

THE INFLUENCE of VARIOUS AMOUNT of IODINE in the EWES' RATIONS on their PRODUCTIVITY and GROWTH of LAMBS in the SUCKLING PERIOD

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The optimum concentration of iodine in ration of Merino sheep in the lactation period has been determined. It was found that an increase the content of this mineral in the ewes' rations by 25%, in relation to the existing feeding standards, promotes an increase of the milk productivity of ewes to 40 kg or by 11% compared to the results of the productivity of the animals in the control group. The presence of this amount of mineral in the ration provides the absolute increase of lambs' growth during the suckling period to 26.0 kg, compare at 22.2 kg in the control. Similar indices were obtained for the growth rate of the young animals, which in animals of the 1st test group increased to 289 g per day that is 17% ($P < 0.050$) higher than the weight gain of their peers in control groups (247g). Concerning to the indexes of wool productivity, the following results were established: with an increase in the iodine content in the rations of the ewes to 0.5 mg / kg of dry matter, the clip of washed wool in the sheep of the experimental group increased to 3.1 kg / g, or by 7%, compared to their control analogues. Further increase of the trace element content in the rations to 0.6 mg / kg dry matter did not lead to an equivalent increase in the productivity of ewes.

In general, the use of refined iodine concentration in the normalization of diets of merino sheep feeding during lactation provides an 11% improvement the milk productivity of sheep and an increase in the intensity of lamb growth during the suckling period.

Keywords: ewes, ration, feed, iodine, milk, lambs, wool clip, productivity.

ВПЛИВ РІЗНОЇ КІЛЬКОСТІ ЙОДУ В РАЦІОНІ ВІВЦЕМАТОК НА ЇХ ПРОДУКТИВНІСТЬ ТА РІСТ ЯГНЯТ У ПЕРІОД ПІДСИСУ

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Визначено оптимальну концентрацію йоду для мериносових вівцематок в період лактації. Встановлено, що підвищення вмісту мінералу у раціонах вівцематок на 25% ,по відношенню до існуючих норм годівлі, сприяло покращенню молочності овець до 40 кг, або на 11% від результатів продуктивності тварин контрольної групи. Це забезпечило зростання абсолютного приросту ягнят під час їх підсису до 26,0 кг при 22,2 кг у контролі. Аналогічні дані було одержано і за інтенсивністю росту молодняка, яка у тварин I дослідної групи збільшувалася до 289 г на добу, що на 17% ($P<0,050$) перевищувало показники приросту живої маси їх контрольних од-нолітків (247 г). Що стосується вовнової продуктивності вівцематок, то при підвищенні вмісту йоду в раціонах до 0,5 мг/кг сухої речовини відмічено поліпшення настригу митої вовни до 3,1кг/гол, або на 7% у порівнянні з їх контрольними аналогами. Подальше збільшення вмісту мікроелементу в годівлі вівцематок до 0,6 мг/кг сухої речовини раціону не призводило до еквівалентного підвищення їх рівня продуктивності.

В цілому застосування уточненої концентрації йоду при нормуванні годівлі мериносових вівцематок в період лактації забезпечує покращення на 11% молочності овець та зростання інтенсивності росту ягнят у період підсису.

Ключові слова: вівцематки, раціон, корми, йод, молочність, ягнята,настриг, продуктивність.

ВЛИЯНИЕ РАЗНОГО КОЛИЧЕСТВА ЙОДА В РАЦИОНАХ ОВЦЕМАТОК НА ИХ ПРОДУКТИВНОСТЬ И РОСТ ЯГНЯТ В ПЕРИОД ПОДСОСА

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Определена оптимальная концентрация йода для мериносовых овцематок в период лактации. Установлено, что повышение содержания минерала в рационах овцематок на 25%, по отношению к существующим нормам кормления, способствует повышению молочности овец до 40 кг или на 11% по сравнению с результатами продуктивности животных контрольной группы. Присутствие данного количества минерала в рационе обеспечивает увеличение абсолютного прироста ягнят во время подсоса до 26,0 кг, при 22,2 кг в контроле. Аналогичные показатели были получены и в отношении интенсивности роста молодняка, которая у животных I опытной группы увеличилась до 289 г в сутки, что на 17% ($P < 0,050$) превышает показатели прироста живой массы их ровесников в контрольных группах (247г). Относительно показателей шерстной продуктивности установлены следующие результаты: при повышении содержания йода в рационах овцематок до 0,5 мг/кг сухого вещества настриг мытой шерсти у овец опытной группы увеличился до 3,1 кг/гол, или на 7%, по сравнению с их контрольными аналогами. Дальнейшее увеличение содержания микроэлемента в рационах до 0,6 мг/кг сухого вещества не приводило к эквивалентному повышению уровня продуктивности овцематок.

