Kosilov V.I., Doctor of Agricultural Sciences, Professor, the main author, https://orcid.org/0000-0003-4754-1771
FSFEIHPE «Orenburg State Agrarian University», 460014, Chelyuskintsev str., 18, Orenburg, Russian Federation, kosilov_vi@bk.ru
Kadralieva B.T., Ph.D student, https://orcid.org/0000-0002-5161-5561
FSFEIHPE «Orenburg State Agrarian University», 460014, Chelyuskintsev str., 18, Orenburg, Russian Federation, bkadralieva@mail.ru

INDICATORS OF WEIGHT GAIN OF FIRST-CALF COWS OF BLACK-AND-WHITE, HOLSTEIN BREEDS OF DIFFERENT SELECTION AND THEIR FIRST-GENERATION CROSSBREEDS

Annotation
The article presents the indicators of live weight, growth and relative growth rate of cows of the first heifers of the black-and-white breed, peers of the Holstein breed of German selection, holsteins of Dutch selection, crossbreeds of ½ holsteins of German selection x ½ black-and-white, crossbreeds of ½ holsteins of Dutch selection x ½ black-and-white. It was found that due to the effect of crossing, crossbred Holstein animals of groups IV and V outperformed purebred peers of the black-and-white breed of group I in live weight at the beginning of the experiment by 29.67 kg (6.29%, P<0.01). It is characteristic that the first heifers of the Holstein breed of the Dutch selection of group III, being inferior in live weight at the beginning of the experiment to the peers of the Holstein breed of the German selection of group II, surpassed the purebred animals of the black-and-white breed of group I in their level by 36.33 kg (7.71 %, P<0.05). The obtained data and their analysis indicate that the rank of distribution of the first-calf cows of the experimental groups by live weight, established at the beginning of the experiment, was also noted at the end of the study. The data obtained on the intergroup differences in live weight at the end of the experiment are largely due, along with its different level at the beginning of the experiment, to the unequal value of its absolute increase during the observation period. At the same time, the leading position in terms of the gross increase in live weight was occupied by the first-calf cows of the Holstein breed of the German selection of group II. The obtained experimental materials and their analysis indicate inter-group differences in the value of the analyzed indicator with the advantage of first-heifer cows of foreign breeding. Thus, purebred animals of groups II and III exceeded the relative growth rate of purebred peers of the black-and-white breed of group I in terms of the relative growth rate for the experiment period by 0.51% and 0.45%, respectively, crossbreeds of group IV – by 0.37% and 0.31%, crossbreeds of group V by 0.46% and 0.40%.

Keywords: cattle breeding, first-born cows, black-moth breed, holstins of German and Dutch breeding, mixing, living mass, growth.

Introduction. The high genetic potential of dairy cattle is created and realized by rationed feeding. Therefore, strengthening the management of dairy cattle farming is unthinkable without creating a solid feed base in the farm, which will ensure adequate feeding throughout the year. Under the same conditions of feeding and housing the intensity of metabolic processes occurring in the body is determined by the genetic characteristics of animals. The main national economic task of domestic livestock breeding is to provide the country's population with high-quality foodstuffs [1-6]. To solve it, it is necessary to use all the available reserves of the livestock industry of the agroindustrial complex [7-10]. At the same time, the rational use of genetic resources of both domestic and foreign breeding is important. At present, the issues of providing the country's population with high-quality dairy products remain unresolved. This is due to the insufficient number of highly productive breeds of dairy cattle. In this connection, in recent years the importation of Holstein cattle of various selections has been carried out. Animals of this breed are used both for purebred breeding and in cross-breeding with black-and-white cattle of local breeding. In this regard, a comparative assessment of the live weight of first-calf cows of Black and Holstein breeds and their mixtures is relevant, and its results are of scientific and practical importance [11-24].

Material and methods of research. For the solution of the set aim we have formed five groups of 15 cows each: I - black-motley, II - Holstein of the German selection (GNS), III - Holstein-Holland selection
(HCS), IV - ½ Holstein of the German selection x ½ black-motley, V - ½ Holstein-Holland selection x ½ black-motley. To determine the live weight of the experimental first-calf cows at the beginning and at the end of the experiment, individual weighing of the animals was carried out. Based on the results of weighing, absolute weight gain and relative growth rate were calculated by the formula of C. Brody formula.

