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BREEDING PUREBRED AND CROSSBRED STEERS FOR MEAT USING VARIOUS TECHNOLOGICAL METHODS

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Abstract
The article presents the results of scientific and economic experience in studying the reserves for increasing the meat productivity of cattle calves during fattening.It has been established that the mineral and vitamin supplements introduced into the diet of cattle calves during fattening improve the digestibility of nutrients in the eaten feed, increase the formation of meat productivity and daily increase in live weight, as well as the effectiveness of farming technology.

Keywords: Goby, cattle, fertilizing, minerals, vitamin, nutrients, digestibility, meat productivity, live weight, average daily gain, efficiency.

Introduction

The intensification of animal husbandry provides for a comprehensive increase in livestock productivity, obtaining the maximum amount of products per unit of feed. A prerequisite for the successful solution of this problem is the provision of animal husbandry with feed. In strengthening the feed base, it is necessary to follow the path of increasing the yield of fodder crops, the most rational use of meadows, and a significant expansion of the industrial production of combined feeds enriched with high-protein additives, vitamins, trace elements, antibiotics, and other means that increase the nutritional value of feed. Modern chemistry opens up great opportunities for improving the quality of compound feed through the use of chemical additives. The supply of animals in sufficient quantities with various chemical compounds and biostimulants will make it possible to use reserves more fully to increase animal productivity, improve quality and reduce production costs [2,4,7].

Among the factors determining the usefulness of feeding cattle calves during fattening, the conditions of mineral and vitamin nutrition are essential. Due to the expansion and detail of ideas about the requirements of bull calves and the physiological role of biogenic mineral elements and vitamins, these issues have become of great importance.

The increase in meat productivity, on the one hand, and the use of processed products and waste products as feed, on the other, has led to the fact that quite a few diets do not meet the needs of bulls in certain minerals and vitamins. As a result, it became necessary to use mineral and vitamin supplements and premixes. Their inclusion in the diets is determined by the content of minerals and vitamins in the feed and the recommended standards of their needs for bulls.

There is currently a significant amount of experimental material and best practices in beef production in the literature on this issue. However, they are obtained in various natural and

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webofjournals.com/index.php/8

economic zones of the country, each of which has its own peculiarities of animal husbandry. Therefore, this paper examines the features of the mineral and vitamin nutrition of bull calves during fattening in the mainly sharply continental climate of the Ferghana Valley. Special attention is paid to the importance of minerals and vitamins in metabolism, their content in the most common feeds, their effect on meat productivity and physiological state. The article considers ways to cover the deficiency of minerals and vitamins in the diets of cattle calves during fattening on farms.

It is known that the functions of cells in the animal body are related to minerals and vitamins. The importance of minerals and vitamins for cattle calves during fattening can be judged by the consequences that occur when they are insufficiently or excessively absorbed into the body. These consequences can be very diverse, but the main ones are as follows:

1) disruption of the functional activity of organs and systems and the occurrence of nutritional diseases;

2) reduction of meat productivity and meat quality;

3) deterioration of the use of nutrients in the diet and an increase in feed costs for the formation of meat productivity.

Of course, all these phenomena can be the result of some kind of disease or insufficient energy and nutrients in the diet, but when they occur in healthy animals and with adequate feeding, it is necessary to pay attention to the content of minerals and vitamins in the diets [1,5,9].

Objects and methods of research

To study the optimal level of mineral nutrition of black-and-white cattle calves when fattening for meat, a series of experiments was organized and conducted in the farm "Shukurdavlat" of the Kushtepe district of the Ferghana region. During the experiments, it was assumed that the availability of minerals would be complete if the deficiency was replenished to a certain level by mineral fertilization.

Research results and their discussion

1. The first experiment was conducted on 12-month-old black-and-white bull calves during the 150-day winter stable period. In the preliminary period of the experiment, the bulls were fed a basic diet consisting of 6-8 kg of mixed hay, 20-25 kg of silage, 8-12 kg of fodder beet, 2-3 kg of ground barley and 2-2.5 kg of cotton meal. 1 kg of the dry matter of the diet contained 45.9 g of minerals, including 5.0 g of calcium, 3.3 g of phosphorus, 18.7 g of potassium, 89 mg of manganese, 11.9 mg of copper, 0.46 mg of cobalt and 40.9 mg of zinc.

