ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Meat Productivity Of Young Sheep Karachai' Breed.

Yusupzhan Artykovich Yuldashbayev[1]*, Anatoly Foadovich Shevhuzhev[2], Rashid Khasambievich Kochkarov[3], Evgeny Georgievich Mishvelov[4], and Anna Ivanovna Ponomareva[2].

[1]Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, Timiryazevskaya str. 49, Moscow 127550, Russia.
[2]North-Caucasian State Humanitarian Technological Academy, 369000, Karachay-Cherkess Republic, Cherkessk, ul. Stavropol, 36, Russian Federation.
[3]Stavropol Institute of Cooperation (Branch), Belgorod University of Cooperation, Economics and Law: 355035, Stavropol, st. Goleneva, 36, Russian Federation.
[4]North Caucasian Federal University, Str. Pushkin 1, Stavropol 355009, Russia.

ABSTRACT

The meat of Karachai sheep is distinguished by its exceptional taste qualities, formed due to selectivity in eating certain types of herbs, including medicinal herbs, it is biologically full. The aim of the research was the scientific substantiation of the features of the formation of meat productivity in young sheep of Karachai breed at different ages and the determination of the optimal age for the sale of animals for meat in the Karachay-Cherkess Republic. The object of the study was purebred sheep of Karachai breed. To conduct the experimental part of the work, 200 heads of ewes of the class of elite and class I were selected. They were randomly hand-tampered with four elite rams. From the obtained litter, two groups of young animals (sheep and lambs) were formed with 60 heads each. The highest average daily growth in bright (170.0 g) and rams (196.6 g) was observed in the first and second months of life, respectively. With age in both groups, the average daily growth rate decreased. According to the measurements of the main body articles, the superiority was on the side of the sheep, both at the age of 4 months and at the age of 12 months. According to the main body indexes, the best indicators were the group of sheep, which are characterized as animals with well-defined meat forms. The weight of the carcass of the sheep carcass was in the range from 11.79 to 25.03 kg and for 8 months it increased 2.1 times (by 112%). The weight of the cooled carcass also increased 2.1 times (from 11.6 to 24.4 kg), which was 110%. The slaughter weight and slaughter yield for the sheep were 12.2-25.63 kg and 46.6-52.3%, respectively. With age, in the Karachai coarse-wooled sheep breed, the percentage of cuts of the most valuable I grade is steadily increasing both in rams and in ewes, which is associated with the buildup of musculature. The yield of 1st grade in sheep bats was 10,18-21,55 kg (87,8-90,2%), and in ewes - 8,33-17,30 kg (88,6-90,5%). The increase in calorie content with age in bunches was 7.2%, in ewes - 4.9%. The lowest costs for growing a single head of young animals and a fairly high profitability (in barons 79.8, in ewes 73.9%) were obtained when young animals were sold at the age of 8 months after feeding them on natural pastures.

Keywords: Karachai breed, live weight, average daily gain, varietal cutting, the chemical composition of meat.

Corresponding author

ISSN: 0975-8585

INTRODUCTION

Sheep have high mobility, respectively, have the ability to travel long distances. A valuable species property - adaptability to pasture content - allows animals to use lands that are unsuitable for growing crops or for grazing other species of animals. In the North Caucasus, sheep graze on natural highland pastures and rapidly increase in live weight. Due to the fact that natural pastures are far from industrial facilities, meat raw materials obtained from such sheep are environmentally friendly and safe [1, 2, 3].

The breeding of sheep in the North Caucasus allows not only to provide the indigenous population with traditional products but also contributes to the realization of social and domestic characteristics (holding religious and religious rites). In widely differing breeding conditions, universal meat-wool-milk breeds were used by methods of folk selection [4, 5].

In modern conditions in the Karachay-Cherkess Republic, the use of local Karachai coarse-wooled sheep breeds is important for increasing the economic importance of the meat industry.

The meat of Karachai sheep is distinguished by its exceptional taste qualities, formed due to selectivity in eating certain types of herbs, including medicinal herbs, it is biologically full [6, 7, 8].

In this regard, the scientific justification for the optimal timing of the implementation of young animals for meat is of interest for the effective management of the industry.