**Results of the study and their discussion.** In dairy cattle breeding, live weight is one of the main breeding traits. Only well-developed animals have the potential to show high levels of dairy productivity. It should be kept in mind that under the same conditions of maintenance and feeding the value of live weight is determined by the genotype of the animal. This position is also confirmed by the experimental data obtained (Table 1).

| Indicator                      | Group |          |          |          |          |          |          |          |
|-------------------------------|-------|----------|----------|----------|----------|----------|----------|----------|
|                               | I     | II       | III      | IV       | IV       |
| Live weight, kg               | X ± Sx| Cv       | X ± Sx   | Cv       | X ± Sx   | Cv       | X ± Sx   | Cv       |
| in the beginning of experiment| 471,00±2,53 | 5,90 | 513,42±1,42 | 3,60 | 507,33±1,68 | 3,38 | 500,67±1,79 | 3,65 | 489,08±1,63 | 3,48 |
| at the end of experiment      | 491,00±3,23 | 5,95 | 537,92±1,83 | 3,53 | 531,25±2,68 | 3,99 | 522,67±2,23 | 4,88 | 509,83±1,94 | 3,93 |
| Absolute gain of live weight, kg | 20,00±0,92 | 1,02 | 24,50±1,50 | 1,12 | 29,92±0,70 | 1,68 | 22,00±1,09 | 1,18 | 20,75±0,63 | 1,22 |
| Relative growth rate, % (by S. Brody) | 4,15 | 4,66 | 4,60 | 4,29 | 4,20 |

Already at the beginning of the experiment, there were intergroup differences in live weight due to the genotype of first-calf cows. At the same time, the maximum value of the analyzed indicator differed between the animals of Holstein breed of German selection of group II. The animals of black-motley breed of the first group yielded to them by 42,42 kg (9,00 %, P<0,01) by live weight at the beginning of the experiment.

It was established that owing to the effect of crossbreeding the crossbred Holstein IV and V animals surpassed the purebred cows of the Black-motley breed of Group I by live weight at the beginning of the experiment by 29,67 kg (6,29 %, P<0,01). It is characteristic that female cows of the Holstein breed of the Dutch selection of Group III were inferior to their female counterparts of the German Holstein breed of Group II in respect to live weight at the beginning of the experiment, but they surpassed the purebred animals of the Black-Motley breed of Group I in the live weight by 36,33 kg (7,71 %, P<0,05).

The data obtained and their analysis indicate that the rank of distribution of cows of experimental groups by live weight established at the beginning of the experiment was also observed at the end of the study. Thus, Holstein cows of the German selection of Group II surpassed their purebred coevals of Group I by 46,92 kg (9,55 %) by live weight at the end of the experiment. At the end of observations purebred cows of Holstein breed of Dutch selection of Group II were surpassed by 46,92 kg (9,55 %, P<0,001), crosses of Group IV - by 15,25 kg (2,91 %, P<0,01), crosses of Group V - by 28,09 kg (5,50 %, P<0,001).

The crossbred first-calf cows of groups IV and V surpassed their purebred cows of the black-motley breed of group I by the body weight at the end of mortality by 31,67 kg (6,45 %, P<0,01) and 18,83 kg (3,83 %, P<0,001) correspondingly. At the same time female cows of Holstein breed of Dutch selection of the III group excelled their coevals of the I, IV and V groups according to the size of the analysed parameter by 40,25 kg (8,19 %, P<0,001), 8,88 kg (1,69 %, P<0,05) and 21,42 kg (4,20 %, P<0,001). Obtained data on intergroup differences in live weight at the end of the experiment is largely due, along with its different level at the beginning of the experiment the unequal value of its absolute growth in the period of observation. At the same time, the leading position in the level of gross live weight gain was occupied by Holstein cows of the German breeding group II.

So, their advantage in value of the analyzed parameter over their purebred coevals of the Black-and-White breed of Group I was 4,50 kg (22,50 %, P<0,01), animals of Holstein breed of the Dutch selection of Group III - 0,58 kg (2,42 %, P<0,005), pigs of Groups IV and V - 2,50 kg (11,36 %, P<0,01) and 3,75 kg (18,07 %, P<0,01) correspondingly. The pigs of groups IV and V surpassed...
their purebred coevals of group I by 2,00 kg (10.00 %, P<0,05) in absolute live weight gain over the period of the experiment respectively.

In turn, purebred cows of Holstein breed of Dutch selection of Group III were 3,92 kg (19.60%, P<0,01) better in live weight gain of purebred cows of Group I, 1,92 kg (8.72%, P<0,05), crossbreds of Group IV - 3,17 kg (15.27%, P<0,01).

It is interesting that by the value of live weight at the end of the experiment and absolute gain the crossbred cows were inferior to the crossbred cows of the IV group by 12,84 kg (2.51 %, P<0,001) and 1,25 kg (6,02 %, P<0,05).

