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ДИНАМІКА ВАГОВОГО РОСТУ ЖИВОЇ МАСИ ТЕЛЯТ УКРАЇНСЬКОЇ ЧОРНО-РЯБОЇ МОЛОЧНОЇ ПОРОДИ ЗА РІЗНИХ СПОСОБІВ ВИРОЩУВАННЯ

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DYNAMICS OF WEIGHT GROWTH OF LIVING WEIGHT OF CALVES OF UKRAINIAN BLACK-SPOTTED DAIRY BREED BY DIFFERENT METHODS OF GROWING

Анотація.

Наведено дані вагового росту телят української чорно-рябої молочної породи у період вирощування від народження до 6-ти місячного віку залежно від способу вирощування. Живу масу тварин, відносний і середньодобовий прирости визначали на основі даних щомісячного зважування в період їх вирощування. Досліджувані показники у всі місяці найвищі були групі телят за «холодного» вирощування. Жива маса новонароджених телят знаходилась в межах 32,7-33,2 кг, в 3-місячному віці – 101,8-105,2 кг, в 6-місячному – 171,3-178,3 кг. Даний показник у всі місяці вирощування у тварин піддослідних груп був вище стандарту породи. Встановлено, що тварини за живою масою у 3-місячному віці переважали стандарт породи на 2,2 кг, у 6-місячному – на 1,3 і 8,3 кг відповідно за вирощування телят у профілактиці та «холодного» способу. У 6-місячному віці жива телят за холодного методу утримання була більшою на 7,0 кг, або на 4,1%, тварини першої групи збільшили свою живу масу в 5,24 рази, другої – у 5,37 разів. Перевага була у тварин за «холодного» вирощування на 0,13. Середньодобовий приріст відповідав плановому приросту при вирощуванні ремонтного молодняка, у другій групі був вищим на 36 г порівняно з утриманням телят у приміщенні. Відносна швидкість росту телят «холодного» вирощування вища на 1,3 п.п.

Abstract.

The data of weight growth of calves of Ukrainian black-spotted dairy breed in the period of rearing from birth to 6 months of age depending on the method of rearing are given. Live weight of animals, relative and average daily gains were determined on the basis of monthly weighing data during their rearing. The studied indicators in all months were the highest in the group of calves for "cold" rearing. Live weight of newborn calves was in the range of 32.7-33.2 kg, at 3 months of age - 101.8-105.2 kg, at 6 months - 171.3-178.3 kg. This figure in all months of cultivation in animals of the experimental groups was higher than the breed standard. It was found that animals at live weight at 3 months of age exceeded the breed standard by 2.2 kg, at 6 months - by 1.3 and 8.3 kg, respectively, for rearing calves in prophylaxis and "cold" method. At 6 months of age, the live weight of calves by the cold method was increased by 7.0 kg, or 4.1%, the animals of the first group increased their live weight by 5.24 times, the second - by 5.37 times. The advantage was in animals for "cold" rearing by 0.13. The average daily gain corresponded to the planned increase in the repair of young animals, in the second group was higher by 36 g compared to the content of calves indoors. The relative growth rate of "cold" calves is higher by 1.3 percentage points.

Ключові слова: жива маса, середньодобовий приріст, відносний приріст, напруга росту, кратність збільшення, витрата кормів

Keywords: live weight, average daily gain, relative gain, growth stress, multiplicity of increase, feed consumption

Introduction. One of the most important tasks of the agro-industrial complex is the search for reserves to increase the production of dairy products. Genetically programmed productivity can be realized only under favorable conditions of growing, care and use of animals.

Breeding and productive qualities of cattle are formed during the period of growth and development of the organism. Among the measures that increase the productivity of dairy herds is of great importance to raise animals of the desired type and level of productivity.

To raise a cow that would fully reveal the genetic potential, it is necessary from the first days of breeding to create optimal conditions for calves to feed and keep, which will ensure the normal growth and development of animals [4].

