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**COMPARATIVE RESULTS OF PRODUCTIVITY
OF MEAT-TYPE BULL-CALVES
IN THE CONDITIONS OF BAYSERKE-AGRO LLP**

Abstract. The article presents the results of the research work on fattening of meat-type bull-calves belonging to 4 breeds (Angus, Hereford, Auliekol, Kazakh whiteheaded). Staged diets of intensive fattening and their chemical indices are presented, including the content of digestible protein and the exchange energy of 1 kg of dry matter. The dry matter consumption of the experimental animals was established, as well as the prime cost of product unit in the structure of the diet for the studied breeds was calculated. The average daily weight gains were established depending on the methods of feed distribution, including the terms of breeds.

The diet of the experimental and control groups consisted of 4 components (corn silage, alfalfa haylage, grain mixture, vitamin-mineral premixes for cattle) and was approved taking into account the adjustment in palatability with the rest of the feed table from a daily rate of not more than 5%. According to the results of chemical analysis of feed, the content of digestible protein per 1 kg of dry matter was 10.3% and the concentration of exchange energy was 11.3 MJ, the ratio of concentrated feed in dry matter of the diet was 29.5% against 70.5% of the structural feed.

According to the technology of intensive fattening, a share of concentrated feed in the dry matter of the diet was gradually increased by 6.5-7% with an interval of 10-12 days in order to adapt the rumen microflora and avoid acidosis, with a duration of up to 3 months. The ultimate goal was to increase the share of concentrated feed in the dry matter of the diet to 75%.

In the 1st fattening stage, the average ratio of dry matter of concentrated to structural feed was 56.4% versus 43.6%. The duration of the 1st stage was 60 days, while the increase in the proportion of concentrated feed was carried out every 10 days (an increase in grain mixture by 500 grams in natural weight or 430 grams in dry matter per animal), the share of dry matter in structural feed was reduced proportionally. At the end of the 1st stage, taking into account the adjustment of the diet by palatability, the average dry matter consumption was 8.38 kg per head in the group. According to the results of feeding at the 2nd stage with a duration of 30 days, the average ratio of dry matters of concentrated feeds to structural ones was 66.9% to 33.1%, while the change in dry matter consumption in the group was not observed. The increase in the proportion of concentrated feed in the dry matter of the diet was also carried out with an interval of 10 days, while the increase in the diet was produced by 330 g in natural weight or 280 g in dry matter.

Keywords: feeding, diet, breed, meat productivity, production prime cost, fattening, weight gain, dry matter, protein, energy, concentrated feed.

Introduction. The level and efficiency of the productivity of animals, the duration of their economic use primarily depend on the balance and full-value of feeding [1-3]. The increase in beef production is possible only with the introduction of advanced technology. According to detailed feeding standards, balance in the diet will allow to maximize the genetic capacity of animals, while reducing the growing period and reducing the prime cost of the final product [4-6].

Beef cattle is currently one of the most promising livestock industries in Kazakhstan. But a number of problems related to the profitability of the industry due to inadequate scientific and innovative support

have led to some reduction in efficiency. The low level of growth intensity at high cost of maintenance is conditional upon the insufficient supply of nutrients due to the diets imbalance in energy, protein, and other nutrients.

Currently, achievements in the feeding of ruminants have allowed creating new approaches in assessing feed protein and energy, including processes in the forestomachs, which have a decisive influence on providing the body with protein and amino acids and rationing it for groups in accordance with the expected productivity [7, 8].

In this regard, the research work was conducted on the comparative assessment of average daily weight gains of meat-type bulls of four breeds when balancing the diets in energy, protein, and vitamin-mineral premixes, as well as the impact of various distribution methods on animals.

Material and methods of the research. The research work was performed on the feeding platform of Bayserke-Agro LLP using meat-type bull-calves of the Hereford, Kazakh whiteheaded, Auliekol, and Angus breeds. The total livestock on the platform at the time of the experiment was 987 heads. The average age of selected bulls for experimental fattening was 11-14 months with an average live weight of 312 kg (lim. 295-330 kg.). The total livestock population of selected experimental animals was 212, of which Hereford - 41 animals, Angus - 64 animals, Auliekol - 56 animals, Kazakh whiteheaded - 51 animals. Keeping condition was untied grouped 60-80 heads in each, divided by age [2, 9]. The distribution of feed was carried out twice with an interval of 8 hours in trays with filling the feeding table with animals no more than 80%, in order to avoid fodder competition during distribution.