It is known that a sufficiently informative indicator characterizing the tension of growth is the relative growth rate. The experimental data obtained and their analysis testify to intergroup differences in the value of the analyzed index with the predominance of first-bred cows of foreign breeding. The purebred cows of groups II and III were 0,51% and 0,45% superior to the purebred cows of crossbred breed of group I according to the relative growth rate for the period of experiment, respectively, while the crossbred cows of group IV were 0,37% and 0,31% superior, the crossbred cows of group V were 0,46% and 0,40% superior. The crossbred cows of groups IV and V were 0,14 % and 0,05 % superior to their purebred counterparts, while the crossbred cows were 0,09 % inferior to the crossbred cows of group IV.

Productive qualities of the animals largely depend on the organization of complete and balanced feeding. The results of the physiological experiment and their analysis testify to the influence of genotype on the consumption of nutrients in the diet. The leading position in consumption of all kinds of nutrients was taken by the first-calf cows of Holstein breed of German and Dutch selection of groups II and III, the minimum quantity was taken by the purebred animals of black-motley breed of group I, the crossbred animals of groups IV and V took an intermediate position by the size of the analyzed indicator.

Thus, the cows of the first heifers of the black-motley breed of the I group yielded to the cows of the II-V groups according to their dry matter intake by 368-1105 g (2.22-6,68%), organic matter by 500-990 g (3.37-6.66%), crude protein by 42. 6-127.2 g (1.90-5.69%), crude fat by 12.5-35.4 g (2.22-6.30%), crude fiber by 111.4-349.8 kg (2.85_8.94%), and nitrogen-free extractive substances (BEB) by 333.5-477.6 g (4.10-5.87%).

**Conclusion.** Thus, first-calf cows of Holstein breed of foreign selection were distinguished by higher weight parameters, the minimum of their value was characterized by the animals of Black-and-White breed, the crosses occupied an intermediate position. The greatest effect was noted in crossing cows of the black-and-white breed with Holstein cows of the German selection.

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ТУЙІН
Макалада қара-әк әрекетінің екінші жер бүзәуләрдән бөрінші бүзәуләрдән, немесе селекциялық ғойштейн әрекетін, голландиялық селекциялық ғойштейнің, гибридтәрдән бүзәуләрдән тірілілі тәлдамы, осуы және салыстырмалы осуы қорсеткіштері келтірілген. x 1/2 ак-қара, гибридтәр голландиялық сүрүптау x 1/2 ак-қара. Айысу әсерін арқасында IV және V топтарға гибридтәр ғойштейндік жануарлар тәжірибеленің басында тірі тәлдамға I топтарға қара-қақ тұқымының таза құрмының 7,67 кг (6,29%, P<0,01) асый түкендігі анықталды. Эксперименттін басында тірі тәламға бойынша II топтарға голландиялық селекциялық ғойштейні тұқымының бөрінші құрмының 0,51% және 0,45% асый түсті. 

РЕЗЮМЕ
В статье приводятся показатели живой массы, прироста и относительной скорости роста коров первотелок черно-пестрой породы, сверстниц голштинской породы немецкой селекции, голштейнов голландской селекции, помесей ½ голштин немецкой селекции х ½ черно-пестрой, помесей ½ голштин голландской селекции х ½ черно-пестрой. Установлено, что за счет эффекта скрешивания помесные голштинские животные IV и V группы превосходили чистопородных сверстников черно-пестрой породы I группы по живой массе в начале эксперимента на 29,67 кг (6,29%, P=0,01). Характерно, что первотелки голштинской породы голландской селекции III группы, уступая в живой массе в начале эксперимента сверстникам голштинской породы немецкой селекции II группы, превосходили чистопородных животных черно-пестрой породы I группы по своему уровню на 36,33 кг (7,71 %, P<0,05). Полученные данные и их анализ свидетельствуют о том, что ранг распределения коров-первотелок опытных групп по живой массе, установленный в начале эксперимента, также был отмечен в конце исследования. Полученные данные по межгрупповым различиям по живой массе в конце опыта обусловлены во многом наряду с разным её уровнем в начале опыта неодннакою величиной её абсолютного прироста в
период наблюдений. При этом лидирующее положение по уровню валового прироста живой массы занимали коровы-первотелки голштинской породы немецкой селекции II группы. Полученные экспериментальные материалы и их анализ свидетельствуют о межгрупповых различиях в значении анализируемого показателя с преимуществом коров-первотелок зарубежной селекции. Так, чистопородные животные II и III групп превосходили по относительному темпу роста чистопородных сверстников черно-пестрой породы I группы по показателю относительного темпа роста за период эксперимента на 0,51% и 0,45% соответственно, помесей IV группы-на 0,37% и 0,31%, помесей V группы – на 0,46% и 0,40 %.