The organization and technology of breeding repair young animals should be based on the laws of individual growth and development and promote the formation of animals with a strong constitution and high productivity. It is known that the underdevelopment of organs due to insufficient feeding and inadequate housing conditions for one period of rearing leaves negative

consequences, even if the next period of animal development occurs under favorable organizational and technological conditions. There is a significant number of systems for growing repair heifers, which are based on the use of knowledge of the biological patterns of growth of young animals in combination with specific feeding conditions and economic feasibility [5].

The growing morbidity and mortality of young cattle, the shortage of products from sick animals, necessitate research and development of energy-saving in dairy farming.

The share of animals of the Ukrainian black-spotted dairy breed in the total livestock reaches over 40%. Currently, this specialized dairy breed is kept in more than 250 breeding farms of Ukraine and is selected in the direction of increasing the amount of milk and its quality indicators - fat and protein content in milk [7, 11].

The choice of technology for raising calves during the milk period to maintain the health of young animals along with the organization of their feeding is important in shaping future productivity [2].

Significant damage to the dairy industry is caused by diseases and deaths of young animals during the dairy period. This is due to the fact that the realization of genetically determined milk productivity in a sick newborn heifer decreases in adulthood in proportion to the severity and duration of the disease. The newborn calf adapts to living conditions outside the mother's body for 7-10 days. At this time, it is especially important to protect calves from disease and promote the development of protective functions of the body. Heifers that relapsed with dyspepsia at 10 days of age, compared with those who were not ill, lag behind in growth and development. Fertile fertilization in them occurs 3-5 months later, and the mortality of calves born to them is 4-5 times higher. In the future, they reduce milk yield during lactation by 15-20%, and the fat content in milk - by 0.1-0.2% [9].

Today, many farms use the "cold" method of keeping calves. This method, regardless of the season, involves keeping calves from the first days of life in conditions close to the external environment, which mobilizes the body's defenses and hardens the animals. Young animals raised by the "cold" method are easier to adapt to climatic conditions, although they consume more feed, but grow quickly and develop harmoniously.

The essence of the technology of cold method of keeping newborn calves is that calves in 8-12 hours, or 2-3 days after birth (regardless of the season) are transferred to specially made and equipped individual cages-houses in the open air, where hold 1.5-3 months.

There are various modifications of the "cold" method of raising calves during the milk period: in individual cages with a removable roof; in individual cages-houses with walking platforms; in individual cages under canopies; in individual cages in atypical cold rooms of capital or light type with walking areas on the street; after two to three months of age - group loose housing in isolated boxes on deep straw bedding in atypical cold rooms of the capital or lightweight buildings with outdoor playgrounds [1].

Most often, calves are kept in individual houses, as this option has a number of advantages. The introduction of this method is less expensive than the construction of cold rooms and sheds, and the animals, going to the playgrounds, are exposed to solar insolation all year round, which has a positive effect on their health. Individual keeping of calves prevents the spread of infectious diseases among animals, in contrast to keeping in group houses.

Cold keeping of calves should be used only in well-ventilated areas or in areas with canopies that protect mainly from rain, and this will allow you to get healthy young. Keeping calves indoors after rearing by the "cold" method poses a risk of lung disease due to the lack of resistance in animals to increased bacterial air pollution and high concentrations of harmful gases.

With the "cold" method of raising calves, it is important to follow the basic rules of feeding them colostrum and milk, as well as feeding plant foods. Ukrainian farms have a positive experience of using the "cold" method of raising calves, including the limited liability company "Ukrainian Dairy Company", where animals are kept in individual houses located on the site. Calves are transferred after the hair is completely dry (1-2 days). Drink 6 liters of milk per day at a temperature of 38°C, using a milk taxi. Milking is carried out 2 times a day, in the morning at 7.00 and in the afternoon at 15.00. An hour after drinking milk, give water that is not heated. Concentrated feeds are fed to their heart's content [10].