The aim of the research was the scientific substantiation of the features of the formation of meat productivity in young sheep of Karachai breed at different ages and the determination of the optimal age for the sale of animals for meat in the Karachay-Cherkess Republic.

MATERIALS AND METHODS

The scientific and economic experience was carried out in LLC Hammer Company of the Prikubansky District of the Karachay-Cherkess Republic, Russia.

To conduct the experimental part of the work, 200 heads of ewes of the class of elite and class I were selected. At the end of September and beginning of October, they were randomly hand-tied with four rams of the elite class.

From the litter obtained in February, two groups of young animals (lambs and rabbits) were formed with 60 heads each. Both groups were kept on an increased diet under the same conditions up to 12 months of age. When studying the growth and development of young animals, a special experience was conducted to pay for feed. In the course of the experiment, five control slaughter (aged 4, 6, 8, 10 and 12 months) were conducted to study meat qualities at different ages.

RESULTS

Between the live weight and absolute yield of meat, other things being equal, there is a direct dependence. All this in evaluating mountain sheep, especially for breeding purposes, cannot be ignored, but at the same time, the evolutionary development of mountain livestock breeding cannot be neglected [4, 79, 84, 194, 197, 203, 204].

Dynamics of the live weight of young animals in different age periods are given in Table 1.

ISSN: 0975-8585

Table 1: Dynamics of live weight the experimental young animals

Age, month.	Rams				Ewes			
	n	Average live weight, kg	Growth of live weight		n	Average live weight, kg	Growth of live weight	
			total, kg	per day, g			total, kg	per day, g
At birth	**60**	**3,87+0,05**	–	–	**60**	**3,58±0,04**	–	–
1	**58**	**9,7±0,18**	**5,8**	**193,3**	**57**	**8,7+0,12**	**5,1**	**170,0**
2	**56**	**15,6±0,27**	**5,9**	**196,6**	**56**	**13,2+0,18**	**4,5**	**150,0**
3	**55**	**21,1±0,36**	**5,5**	**183,3**	**55**	**17,2±0,24**	**4,0**	**133,3**
4	**55**	**26,2+0,43**	**5,1**	**170,0**	**55**	**20,6±0,28**	**3,4**	**113,3**
8	**44**	**39,9±0,76**	**3,1**	**103,3**	**44**	**30,9+0,39**	**2,2**	**73,3**
12	**33**	**49,0±0,98**	**3,7**	**61,7**	**33**	**35,5±0,54**	**1,8**	**30,0**

The growth of live weight in the milk period for sheep was the maximum and was 5.1-5.9 kg per month. In the group of bright, this indicator was much lower and was 3.4-5.1 kg. The results of the conducted studies reflect the general laws of the biological development of young animals. With age, the rate of growth is declining. An analogous regularity is also observed in the average daily increment.

In the period from birth to pouring (4 months), the indicators of average daily increments differ by maximum indices (170,0-196,6 g - in burrs and 113,3-170,0 g - in ewes).

The maximum indicators of the average daily growth were different in the second month (196.6 g) and in the first month of life (170.0 g). With age in both groups, the average daily growth rate decreased.

In the pasture period (4-8 months), the average daily growth in sheep fell by 40% (from 170.0 to 103.3 g), and in the ewes - by 35.3% (from 113.3 to 73.3 g). The average daily gain in live weight in sheep from 8 to 12 months decreased by 40%, and in ewes - by 2.5 times.

Monitoring of the growth and development of young animals was carried out up to 12 months of age. Measurement of linear measurements of body articles of young Karachai breeds was carried out after a beat from mothers and at one-year-old age. The results of measurements of the articles of the body of brightly colored and small sheep are shown in Figures 1 and 2.