During the experimental period, the bulls were fed the same diet, but with the inclusion of mineral fertilizers of the following composition, %: precipitate-11.59, sodium bicarbonate-12.01, sodium sulfate-7.13, potassium carbonate-10.12, table salt-40.29, iron sulfate-0.49, zinc sulfate-0.13, manganese sulfate-0.09, copper sulfuric acid-0.17, cobalt chloride-0.04, potassium iodide-0.009. Such a mineral mixture was set at the rate of 8 g per 1 kg of dry matter in the diet. All salts were introduced into the diet in an aqueous solution with hay, with the exception of the precipitate, which was fed in its natural form along with concentrated feed.

The introduction of such a mineral mixture into the diet of bulls allowed to increase the concentration of minerals in the dry matter to 54.1 g, including: calcium-up to 6.7g, phosphorus-

Volume 3, Issue 2, February - 2025
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up to 3.5g, potassium-up to 21.09 g, manganese-up to 100.2 mg, cobalt - up to 0.65 mg and zinc - up to 44.7 mg, copper-12.3mg.

In the final period, the bulls were transferred to the main diet without mineral top dressing. The feeding conditions of the calves affected the average daily increase in live weight. The transfer of calves from the main diet to a diet with mineral top dressing led to an increase in the average daily increase in live weight from 795.0g to 749.0 g (experimental period), and with the exclusion of top dressing, productivity decreased again to 129g.

2. Second experiment to establish the optimal concentration of minerals in the dry matter of feed, scientific and economic experiments were conducted in bulls at the age of 9 months.

For the experiment, 30 bulls were selected and divided into three equal groups according to the principle of analogues. The trial consisted of a 52-day pre-trial period, a 75-day trial period, and a 15-day final period. In the preliminary period, all steers received a diet consisting of hay, silage, root crops, mixed feed and hayloft. During the pilot period, the feed was replaced with ground barley grain and cotton meal.

To create different levels of minerals in the diets of groups II and III, complex mineral fertilizers were introduced, which include in%: table salt in group II-40.9%, defluorinated feed phosphate-44.3%, bicarbonate of soda-6.09%, sodium bicarbonate-9.1%, magnesium oxide-1.301%, iron sulfate-0.014%, potassium iodide-0.005%, respectively, in group III-20,009%; 66,001%; 7,895%; 6,159%; 1,007%; 0,151%; 0,041%; 0,061%; 0,008%.

211 g of the mixture per head per day was introduced into the diet of the bulls of the II experimental group, which contributed to an increase in the level of minerals in the diet to 6.21% in dry matter. 511g of top dressing was introduced into the diets of the bulls of the III experimental group, which corresponded to 8.21% of minerals in the dry matter. No top dressing was introduced into the diets of the first experimental group, and the mineral content was 4.89% of the dry matter. The content of individual macro-microelements (potassium, sodium, zinc, cobalt, copper, manganese) in the diets of the II and III experimental groups was the same. The average daily increase in body weight in all groups at the beginning of the experiment was the same and amounted to 787-815 g. By the end of the experimental period, there was a regular decrease in productivity in all groups, but the sharpest decrease was observed in bulls of the III experimental group (by 19.43% compared to the preliminary period). The productivity of group I bulls decreased by 16.11%, while that of group II bulls decreased by only 7.01%.

It should be noted that in the second group of bull calves, who received a diet with a mineral content of 6.21%, the cost of feed units per 1 kg of body weight gain was lower than in the I and III groups. The feed weight in Group I was 0.985 kg, while in groups I and III it was 0.792 and 0.889 kg, respectively, of the average daily increase in live weight per 1 kg of feed units.

Based on these studies, it can be concluded that feeding calves diets containing 6.21% minerals per dry substance has a more beneficial effect on meat productivity and feed payment than feeding diets containing 4.89 and 8.21% minerals.