In the private joint-stock company "Chernihiv Breeding Enterprise" individual houses for calves are placed under a canopy. The lactation period in animals lasts 57-60 days. In the feeding of young animals from 7 days of age use whole milk substitute and feed to the fullest.

The "cold" method of keeping young cattle during the milk period has both positive and some negative sides.

The positive thing is that you do not need to build capital premises; calves breathe clean air of natural temperature and humidity, practically deprived of harmful factors of a livestock room that promotes cultivation of healthy animals; calves receive a sufficient amount of ultraviolet radiation, under the action of which their skin produces biologically active substances and vitamin D; during the rearing period the calves are isolated from each other, which allows to avoid the transmission of various diseases; promotes the activation of the thyroid gland, better development of the cardiovascular system, respiratory, digestive and excretory organs, which allows to increase the safety of young animals.

The disadvantages of the "cold" method of raising calves in winter are slightly higher feed costs, because much of the energy consumed with feed is spent on maintaining body temperature; rapidly cooled dairy feeds, which are distributed at low temperatures; additional manual labor costs for cleaning aft passages, individual houses. However, these shortcomings of the "cold" method of raising calves are not critical. Increasing the safety of calves allows them to compensate [10].

In farms that use the "cold" method of raising calves, there is a very clear zootechnical requirement - the calf should be watered no later than 30-40 minutes after birth. This is due to the fact that over time, the colostrum loses immunoglobulins, which protect the body of the newborn calf from various diseases. In addition, farms are developing calf feeding schemes, and rations are based on the age and live weight of the animals and balance all nutrients. An important caveat with the "cold" method of raising calves is that it is not recommended to transfer them to warm capital rooms and mix with calves kept there, so as not to cause disease in calves raised outdoors. Calves raised in the cold up to 3 months of age should continue to be kept in similar conditions, separately in cold rooms [3].

To address this issue, the Shcherbych farm in central Ukraine conducted a scientific and economic experiment on a comparative study of the effectiveness of

"cold" rearing of calves up to 6 months of age.

The purpose of the study was to study the features of energy supply of calves of the Ukrainian black-and-white dairy breed of the dairy period of rearing.

Material and methods of research. The research was carried out on the farm on heifers of the Ukrainian black-spotted dairy breed according to the scheme (Table 1).

Today, the farm is refining the technology of growing repair heifers with the "cold" method from birth to the introduction of heifers in the dairy herd. 3-5 days before the expected calving, the cows are transferred to the maternity ward, where the newborn calf is at least 3 days in order to make full use of immunoglobulin colostrum. After that, the calves are transferred to individual houses.

Table 1

The scheme of the experiment

Age, months	Method of retention	
	traditional	"cold"
0-6	Up to 15-20 days in a calf at a temperature up to + 15 ° C	Up to 3 days in the calf, then up to 3 months. in an individual house, 3-6 months - in group cages, at a temperature not lower than -5-8 ° C
Researched indicators	Live weight, relative and average daily gains, live weight growth rate, feed costs	

The research was conducted on young cattle of the Ukrainian black-spotted dairy breed from birth to 6 months of age.

For studies on the principle of analogues selected two groups of heifers with 8 heads in each. The experiment on newborn calves was conducted from December to May 2018.

The young of the control group were raised according to the traditional technology in the calf, the experimental group - "cold" method, in which calves were kept in a calf until 3 days of age, then in individual houses up to 3 months on deep straw litter. Young animals of 3-6 months of age in the autumn and spring periods were raised in group cages with playgrounds, in the winter months - indoors in sections.

Calves are kept in an individual house cage on a deep straw litter 20 to 30 cm thick, with 7-8 kg of straw. It is necessary to regularly change the top layer of straw daily in case of litter contamination, keeping the top layer of litter 5-8 cm thick dry. Individual houses are cleaned of manure, disinfected and whitewashed before each calving. It is possible to launch new calves in these houses only in a week.