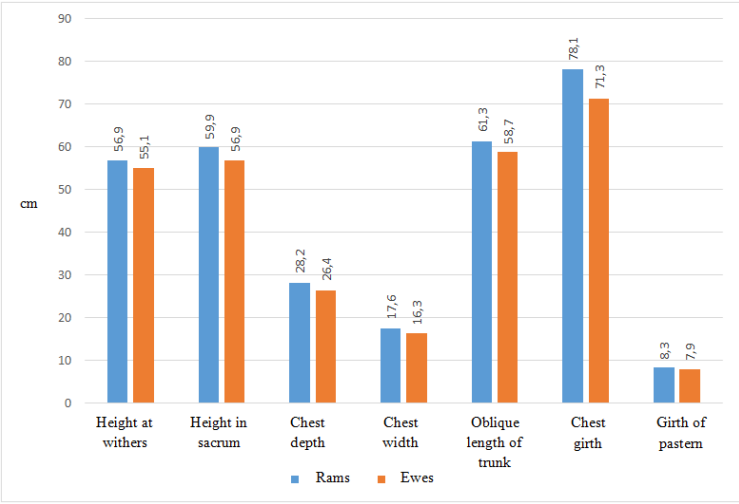

Figure 1: Body' measurements of young animals at 4 ages of months, cm

A comparative analysis of the basic parameters of the physique (Figure 1) shows that sheep are significantly different from their peers - ewes. Depending on the parameter, the superiority is from 3.3% to 9.5% (P <0.01, P <0.01, P <0.01, P <0.01, P <0.01, P <0 , 01 and P <0.05, respectively, to the measured value).

ISSN: 0975-8585

At a one-year-old age (Figure 2), the advantage of measuring the main body articles was also on the side of the sheep, with some increase in the advantage.

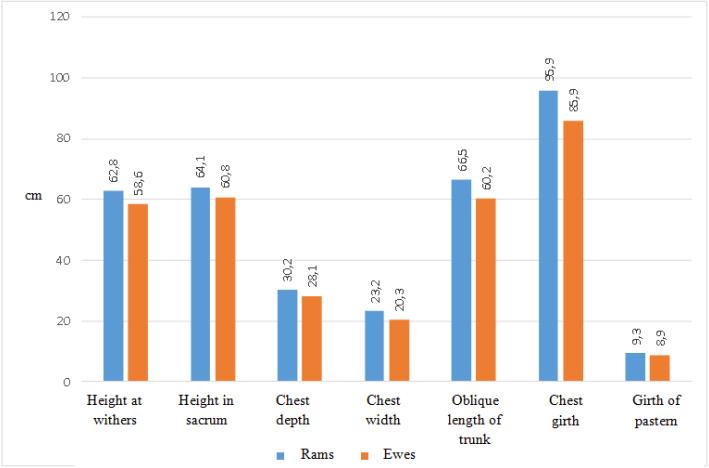

Figure 2: Body' measurements of young animals at 12 ages of months, cm

The increase in the absolute indices of measurements of body articles in ewes ranged from 2.5% to 24.5%. Their peers changed similar indicators in the range from 7.0% to 33.3%.

In youngsters of both groups, thoracic measurements are better developed (chest girth and chest width). The increase in these parameters was 20.5-33.3%.

Based on the presented research results, it can be argued that in conditions of distillation-mountain content (in the presence of constant exercises), animals almost reach their height by the age of 1.5 years.

One of the sides of precocity is the ability of the animal to increase its body mass relatively quickly and at an early age to give quite ripe and certain weight and quality carcass. Sheep of Karachai breed, possessing quite good early maturity.

The prefabric mass of the first experiment's sheep (age 4 months) was 26.2 kg, which corresponds to the requirements of the normative documents for dairy lambs.

In Group II (at 6 months of age), compared to Group I, the pre-bastard mass increased by 28.2%. In group III (at 8 months of age) the pre-bastard weight increased by 52.3%, in the IV group (at 10 months of age) by 72.9% and in the V group (at 12 months of age) - by 87.0%. The most intensive addition of pre-bodily mass was observed in the milking period, as well as up to 8 months of age.

The weight of the carcass of the sheep carcass was in the range from 11.79 to 25.03 kg and for 8 months it increased 2.1 times (by 112%). The weight of the cooled carcass also increased 2.1 times (from 11.6 to 24.4 kg), which was 110%.

The ratio of the mass of the paired carcass to the pre-bodily mass was in the range from 45.0 to 51.1%, of the cooled carcass - from 44.3 to 48.8%. The age-related increase in these indicators was 6.1 and 4.5 abs. percent.