The research results. In order to determine the impact of various feeding methods on the meat productivity of animals, in the first month of the experiment, the control group was fed holistically, i.e. distributing the components of the diet separately in accordance with the approved feeding diet. For the animals of the experimental group, it was used monofeed, a homogeneous mixture of all components by distribution through a vertical feeder. The diet of the experimental and control groups was composed of the fodder available on the farm (table 1).

Table 1 – Feeding diets for bull-calves (starting)

Name of the fodder	Average per animal, kg	Dry matter, kg
Corn silage	9	2.61
Alfalfa haylage	5.6	2.52
Grain mixture (75% barley, 25% corn)	2.5	2.15
Vitamin and mineral premixes for cattle	0.06	–
Total	15.86	7.28

The diet of the experimental and control groups comprised of 4 components (corn silage, alfalfa haylage, grain mixture, vitamin-mineral premixes for cattle) and approved taking into account the adjustment in palatability with the rest of a daily rate on the feed table not more than 5%. According to the results of chemical analysis of feed, the content of digestible protein per 1 kg of dry matter was 10.3% and the concentration of exchange energy was 11.3 MJ, the share of concentrated feed in dry matter of the diet was 29.5% versus 70.5% of the structural feed.

The experimental groups have been fed for 30 days after which there was a control weighing of animals. The results are shown in table 2.

Table 2 – Dynamics of average daily gains of experimental bulls

Indicators	Group	
	Experimental	Control
Number of animals	98	114
Average daily gain, g	960±1.3	846±1.1
Live weight, kg	341±5.3	337.9±4.9
Absolute weight gain, kg	28.8±1.09	25.3±1.14

According to the results of the control weighing of the experimental and control groups with an identical feeding diet, the difference in absolute weight gain for 30 days averaged 3.5 kg per animal. When calculating the prime cost of 1 kg of the average daily weight gain in the feed structure, the values in the experimental and control groups averaged 318.2 and 361.1 tenge respectively, which characterizes the best feed conversion of animals from the experimental group.

Further, according to the technology of intensive fattening, a gradual increase in the share of concentrated feed in the dry matter of the diet by 6.5-7% with an interval of 10-12 days was made in order to adapt the rumen microflora and to avoid acidosis, with a duration of up to 3 months. The ultimate goal was to increase the share of concentrated feed in the dry matter of the diet to 75%.

Table 3 – Feeding diet of bull-calves (intensive feeding)

Name of the fodder	1 stage		2 stage	
	Average per animal, kg	Dry matter, kg	Average per animal, kg	Dry matter, kg
Corn silage	7	2.03	4.6	1.33
Alfalfa haylage	3.6	1.62	3.2	1.44
Grain mixture (75% barley, 25% corn)	5.5	4.73	6.5	5.6
Vitamin and mineral premixes for cattle	0.06	–	0.06	–
Total	15.86	8.38		8.37

As can be seen from the table, at the 1st stage of fattening, the average ratio of dry matter of concentrated feed to structural feed was 56.4% versus 43.6%. The duration of the 1st stage was 60 days, while the increase of the share of concentrated feed was carried out every 10 days (increase in grain mixture by 500 grams in natural weight or 430 grams in dry matter per animal), the proportion of dry matter in structural feed was reduced proportionally. At the end of the 1st stage, taking into account the palatability adjustment of the diet, the average dry matter consumption for the group was 8.38 kg per animal. According to the results of fattening on the 2nd stage with a duration of 30 days, the average percentage ratio of dry matters of concentrated feeds to structural ones was 66.9% to 33.1%, while the change in dry matter consumption in the group has not been observed. The increase in the share of concentrated feed in the dry matter of the diet was also performed with an interval of 10 days, while the enlargement of the diet was produced by 330 g in natural weight or 280 g in dry matter.

In the comparative analysis of average daily gains in weight for 90 days of the fattening period, the average weight gains for the 4 breeds were 1.82 kg (table 4).