Calves older than 3 months of age are kept loose in group cages of 5-10 heads, depending on age. This helps them to better withstand fairly low temperatures, get used to eating plant foods earlier, which contributes to the accelerated development of the digestive system and the formation of a strong skeleton. In the case of group keeping of calves, the floor area per animal is not less than 2 m² per head, the feeding front is not less than 40 cm.

Milk feed for calves was fed individually: in the prophylactic period - from pacifier drinkers, later - from a bucket.

In both methods of cultivation, the floor area per head for calves was 2.5 m².

The comparative efficiency of growing repair heifers by traditional and proposed technologies was determined by conventional methods.

Feed accounting was determined every decade based on the results of weighing the given feed and their residues for two consecutive days.

The growth rate of heifers was assessed by the average daily gain by monthly weighing of animals before feeding. The relative growth rate of repair young was determined by the formula of S. Brody.

Live weight of calves in the period of their rearing up to 6 months of age was determined monthly. Based on these indicators, the average daily gains of animals, the multiplicity of increase in live weight, the relative rate and rate of growth of live weight were calculated. The average daily gain of animals was determined by the formula: $C_{\pi} = (W_t - W_0)/(t_2 - t_1)$, де: W_t i W_0 – final and initial live weight, kg; t_2 i t_1 – age at the end and beginning of the period, days.

The relative growth rate (B) was calculated by the formula of S. Brody:

$$B = (W_t - W_0)/0.5(W_t + W_0) \times 100.$$

The increase in live weight was determined by dividing the live weight at the end of each month by the live weight of newborns. Growth stress (H) was calculated by growth factors: $H = (W_t - W_0)/W_0 \times 100$.

Results and discussion. It is known that to ensure the viability and normal development of the animal, as well as to achieve a high level of productivity in the future, it is necessary to adhere to a sufficient level of cultivation and development at each age. Different methods of raising calves had different effects on the growth and development of experimental young (Table 2).

Table 2

Age dynamics of live weight in experimental calves depending on the method of cultivation, kg

Age, months	Group		Breed standard
	I	II	
At birth	32,7±1,42	33,2±1,12	40
1	54,9±1,22	55,2±1,37	
2	77,8±2,01	78,9±2,14	
3	101,8±3,28	105,2±2,43	103
4	125,2±3,57	129,5±2,97	
5	148,6±2,94	154,7±3,8	
6	171,3±3,57	178,3±3,41	170

The difference in the ways of keeping heifers in the first two months of life did not significantly affect the indicators of cultivation. However, with a fairly good development of young animals of both groups, slight advantages in terms of live weight were observed in calves, which were raised by the cold method, by 0.3-1.1 kg. The tendency to increase this indicator can already be traced from 2 months of age. In the third month, the live weight of calves in the "cold" rearing was higher by 3.4 kg, or 3.3%. Compared to the standard, the live weight of calves in the second group is higher by 2.2 kg, or 2.1%, in the first, where the animals are kept indoors, lower by 1.2 kg, or 1.2%. In the fourth month, this figure in the second group of calves increased by 4.3 kg, or 3.4%. In the fifth month of life, cold-calved calves had a higher live weight of 6.1 kg or

4.0% compared to animals kept indoors. At 6 months of age, the increase reaches a maximum - by 7.0 kg, or 4.1% in the group with the cold method of keeping calves. At the end of 6 months of age, calves in both groups had a higher standard live weight, in particular, in the first group - by 1.3 kg, in the second group the advantage was the largest, by 8.3 kg, or 4.9%.

We found that the increase in live weight of calves in the period of their rearing from birth to 6 months, depending on the method of rearing in the studied age periods was different (Table 3). With each passing month, this figure in the experimental groups increased and at 6 months of age on average calves of the first group increased their live weight by 5.24 times, the second - 5.37 times. That is, the advantage was in animals for "cold" cultivation - by 0.13 (Table 3).