The carcasses of the experimental animals received during the slaughter were in accordance with the requirements of the normative documents.

In the process of cooling, the losses of the sheep were 1.7-2.7%. The mass of internal fat within the group was 1.2-2.1 kg. Its increase was noted at the age of 4 to 8 months of age (by 31.3%). Later (by the age of 12 months) there was a decrease of 57.1%.

ISSN: 0975-8585

The slaughter weight and slaughter yield for the sheep were 12.2-25.63 kg and 46.6-52.3%, respectively. With age, these indicators increased by 13.43 kg (2.1 times) and 5.7 abs. percent.

The prefabricated live weight of bright was in the range from 20.6 to 35.4 kg. The increase in this indicator with age was 71.8%.

Indicators of the weight of the carcass of experimental animals (bright) were in the range from 9.64 to 18.17 kg, an increase of 88.5%.

The weight of the chilled carcass was 9.40-17.30 kg, or 84.0%, respectively.

Carcasses of experimental animals (bright) in all age periods, except for 4 months of age, met the requirements of regulatory documents.

In the cooling process, the losses, depending on the age of slaughter, amounted to 2.2-4.8%.

The weight of internal fat, depending on the age, was 0.37-0.72 kg. Her increase was noted at the age of 4 to 10 months (by 94.6%). In the following (by the age of 12 months) there was a decrease of 8.3%.

The value of the slaughter weight and slaughter yield indicators in the brightly colored fields was 10.01-18.83 kg and 48.6-53.23%, respectively. With age, they increased by 8.82 kg (by 88.1%) and 4.6 abs. percent.

In a comparative analysis of the results of control slaughter of different sex and age groups (rams and ewes), it is necessary to note the considerable superiority of sheep in all the age periods.

The advantage of the main slaughter indicators was 22.0-38.4%. By the indicator of the slaughter yield brightly exceed their peers by 1.0-2.7 abs. percent.

The increase in slaughter yield with age at grazing on mountain pastures reaches a considerable value. This indicates not only the intensive growth of musculature and large fat loss in this period but also helps to correctly determine the terms of the slaughter of young winter and early spring larks in conditions of mountain content.

To fully characterize the meat qualities of the carcasses, the carcass was cut and trimmed - three carcasses of young animals of each age period.

Table 2 shows the final data of the results of a variety of cuts of carcasses of carrots and jars of different terms for their sale to meat.

The yield of first-grade meat in the sheep was 10.18-21.55 kg (87.8-90.2%), while in the ewes it was 8.33-17.30 kg (88.6-90.5%), with the yield of the second grade is 9.8-12.2% and 9.5-11.4%, respectively.

Table 2: The grade composition of carcasses of young animals at different ages

Selling age, months	Weight of the cooled carcase, kg	Including			
		I grade		II grade	
		Weight, kg	%	Weight, kg	%
Rams					
4	11,60±0,33	10,18±0,27	87,8	1,41±0,06	12,2
6	15,32±0,48	13,51±0,44	88,2	1,81±0,04	11,8
8	18,34±0,89	16,77±0,65	88,7	1,57±0,10	11,3
10	22,24±1,18	19,84±1,09	89,2	2,40±0,09	10,8
12	23,90±1,06	21,55±0,99	90,2	2,35±0,06	9,8
Ewes					
4	9,40±0,41	8,33±0,36	88,6	1,07±0,07	11,4

6	12,24±0,61	11,01±0,92	89,9	1,23±0,04	10,1
8	15,00±0,33	13,42±0,34	89,5	1,58±0,10	10,5
10	16,50±0,52	14,80±0,50	89,7	1,70±0,03	10,3
12	17,30±0,38	15,65±0,36	90,5	1,65±0,05	9,5

The presented indicators confirm the opinions of other researchers that the general regularity is maintained with age - the proportion of cuts of the most valuable I grade increases, which is connected with the buildup of muscles. By dividing the individual cuts, the ratio of pulp and bone was determined.

The content of meat-pulp in the carcasses of carrots, depending on age, is 0.9-2.3% below the brightness and is in the range from 71.4% to 74.9%. Already at 4 months of age, the content of pulp in the groups of experimental animals is 71.7 and 72.6%, and by the year of age, it increases respectively to 74.9 and 77.2%. The increase is only 3,2-4,6%, which indicates the uneven buildup of the muscles with age.