Table 4 – Dynamics of average daily weight gains of experimental bull-calves in the context of breeds.

Indicators	Breed			
	Hereford	Angus	Auliekol	Kazakh whiteheaded
Number of animals	41	64	56	51
Average daily gain, g	1.86±1.25	1.96±1.3	1.75±1.41	1.68±1.38
Live weight, kg	507±4.8	516.4±5.3	497.3±6.2	491.2±5.7
Absolute weight gain, kg	167.5±3.1	175.4±3.5	160.3±4.1	153.2±3.8

In terms of breeds, the highest average daily weight gains were found in Angus and Hereford bull-calves, which were 1.96 and 1.86 kg, respectively. When calculating the prime cost of 1 kg of weight gain in the structure of the diet, the average for 4 breeds was 250 tenge, of which 232.1 tenge for Angus breed, 244.6 tg for Hereford, 260 tg for Auliekol and for Kazakh whiteheaded 270.8 tg.

Conclusion. According to the results of the research work on the comparative analysis of the productivity of meat-type bull-calves, it was found that the highest growth rate and feed efficiency were in Angus breed, which exceeded the indicators of the compared breeds on average by 10.1%, including Hereford by 5.1%, Auliekol and Kazakh whiteheads by 10.7 and 14.2%, respectively.

The basis for doing research. The scientific and technical program of the Ministry of Agriculture of the Republic of Kazakhstan for 2018-2020. “Creation of “pattern” farms for breeding beef cattle in various regions of Kazakhstan”.

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"БАЙСЕРКЕ-АГРО" ЖШС ЖАҒДАЙЫНДА ЕТ БАҒЫТЫНДАҒЫ БҰҚАШЫҚТАРДЫҢ ӨНІМДІЛІГІНІҢ САЛЫСТЫРМАЛЫ НӘТИЖЕЛЕРІ

Аннотация. Мақалада 4 тұқым (ангус, герефорд, Әулиеқол, қазақ ақ басы) бөлінісінде етті бағыттағы бұқашықтарды бордақылау бойынша ғылыми-зерттеу жұмыстарының нәтижелері келтірілген. Қарқынды бордақылаудың кезең-кезеңімен рационы және олардың химиялық көрсеткіштері, оның ішінде 1 кг құрғақ затта қорытылатын протеин мен алмасу энергиясының құрамы ұсынылған. Тәжірибе жасалатын жануарлардың құрғақ затты тұтынуы белгіленді, сондай-ақ зерттелген тұқымдар бойынша рацион құрылымында өнім бірлігінің өзіндік құны есептелген. Жем-шөп тарату тәсілдеріне, оның ішінде тұқымдарға байланысты орташа тәуліктік қоспалар орнатылды.

Тәжірибелік және бақылау тобының рационы 4 компоненттен (жүгерінің сүрлемі, люцерн пішенажы, дән қоспасы, ІҚМ үшін витамин-минералды қоспалар) ұсынылды және тәуліктік нормадан 5%-дан аспайтын азық үстеліндегі қалдықпен тамақтану бойынша түзетуді ескере отырып бекітілді. Азықты химиялық талдау нәтижелері бойынша 1 кг құрғақ затта қайнатылатын протеиннің құрамы 10,3% және алмасу энергиясының концентрациясы 11,3 МДж, рационның құрғақ затында концентрацияланған азықтың үлесі құрылымдық 70,5% қарсы 29,5% құрады.

Қарқынды бордақылау технологиясына сәйкес тыртықтың микрофлорасын бейімдеу және 3 айға дейінгі ұзақтықпен ацидозды болдырмау мақсатында рационның құрғақ затындағы құнарлы азықтың үлесін 10-12 күн аралықпен 6,5-7% біртіндеп ұлғайту жүргізілді. Соңғы мақсат рационның құрғақ затындағы құнарлы азықтың үлесін 75% - ға дейін арттыру болып табылады.