Table 3

Multiplicity of live weight increase in experimental calves

Age period, months	Group	
	I	II
From birth to 1 month	1,68	1,66
1-2	2,38	2,38
2-3	3,11	3,17
3-4	3,83	3,90
4-5	4,54	4,65
5-6	5,24	5,37

A more vivid idea of the influence of the method of keeping is given by the analysis of the average daily gain of live weight of young animals by individual age periods (Table 4).

Table 4

The average daily live weight gain in calves up to 6 months of age, g

Age period, months	Group	
	I	II
From birth to 1 month	740	733
1-2	763	790
2-3	800	877
3-4	780	810
4-5	767	840
5-6	757	787
From birth to 3 months	768	800
From 3 to 6 months	772	812
From birth to 6 months	770	806

First of all, it should be noted that with age, the average daily increase in live weight of animals tended to increase monthly.

Analysis of data to determine the average daily gain of calves in the dairy period showed that for the first period of the experiment (up to 3 months of age) the average daily gain was 740 g in the control group and slightly lower in the experimental group - 733 g per

day, then in the following months increased. During the second month of rearing the increase in the first group was at the level of 23 g (763 g), the second - by 57 g (up to 790 g), which is higher than the first group by 34 g. Later in the following months of rearing calves were higher in the second group in the "cold" breeding of animals. Favorable weather in the spring allowed the animals of the second group to increase the average daily

gain of live weight from 30 to 77 g. In the spring months, the increase in live weight of calves of the second group was 810-840 g, 77 g, the fourth - 30 g, the fifth - 73 g and the sixth - 30 g.

It should also be noted that the trend of better development in calves "cold" breeding is observed at all ages - from birth to 6 months of age. During the period from birth to 3 months of age, the average daily gain in calves of the experimental group under the "cold" method of cultivation was higher by 26 g or 4.2%. The highest average daily gains in live weight of calves were observed in the period from 3 to 6 months of age (812 g) in the group for "cold" rearing, against the data of the first group greater than 40 g. In general for the experimental period (from birth to 6 months) age the average daily increase in young animals of the experimental groups was approximately equal (770-806 g),

which corresponds to the planned increase in the cultivation of repair young animals. However, in the second group, the studied indicator for this period was higher by 36 g compared to the animals for keeping indoors.

Calves in the first months of their lives grow unevenly, so the indicators of absolute growth do not fully reflect the intensity of their growth. To this end, we calculated relative increments.

It is established that the greatest intensity and stress of calf growth is observed up to three months, so during this period it is necessary to pay special attention to the maintenance and feeding of young animals, which is the method of "cold" rearing. The highest indicators of the relative growth rate of calves in both experimental groups were observed for the first month of rearing, in the future with each subsequent month they decreased (Table 5).

Table 5

Intensity of relative growth and growth rate of live weight of calves, %

Age period, months	Relative growth rate, %		Live weight growth voltage, %	
	Group		Group	
	I	II	I	II
From birth to 1 month	50,7	49,8	67,9	66,3
1-2	34,5	35,3	41,7	42,9
2-3	26,7	28,6	30,8	33,3
3-4	20,6	20,7	22,9	23,1
4-5	17,1	17,7	18,7	19,4
5-6	14,2	14,2	15,3	15,3
From birth to 3 months	102,7	104	211,3	216,9
From 3 to 6 months	50,9	51,6	68,3	69,5
From birth to 6 months	135,9	137,2	423,8	437

Higher data on the relative growth rate of live weight of calves were observed in the second group of animals during "cold" rearing. For the second month of cultivation the advantage was 0.8 percentage points, the third - 1.9, the fourth - 0.1, the fifth - 0.6 percentage points, in the last month the figures were at the same level (14.2 %).

The relative growth rate of calves for the period from birth to 3 months of age in the second group is higher by 1.3 percentage points, in the period of 3-6 months. - by 0.7, for the period from birth to 6 months - by 1.3 percentage points.