В целом использование уточненной концентрации йода при нормировании рационов кормления мериносовых овцематок в период лактации обеспечивает улучшение молочности овец на 11% и увеличение интенсивности роста ягнят в период подсоса.

Ключевые слова: овцематки, рацион, корма, йод, молочность, ягнята, настриг шерсти, продуктивность.

Science and practice shows that only provided a complete balanced feeding can be realized genetic potential productivity of animals. This applies to the industry of sheep breeding, where the creation of new high-performance genotypes of sheep, particularly animals of Taurian Type Askanian Fine Fleece breed, necessitates revision of existing norms of feeding Merino sheep. The existing norms, including those for ewes of wool's productivity directions have been worked out yet in the Soviet Union in 1985 (WIT) and were appointed to receive the wool clip per 2-2,3 kg of washed wool from one ewe, while the sheep of Askanian selection get 3-4.5 kg of washed wool fiber [1,2]. The correction of need for energy and protein of the ewes of this genotype, which was carried out, showed that the level of these indices of nutrition in the rations of ewes' livestock population advisable to increase by 20% compared with the existing norms. This provides an 18% improvement the dairy productivity of ewes, an increase of 10% of the wool clip and improving to 13% indices of fertility these animals. [3]

Unresolved, but extremely important question remains the refinement of mineral nutrition of the sheep Askanian selection, and in particular a mineral element with iodine. The role of iodine is associated with the processes of synthesis and metabolism of thyroid hormones which carry out the regulation of many physiological functions - growth and differentiation of tissues, the intensity of the overall metabolic processes, heat production, protein, carbohydrate and lipid metabolism, metabolism of vitamins, water and many electrolytes. [4, 5]. Therefore, given the role of microelements on metabolic processes in the body of the sheep, the aim of our research was to determine the optimal concentration of iodine in the rations of ewes Askanian Fine Fleece Breed during their lactation.

Materials and methods of researches. The experimental work was carried out under the conditions of sheep farm SIEF "Askania Nova" Chaplynka district, Kherson region on Askanian Fine Fleece Breed of sheep. To this end, according to the "pairs-analogues" method, 30 sheep have been selected at the beginning of their lactation; they were divided into three groups: a control group and two research ones, 10 ewes in each. The number of offspring received in each group was the same - 12 lambs.

The feeding rations of the ewes differed in the level of the microelement of iodine in them, in the diet of the control group it was 0.4 mg / kg of dry matter. In the diet of the animals of the first and second experimental groups the concentration of iodine was increased to 0.5 and 0.6 mg / kg of dry matter or 25% and 50% compared to the current norms. The increasing of the level of iodine in the rations was provided by animal feeding of the salt mineral mixture with addition of potassium iodide. The content of iodine in feed, salt and products of exchange was determined according to generally accepted techniques (GOST 28458-90). The feeding level of lambs of all experimental groups was the same: during the

whole time while the experiment lasted, according to the developed scheme they were fed up with legume-cereal hay and concentrates.

During the experiment, we studied: the dairy and wool productivity of ewes, the change in their live weight and the intensity of lamb growth during the suckling period, the state of animal health when using different levels of iodine in rations. Biometric data processing was carried out using the method of variational statistics of M.O. Plokhinskiy [6]. The duration of the experiment was 90 days.

The results of researches. Increasing the amount of iodine in the rations of ewes differently has affected the level of their productivity (Table 1). Thus, in determining the dairy productivity of ewes found that the greatest value of this index was observed in the first experimental group (40.0 kg), the results of which were 11% higher than in control one (36.0 kg).

Table 1. Performance of ewes, $\bar{X} \pm S_{\bar{x}}$

Index	Group		
	control	I experimental	II experimental
Number of ewes in the group, heads	10	10	10
Number of lambs, heads	12	12	12
The live weight of ewes kg:			
- after lambing	59,7±0,5	60,9±0,4	58,8±0,4
- at weaning of lambs	59,0±0,4	60,3±0,5	59,0±0,6
Loss of live weight per lactation, kg	-0,7	-0,6	+0,2
Milk productivity of ewes, kg	36,0	40,0	35,6
In% to control	100	111	99
The live weight of lambs at birth, kg	4,7±0,33	4,5±0,20	4,7±0,20
In% to control	100	96	100
The live weight of lambs in 21st day, kg	10,5±0,4 1	10,9±0,32	10,4±0,45
The absolute increase for 21 days, kg	5,8±0,12	6,4±0,15	5,7±0,17
In% to control	100	110	98
Wool clip of greasy wool, kg	5,0	5,2	5,0
Output of pure fiber%	58,3±0,12	59,2±0,11	58,7±0,15
Quantity of washed wool, kg	2,9±0,10	3,1±0,08	2,9±0,12
In% to control	100	107	100

Further increase by 50% concentration of iodine in the diet of animals' second experimental group has led to a decrease in their milk productivity to 35.6 kg, which is almost corresponds to the obtained data of the control group. Concerning the dynamics of the live weight of ewes, when they were taken up for experiment, it was almost the same (58.8-60.9 kg), with slight fluctuations of 2% of the control level.

