НЕТЕЛЕЙ ПОРОД ФЛЕКФИ И ДЖЕРСЕЙСКОЙ В РЕСПУБЛИКЕ АРЦАХ

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Исследования показали, что по интенсивности роста в период от рождения до оплодотворения животные породы флекфи превзошли джерсейскую породу на 20,5%, а по живой массе - на 47,8%.

По результатам первой лактации средний удой первотелок породы флекфи составил 3810 кг при жирности молока 4,05%, а у джерсейской, соответственно, - 2810 кг и 5,61%, т.е. животные породы флекфи превзошли джерсейскую на 34,6%. В то же время по содержанию молочного жира они уступили джерсейской на 4,5 кг.

Привозные нетели оказались более восприимчивы к кровепаразитарным заболеваниям, особенно к пироплазмозу.

Поэтому рекомендуется провести зоотехническую и экономическую оценку привозных пород, что позволит выявить потенциальные возможности продуктивности, обусловленные наследственностью.

Ключевые слова: лактация, беременность, интенсивность, наследственность, пироплазмоз, удойность.

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