The growth stress of the live weight of the calf in the group of animals in the "cold" breeding was higher compared to the content indoors. If for the first month in the second group this indicator was lower by 1.6 percentage points, then in the following months - higher, in particular, for the second month - by 1.2 percentage points, the third - by 2.5 percentage points. n., the fourth - by 0.2, the fifth - by 0.7 pp. and for the sixth month of cultivation, the growth rate of live weight was the same. The growth stress in calves from birth to 3 months of age compared to the next period is 3.1 times higher. In the group of calves for "cold" rearing, the studied indicator is higher for the period from birth to 3 months of age by 5.6 percentage points, 3-6 months. - at 1.2 percentage points

Adherence to the microclimate in livestock facilities is one of the ways to obtain high productivity. When the air temperature decreases, feed consumption increases. According to the results of our research, in the winter and summer periods of the year the air temperature in the prophylactic clinic and in the individual ones corresponded to the generally accepted norms of the microclimate. The room temperature was in the range of 18-20 °C, air velocity of 0.11-0.25 m / s, and these indicators were within normal limits. In the winter months, the concentration of ammonia was 14.6 mg / m³, in the spring - increased by 16.4% and amounted to 17 mg / m³. Humidity in the clinic was higher than normal - an average of 81.3%.

The temperature in the individual houses where the calves of the second group were kept depended on the environmental conditions and was the lowest in January - -5.8 °C, in February - -2.2 °C, in March - 5.7 °C, in April 13.5 °C. The average humidity is 72%.

Different methods of growing calves had different effects on eating food, especially vegetable (Table 6).

With the same consumption of dairy feed - 300 kg of whole milk and 400 kg of collected milk per head on average - the difference was in favor of young animals of the second group (from birth to 3 months). The difference in the amount of feed consumed between the first and second groups was higher in the second: hay - 10.6 kg and silage - 12.6 kg, from 3 to 6 months. - 23.3 and 31.7 kg, respectively, and green fodder - 6.4 kg (Table 6).

Table 6

Feed costs during the experiment (average per 1 head, kg)						
Group	Feed					
	Whole milk	Skim	Compound feed	Hay	Corn silage	Green fodder
0-3 months						
I	300	150	56,8	42,5	52,3	–
II	300	150	54,7	53,1	64,9	–
3-6 months						
I	–	250	110,2	86,4	99,8	37,4
II	–	250	111,7	109,7	131,5	43,8
0-6 months						
I	300	400	167,0	128,9	152,1	37,4
II	300	400	166,4	162,8	196,4	43,8

Differences in the amount of plant foods consumed are reflected in the total nutritional value of rations (Table 7).
Table 7

**Nutrition of feed consumed by calves for the accounting period
(on the average on 1 head, kg)**

Group	Content in feed			
	feed units	digestible protein	Ca	P
0-3 months				
I	206,4	22,9	1,0	0,8
II	211,2	23,4	1,1	0,9
3-6 months				
I	227,2	24,4	1,3	1,1
II	252,4	27,2	1,5	1,2
0-6 months				
I	433,6	47,3	2,4	1,9
II	463,6	50,6	2,8	1,9

As the calves of the second group consumed more feed during the study period, therefore, the total nutritional value of these feeds for the period from birth to 6 months of age in calves of the second group was higher, namely, from birth to 3 months - 4.8 feeds .od .; from 3 to 6 months - by 25.2 feed units; from birth to 6 months - 30 feed units.

Digestible protein in calves in the experimental group was also consumed more: from birth to 3 months - 0.5 kg; from 3 to 6 months - by 2.8 kg; from birth to 6 months - 3.3 kg.

According to the analysis of the chemical composition and properties of silage used in feeding calves, can be attributed to the second class. According to the score, the samples of corn silage were considered good: the total number of points was 11 points, incl. for acidity - 5, color - 3 and odor - 3. Humidity of silage was 69.17%, acidity (pH) - 3.82, color was dark olive and had a slightly oily consistency [6].