The availability of minerals in the steers grown by us should be judged not only by the total influx of them into the diet, but also on the basis of a detailed study of feed for the content of calcium, phosphorus, potassium, manganese, copper, zinc, cobalt, iodine and other elements.

3. In order to study the effectiveness of phosphorus-calcium supplements for feeding 15-month-

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Volume 3, Issue 2, February - 2025
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Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

old calves, experiments were conducted during the winter stall period. An experiment lasting 150 days was conducted on two groups of black-and-white bull calves with 10 heads each. In the preliminary 35-day period, all the bulls received a diet consisting of hay, corn silage, alfalfa haylage, mixed feed, cotton husks and a mixture of macronutrients. Trace element salts were given in an aqueous solution in the following amounts, mg per 1 head per day: cobalt chloride-18, zinc sulfate-59, copper sulfate-97, potassium iodide-2.7. To prevent the destruction of potassium iodide, bicarbonate of soda was introduced into the solution. In the main period, lasting 90 days, Group I bulls additionally received fluorinated phosphate at the rate of 68 g per head per day, while group I bulls remained on the diet of the preliminary period. And in the final 30-day period of the experiment, all the bulls were switched back to the pre-period diet. As for the structure of the dry matter of the feed rations, it did not change, except for the content of calcium and phosphorus.

Given that the diets of the experimental bulls differed from each other in the delivery of calcium and phosphorus, it is possible to trace how these differences affected the value of meat productivity.

If in the preliminary period of the experiment the average daily increase in body weight in the II experimental group was higher than in the I by only 4.7% (902 and 861), then in the main period by 8.7% (1019 and 937), and in the final, on the contrary, it even decreased slightly relative to the I group (944 and 982g).

4. There is still insufficient data on the impact of calcium and magnesium supplements on the meat productivity of bulls in the Ferghana Valley. However, feeding calves with table salt has long been a common way to satisfy animals in sodium. In the fourth experiment, the effect of different doses of feeding calves with table salt on their meat productivity was studied. The main diet consisted of 5-6 kg of hay, 2-3.5 kg of straw (wheat), 15-17 kg of corn silage and 4-6 kg of concentrates. The indicators of the average daily increase in body weight with the addition of 4-16 g of table salt per feed unit did not change. However, E.Schneider (1971) noted a decrease in animal productivity with insufficient salt content in diets.

Research in recent years has shown that in all cases, when there is increased protein synthesis in the body (growing animals, animals of medium and high productivity), balancing diets to deliver the optimal amount of sulfur to them gives positive results.

However, the available data from both domestic and foreign researchers are often contradictory and do not allow us to sufficiently assess the optimal delivery of sulfur in the diets of growing calves and its effect on meat productivity and meat quality.

5. In this regard, two experiments were conducted with black-and-white bull calves. In the first experiment, the effectiveness of the delivery of various sources of sulfur (elemental sulfur and Glauber's salt) in the diets of bull calves was studied, and the optimal amount of sulfur in the diets was determined.

30 12-month–old bull calves were selected for the experiment and three different groups were formed according to the principle of analogues - a control group and two experimental groups. The experiment lasted 90 days and consisted of three periods: preliminary-20 days, the first accounting-40 days and the second accounting -30 days.

The diets of the experimental bulls in all periods of the experiment were the same in terms of the set of feeds. They included alfalfa and natural hay, corn silage, fodder beets and mixed feed. In

Volume 3, Issue 2, February - 2025
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Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

the preliminary period, all the bulls received a diet without additives.

During the accounting periods, the control group of bulls was on the diet of the preliminary period, and sulfur was introduced into the diets of the experimental groups. In the first accounting period, the sulfur concentration was adjusted to 1.8 g, and in the second to 2.3 and 2.5 g per 1 kg of dry matter of the diet (taking into account the sulfur contained in the feed). Moreover, elemental sulfur was introduced into the diet of the experimental group I as an additional source of sulfur, and Glauber's salt was introduced into the diet of group II.