The ratio of bone mass in the carcasses is 24.8-19.3% (3.28-4.61 kg) and with an increase in age is reduced by 5.5%. Similar indicators the ewes were 22.1-18.1% (2.01-3.20 kg).

Fat deposits in the carcasses of carrots make up 3.5-5.8% of the carcass mass, and by 2.3% increase in the one-year age. In the group of bright these indicators are 5.3-5.8% and 0.5%.

The chemical composition of the meat of the experimental livestock in different age periods is shown in Fig. 3.

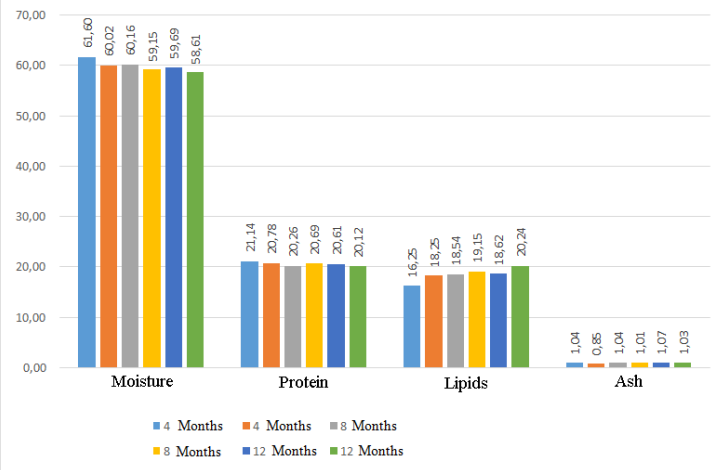

Figure 3: Chemical composition of young meat, %

In animals of both groups, with increasing age, an increase in dry matter and a decrease in the mass fraction of moisture in the average meat sample were observed. The increase in dry matter in the rams of Karachai breed at the age of 4 to 8 months was 1.44%, and at the age of 8 to 12 months - 1.91%. In ewes, this indicator was 0.87% and 0.54%, respectively.

The corresponding decrease in moisture was 1.91 absolute percent - for sheep and 1.41 percent for ewes.

The fat content in the meat of the animals of both sex-age groups at the age of 4 to 12 months increased on average by about 2% (2.37% for sheep and 1.99% for ewes).

At the same time, the protein content at the age of 4 and up to 12 months of age decreased (0.53% for sheep and 0.66% for ewes).

The edible part of the carcass of the February lambs increases due to the deposition of both subcutaneous and inter muscular fat, which increases the taste of meat, its nutritional value, and calorie

content.

DISCUSSION

Sheep breeding of mountain and foothill areas of the Karachay-Cherkess Republic, where there are tribal herds of sheep of Karachai breed, has long been of great economic importance. Rich summer mountain pastures, suitable for a significant part only for pasturing sheep, contributed to the development of sheep breeding here [9, 10].

It is known that large animals are economically more profitable. For a unit of weight, they require less supportive food. Large animals are able to accumulate more fat and give a smaller percentage of loss in slaughter due to a smaller relative size of the head and skin [11, 12].

The highest average daily growth in ewes (170.0 g) and in rams (196.6 g) was observed in the first and second months of life, respectively. With age in both groups, the average daily growth rate decreased. In the pasture period (4-8 months), the average daily growth in sheep fell by 40%, and in the ewes - by 35.3%. The average daily gain in live weight in sheep from 8 to 12 months decreased by 40%, and in ewes - by 2.5 times.

Knowing the conditions of growth and age changes in the exterior allows you to change the proportions of the body and create the desired type of animals.

Lambs of Karachai breed are relatively more tall, tall, with a narrow, shallow and relatively short body compared with adult sheep. In the post-uterine period, during the growth and development of the animal, the spine grows in length and breadth, resulting in the sheep being stretched out with age and becoming relatively broad. Tubular bones grow less intensively during this period, and the animal grows taller in the withers area with more energy than in the sacrum. This fact leads to a smoothing out of the difference between these measurements, causing a decrease in overgrowth in the region of the sacrum with age [13, 14].