Hay of cereals and legumes of sown grasses was evaluated by organoleptic parameters, the class was determined experimentally - the second; the consistency

is soft with single coarse stems, the leaves make up 35-50% of the sample weight, the contamination is small - only hay flour, the smell is weak, the color is slightly faded. The selected sample of hay was classified as non-class (for exceeding the moisture content of 24.81% against 17% - according to the standard). However, according to the score, the quality of hay samples was 26 points (including 10 points for protein content, 8 points for carotene content, 5 points for odor and 3 points for color), which corresponds to the quality class "satisfactory".

Concentrated feed deviations from the requirements of the quality standard in terms of humidity, the presence of impurities, mineral, harmful, other grain impurities, the presence of barn beetles were not detected. Grain moisture was 11.5% vs. 15.5% by standard, protein content - 14.1% vs. 8.5% by standard, ie were within normal limits.

The energy nutrition of feed mixtures for calves up to 6 months of age was calculated (Table 8).

Table 8

Calculation of specific energy nutrition of feed mixtures for young cattle in IVF [6]				
Indication	Protein	Tallow	Cellulose	Without nitrogenous substances
Feed mixture for calves aged 0-6 months				
Chemical composition, %	9,9	2,7	16,01	16,17
Digestibility ratio, %	62,8	69,7	60,0	76,3
The amount of digestibles, g / kg	62,14	18,82	96,06	123,43
OE in 1 g of digestibles	18,0	32,6	12,1	15,5
OE, kJ / kg	1118,52	613,53	1162,33	1913,17
Energy nutrition, IVF / kg	0,48			

Taking into account the above data, it was found that the average daily diet for calves up to 6 months of age had a nutritional value of up to 28.8 IVF / head / day (against 26.0 IVF - according to the norms).

In addition, when keeping animals in the "cold" rearing of calves, feed costs per 1 kg of growth were higher, in particular: feed units - by 8.1% and digestible protein - by 7.7% (Table 9).

During the "cold" rearing of calves during the accounting period, 145.1 kg of gain was obtained per 1 head, and 6.5 kg less in the prophylactic clinic.

In the spring, this difference increased, and in general, during the growing period, feed consumption per 1 kg of growth in calves of the second group was higher by 3.7% of feed units and 3.4% of digestible protein.

Table 9

Feed costs for different ways of keeping calves in the winter-spring period

Indicator	Group	
	I	II
Received an increase of 1 head up to 3 months, kg	69,1	72
Spent per 1 kg of gain:		
feed units	2,98	2,93
digestible protein, g	331	325
Received an increase of 1 head from 3 to 6 months, kg	69,5	73,1
Spent per 1 kg of gain:		
feed units	3,26	3,45
digestible protein, g	351	372
Received an increase of 1 head from birth to 6 months, kg	138,6	145,1
Spent per 1 kg of gain:		
feed units	3,12	3,19
digestible protein, g	341	348

Gastrointestinal disorders were reported in calves of both groups, but the nature of the disease and its duration were different. If in the second group the duration of the disease averaged 2-3 days and once, in the first - up to 4 days or more. The survival of the calf population in both experimental groups was 100%.

Conclusions. Calves of the Ukrainian black-spotted dairy breed in the period of rearing from birth to 6 months of age were marked by good indicators of live weight. In all age periods, they exceeded the breed standard by this indicator: at 3 months of age - by 1.2 and 2.2 kg, at 6 months - by 1.3 and 8.3 kg.

Live weight of calves depended on their method of rearing. In all studied periods of growth, the highest indicators of live weight, multiplicity of increase in live weight and average daily gain were characterized by animals in the "cold" method of cultivation.

During the "cold" rearing of calves during the accounting period, 145.1 kg of gain was obtained per 1 head, and 6.5 kg less in the prophylactic clinic.

Feed costs per 1 kg of growth were higher in calves in the "cold" rearing: feed units - by 8.1% and digestible protein - by 7.7%.

Research prospects. In the future, the exterior features of heifers of the Ukrainian black-spotted dairy breed depending on the method of cultivation will be studied.

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