It turned out that the average daily increase in body weight in the first accounting period was highest in bulls of the II experimental group (979g), slightly lower in bulls of the I group (893 g) and the lowest in bulls of the control group (817g).

Similar results were obtained in the second accounting period. Thus, the average daily increase in live weight of the bulls of the control group was at the level of 743 g, the bulls of the I experimental group receiving elemental sulfur, 874 g or 17.63% higher than the control group, and the bulls of the II experimental group receiving Glauber's salt -905 g, or 21.9% higher than the control group. However, it should be noted that regardless of the source of sulfur, when its concentration was increased to 2.5 g per 1 kg of dry matter, the consumption of bullhead feed was sharply reduced and their average daily weight gain decreased. Thus, the optimal concentration of sulfur in the diets of bull calves is at the level of 1.8-2.0 g per 1 kg of dry matter, and the best source of sulfur, judging by productivity, can be considered Glauber's salt.

In the CIS countries, an extensive production test of the effectiveness of introducing Glauber's salt into the diets of growing 9-12-month-old calves was carried out. It turned out that the inclusion of 20-25 g of Glauber's salt per head per day during winter stable maintenance led to an increase in the average daily weight gain. Studies have shown that the addition of Glauber's salt to diets containing non-protein nitrogen sources (carbamide, ammonium salts) is particularly effective [3,6,8,10].

In the pre-pancreas of ruminants of cattle, bacteria and ciliates synthesize vitamin K of group B. As for fat-soluble vitamins such as A, D, and E, animals satisfy their need for them only through feed.

In some cases, the animals' need for certain vitamins is not satisfied. This is most often observed with monotonous feeding with an excess of concentrates in the diets or when animals are fed low-quality coarse and silage feed. There are reports [11,12,13] that prolonged carotene deficiency in feed leads to a violation of the ability of the mucous membrane of the small intestine to absorb carotene and convert it into vitamin A. This phenomenon is very often noted when animals are transferred from a meager winter diet to a summer one.

In order to prevent vitamin A deficiency, vitamin A preparations are used in such cases, but the question arises how to administer vitamin A, together with feed or intramuscularly. In this regard, an experiment was conducted on 30 black-and-white calves at the age of 9-12 months.

The bulls selected for the experiment were divided according to the principle of analogues into three groups (control and two experimental). The experience consisted of preparatory, main and final periods. The bulls of the control group received a household ration throughout the experiment. During the main period of the experiment, the bulls of the experimental group were additionally fed oil concentrate A of 100 thousand. It is stored in a place with concentrates once a

Volume 3, Issue 2, February - 2025
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week. To the bulls of the III experimental group, vitamin A concentrate was administered intramuscularly at the same frequency of 100 thousand IU.

In the experiment, the average daily increase in body weight was monitored. In the main period, there was an increase in the average daily weight gain in all groups due to feeding, however, the administration of vitamin A concentrate contributed to a more dramatic increase in daily weight gain, especially when administered intramuscularly. Thus, the average daily increase in body weight in the bulls of the control group increased by 2.09% compared to the preliminary periods, in the bulls of the experimental group I -by 4.42%, and in the II group -by 14.27%.

In the final period of the experiment, the average daily weight gain of all bulls decreased, but in the II experimental group they remained at a higher level than in the control and in the I experimental.

Based on this study, it can be assumed that intramuscular administration of vitamin A to bull calves is more effective than feeding it with feed.

It is known that vitamin D in the animal's body is closely interrelated with mineral metabolism, on which meat productivity largely depends. Interesting data in this regard were obtained in the scientific and economic experience of bulls raised for meat, held during the winter stable period in the farm of Shukurdavlat, Kushtepe district of the Ferghana region. In the experiment, the effect of a complex of minerals and vitamin D on meat productivity and the use of nutrients by bull calves was studied.

For the experiment, 30 black-and-white calves aged 15 months were selected and divided into 5 equal groups. The experiment lasted 150 days, and the diets between the groups of bull calves did not differ in terms of energy delivery, feed structure, and dry matter structure.