At the end of the experiment the live weight of ewes of the first and second experimental groups were respectively 60.3 and 59.0 kg contrary to 59.0 kg in the control one, and its loss during lactation in the first experimental group consisted of 0.6 kg that was 0.1 kg less than in control group animals (0.7 kg). In the second experimental group of sheep, opposite, an increase in live weight by 0.2 kg was observed that can be explained by their lower dairy productivity and a reasonable level of feeding the experimental animals.

Refinement of the need in the mineral element iodine for ewes did not significantly affect the wool clip of the washed wool, which in the second test group was practically at the level of control group animals and was 2.9 kg / head. Yet due to the correction of norms of iodine to 0.5 mg / kg of dry matter of the ration in animals of the first experimental group was observed increase the wool clip of washed wool to 3.1 kg / head, or 7% compared to the ewes of the control group.

The higher dairy productivity of ewes of the first experimental group positively influenced the growth rate of youngsters during the suckling period. If the live weight of lambs of this group at birth was 4.5 kg and was lower than in the control group by 0.2 kg, then at the age of one month the youngsters of the first group had a weight of 13.4 kg and exceeded by these indices of their peers in the control group by 0, 9 kg, or 7% (Table 2). The same trend persisted at two months of age and with the weaning of lambs, the live weight of which in these periods was higher than in the control group by 2.5 and 3.6 kg, respectively, or by 12.8 and 13.4% ($P < 0, 05$).

The lambs of the second experimental group at the age of one month in terms of the live weight were inferior to those of the control group by 0.2 kg, or 1.6%, but already at two months and three months of age, when they were fed and by other kinds of food, the live weight of the lambs from the second experimental group was higher than in the control group by 0.4 and 0.5 kg, or by 2 and 1.9%. If we analyze the absolute increase of live weight of the youngsters in the first and second experimental groups for the entire period of the experiment, this index was 26.0 and 22.7 kg, that was by 3.6 ($P < 0.05$) and 0.5 kg more than their control counterparts had (22.2 kg).

Table 2. Dynamics of live weight of lambs, $\bar{X} \pm S_{\bar{x}}$

Index	Group		
	control	I experimental	II experimental
Number of lambs, heads	12	12	12
The average live weight kg:			
- at birth	4,7±0,33	4,5±0,20	4,7±0,20
In% to control	100	96	100
- The live weight of lambs in 21st day, kg	10,5±0,71	10,9±0,5	10,4±0,75
In% to control	100	103,8	99
The average daily increase for 20 days, g	276±7,0	305±6,0	271±8,0
In% to control	100	111	98
- one month age	12,5±0,86	13,4±0,59	12,3±0,85
The average daily increase (0-1 month), g	260±8,0	297±7,0	253±9,0
In% to control	100	114	97
- two month age	19,6±1,36	22,1±0,73	20,0±1,02
The average daily increase (1-2 months), g	237±7,0	290±9,0	257±8,0
In% to control	100	122	109
at weaning - (3 months)	26,9±1,17	30,5±1,10	27,4±1,26
The average daily increase (2-3 months), g	243±9,0	280±8,0	247±11,0
In% to control	100	115	110
The absolute increase in live weight during the period of the experiment, kg	22,2±0,7	26,0±0,9	22,7±1,1
The average daily increase during the period of the suckling, g	247±8,0	289±8,0	252±10,0
In% to control	100	117	102

A similar dependence inherent and for the average daily gain of lambs, this index in whole during the suckling period for the youngsters of first and second experimental groups amounted to 289 and 252 grams that was by 17 (P <0.05) and 2% higher than the data, which were obtained in the control group (247 g).

Analysis of hematological and biochemical indices of blood of the experimental ewes showed that they were within the physiological norm for healthy animals and had no significant difference between groups.

The calculation of economic efficiency proves that increasing the level of iodine in the rations of Askanian selection Merino Sheep during their lactation to 0.5 mg / kg of dry matter is economically justified, due to the improving the dairy productivity of ewes and the increasing the live weight lambs. This allows you to get to 41 UAH additional incomes per ewe. The further adjustment of iodine norms to 0.6 mg / kg of dry matter reduces the animals' productivity to the level of control and is uneconomical.

Conclusions. Existing norms of feeding ewes Askanian Fine Fleece Breed don't fully satisfy their need of mineral elements iodine during lactation. The increasing of the concentration of this trace element to 0.5 mg / kg of dry matter in their rations improves by 11% of ewes' dairy productivity and provides an increase of the intensity of lambs' growth by 17% during the suckling period. Further increasing the iodine content in sheep feeding rations does not result in an equivalent increase in productivity of animals.

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