Бордақылаудың 1-ші кезеңі бойынша құнарлы азықтың құрғақ затының құрылымға арақатынасы 43,6% қарсы 56,4% құрады. 1-ші кезеңнің ұзақтығы 60 күнді құрады, бұл ретте құнарландырылған азықтар үлесінің артуы әрбір 10 күн сайын жүргізілді (500 гр.астық қоспасының артуы). табиғи салмақта немесе 430 гр. Құрғақ затта), құрылымдық азықтың құрғақ затының үлесін пропорционалды түрде төмендетті. 1-ші кезең аяқталғаннан кейін тамақтану рационын түзетуді есепке ала отырып, құрғақ заттың орташа тұтынылуы бір басына 8,38 кг-ды құрады. Ұзақтығы 30 күн болатын 2-кезең бойынша азықтандыру нәтижелері бойынша концентрацияланған азықтың құрғақ заттарының құрылымға орташа пайыздық арақатынасы 33,1%-ға 66,9%-ды құрады, бұл ретте топ бойынша құрғақ заттарды тұтынудың өзгеруі байқалған жоқ. Рационның құрғақ затында концентрацияланған азықтардың үлесін арттыру 10 күнде интервалмен жүзеге асырылды, бұл ретте рационда өсім 330 г табиғи салмақта немесе 280 г құрғақ затта жүргізілді.

Түйін сөздер: азықтандыру, рацион, тұқым, ет өнімділігі, өнімнің өзіндік құны, бордақылау, салмақ, құрғақ зат, протеин, энергия, концентрацияланған азық.

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СРАВНИТЕЛЬНЫЕ РЕЗУЛЬТАТЫ ПРОДУКТИВНОСТИ БЫЧКОВ МЯСНОГО НАПРАВЛЕНИЯ В УСЛОВИЯХ ТОО «БАЙСЕРКЕ-АГРО»

Аннотация. В статье приведены результаты научно-исследовательской работы по откорму бычков мясного направления продуктивности в разрезе 4-х пород (ангус, герефорд, аулиеколь, казахская белоголовая). Представлены поэтапные рационы интенсивного откорма и их химические показатели, в том числе содержание переваримого протеина и обменной энергии в 1 кг сухого вещества. Установлено потребление сухого вещества подопытных животных, а также рассчитана себестоимость единицы продукции в структуре рациона в разрезе изученных пород. Установлены среднесуточные привесы в зависимости от способов раздачи кормов, в том числе и по породам.

Рацион опытной и контрольной группы был представлен из 4-х компонентов (силос кукурузный, сенаж люцерновый, зерносмесь, витаминно-минеральные добавки для КРС) и утвержден с учетом корректировки по поедаемости с остатком на кормовом столе от суточной нормы не более 5%. По результатам химического анализа кормов содержание переваримого протеина в 1 кг сухого вещества составило 10,3% и концентрация обменной энергии 11,3 МДж, соотношение доли концентрированных кормов в сухом веществе рациона 29,5% против 70,5% структурных.

Согласно технологии интенсивного откорма производилось постепенное увеличение доли концентрированных кормов в сухом веществе рациона на 6,5-7% с интервалом в 10-12 дней с целью адаптации микрофлоры рубца и избежание ацидоза, с продолжительностью до 3-х мес. Конечной целью явилось увеличение доли концентрированных кормов в сухом веществе рациона до 75%.

По 1-му этапу откорма в среднем соотношение сухого вещества концентрированных кормов к структурному составило 56,4% против 43,6%. Продолжительность 1-го этапа составила 60 дней, при этом увеличение доли концентрированных кормов проводили через каждые 10 дней (увеличение зерносмеси на 500 гр. в натуральном весе или на 430 гр. в сухом веществе на голову), долю сухого вещества структурных кормов снижали пропорционально. По окончании 1-го этапа с учетом корректировки рациона по поедаемости среднее потребление сухого вещества составило по группе 8,38 кг на голову. По результатам кормления по 2-му этапу с продолжительностью 30 дней среднее процентное соотношение сухих веществ концентрированных кормов к структурным составило 66,9% к 33,1% при этом изменение потребления сухого вещества по группе не отмечено. Повышение доли концентрированных кормов в сухом веществе рациона осуществлялось так же с интервалом в 10 дней, при этом увеличение в рационе производили по 330 г в натуральном весе или по 280 г в сухом веществе.

Ключевые слова: кормление, рацион, порода, мясная продуктивность, себестоимость продукции, откорм, привес, сухое вещество, протеин, энергия, концентрированный корм.

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