An analysis of the average daily increase in body weight showed that if in the preliminary period of the experiment it was almost the same in all groups of bulls, then in the main period in the experimental groups of bulls it was significantly higher than in the control group.

Moreover, the daily increase in live weight of calves that received only irradiated yeast as an additive was 5.07% higher than the control group. The additional introduction of only a mixture of minerals into the diet led to an increase of 9.12%. Analyzing the data from this study, it can be noted that the highest effect on average daily weight gain was in bulls treated with Glauber's salt ivitamin D. Based on this, it can be assumed that vitamin D to some extent affects the use of sulfur, which is a precursor of sulfur-containing amino acids synthesized by the microflora of the scar [14,15,16,17].

Conclusions

In this way, the daily need for top dressing per animal is calculated, and then the annual need is determined depending on the specific conditions of the farm.

Summarizing the above, it can be noted that the regulation of mineral and vitamin nutrition is a necessary condition for the proper feeding of steers grown by us and obtaining high meat productivity with economical consumption of feed.

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Volume 3, Issue 2, February - 2025
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

References

1.Абдолниёзов Б., Эшчанов Р.-Қишлоқ хўжалик хайвонларини озиқлантириш. Урганч, Хоразм нашриёти, 2010, 89-95 бет.

2.Арзуманян А.,Бегучев А.П., Георгиевский А. Животноводства - Москва, Агропромиздат, 1985, стр. 119-131.

3. Боярский Л.Г., Дзарданов Б.Д. Производство и использование кормов в промышленном производстве. - Москва, Россельхозиздат, 1980, стр. 205-213.

4. Калашников А.П., Клейманов Н.И., Баканов В.Н. Нормы и рационы кормления сельскохозяйственных животных.- Москва, Агропромиздат, 1986, стр. 88-95.

5. Калашников А.П, Смирнов О.К. Справочник зоотехника.- Москва, Агропромиздат,1986, 209-215.

6. Рахимов М.А., Муйдинов Х., Комилжонов А. Интенсивная технология выращивание телок привозного скота.- Фергана, журнал Научный вестник ФерГУ, 2021, № 2, стр. 134-136.

7. Рахимов М.А. Влияние технологии кормления на рост и развитие бычков.- Ташкент, жур.Агроилм, 2021,№5. стр. 65.

8. РахимовМ.А. Интенсификация производства говядины. -. Тошкент, журнал Агроилм, 2022, №3, стр. 50-51.

9. Рахимов М.А., Муйдинов Х.Қ. Эффективность применения минеральных подкормок в рационе бычков привозного скота.- Фергана, журнал Научный вестник ФерГУ, 2022, №1 стр.65

10. Raximov M.A, Javxarov O.Z. Organization of full-value feeding of dairy cows in farm //Gospodarka i Innowacje. – 2022. – T. 24. – C. 840-843.

11.Raximov M.A, Nurmatova M. Morphological and biochemical composition of the blood of cattle bulls Science and innovation 1 (D8), 12-16

12.Рахимов М.А. Резервы повышения мясной продуктивности бычков крупного рогатого скота при откорме. Агро илм, 66-68

13.Рахимов М.А. Мясная продуктивность бычков привозного скота. Science and innovation 1 (D6), 189-192

14.Raximov M, Saminov A. Aholi tomorqa xo‘jaliklarida va himoyalangan joylarda sabzavot yetishtirishning jadal texnologiyasi. Science and innovation 1 (D6), 231-236

15.Raximov M, Saminov A. Aholi tomorqa xo‘jaliklarida va himoyalangan joylarda sabzavot yetishtirishning jadal texnologiyasi //sai. 2022. №d6. url: https:// cyberleninka.ru … halqaro jurnal Science and innovation, 231-235

16. Raximov M.A. Useful texnology in absolute feeding dairy of imported cattle. J. Science and innovation international scientific journal volume 2 issuel January 2023. UIF-2022, 8.2 / ISSN . 2181-3337 Sceientists. UZ.

17. Рахимов М.А. Рациональное использование генетических ресурсов при выращивании скота на мяса. Жур. Научный вестник ФерГУ, 2023, №1 стр.65-68.