According to the measurements of the main body articles, the superiority was on the side of the sheep, both at the age of 4 months and at the age of 12 months. According to the main body indexes, the best indicators were the group of sheep, which are characterized as animals with well-defined meat forms. Somewhat worse, these indicators in ewes.

In a comparative analysis of the results of control slaughter of equal sex and age groups, it is necessary to note the considerable superiority of sheep in all the age periods. The weight of the carcass of the sheep carcass was in the range from 11.79 to 25.03 kg and for 8 months it increased 2.1 times (by 112%). The weight of the cooled carcass also increased 2.1 times (from 11.6 to 24.4 kg), which was 110%. The slaughter weight and slaughter yield for the sheep were 12.2-25.63 kg and 46.6-52.3%, respectively. With age, these indicators increased by 13.43 kg (2.1 times) and 5.7 abs. percent.

Separation of meat according to grades allows not only to correctly assessing the meat qualities of sheep, but it is also more appropriate to use lamb in culinary production [15].

With age, in the Karachai coarse-wooled sheep breed, the percentage of cuts of the most valuable I grade is steadily increasing both in rams and in ewes, which is associated with the buildup of musculature. The yield of 1st grade in sheep bats was 10,18-21,55 kg (87,8-90,2%), and in ewes - 8,33-17,30 kg (88,6-90,5%).

Determination of the chemical composition and calorie content of meat of various breeds is important. The content of water in meat, fat, protein and ash varies with age and breed. With age, the water content of meat decreases. The protein content in the meat of sheep of different ages varies little. The edible part of the carcass of February lambs is increased due to the deposition of both subcutaneous and intramuscular fat, which increases the taste of meat, its nutritional value and calorie content [16, 17].

Caloric content of 100 g of meat obtained from sheep and ewes at the age of 4 months was 2555 and 2579 kcal, respectively. At the age of one year, this figure was 2738 and 2707 kcal, respectively. The increase in calorie content with age in bunches was 7.2%, in ewes - 4.9%.

CONCLUSION

One of the most important technological elements of conducting sheep breeding is the economically efficient production of lamb, which can be facilitated by the implementation of young animals for meat in the first year of life, when the main increase in muscle tissue is observed in conditions of the distillation-mountain content of the population in the Karachay-Cherkess Republic. High-quality meat obtained from animals at this age finds a good sale in the market.

The smallest cost price of a gain of alive weight and the maximum indicators of the level of profitability have been established at the slaughter of young sheep at the age of 8 months after feeding them on natural pastures.

REFERENCES

[1] Bolatchiev A.T., Ibragimov Yu.N., Kubanov A.M. Karachaevskaya sheep breed and ways to increase its productivity. Zootechnics. 2012. 4. pp. 18-19.

[2] Shevkhuzhev A.F., Bovkun Yu.I. Development of meat-wool crossbred sheep breeding in Karachaevo-Cherkessia. Zootechny. 2000. 7. pp. 8-10.

[3] Kochkarov R.H. Current state and prospects for the development of crossbred sheep breeding in the Karachay-Cherkess Republic. Sheep, goats, woolen business. 2014. 1. pp. 26-27.

[4] Mukhin G.F., Mukhin V.G. Otgonno-mountain sheep breeding of the North Caucasus. Ordzhonikidze: The North Ossetian Prince., 1965. P. 272.

[5] Gabaev M.S., Bolatchiev A.T. Influence of the live weight of the sheep of the Karachai breed sheep on the reproductive ability, safety and productivity of the resulting offspring. International scientific research. 2016. 3(28). pp. 294-297.

[6] Gadzhiyev Z.K., Volobuyev D.V. Exterior features of sheep of Karachai breed. Scientific provision of agro-industrial complex by young scientists: Sat. All-Russian scientific and practical conference dedicated to the 85th anniversary of the Stavropol State Agrarian University. 2015. pp. 386-390.

[7] Jatdoev H.M. Productive qualities of sheep of Karachai breed: the author's abstract. dis. Cand. with the sciences. n. Forest Glades, Moscow. reg. 2002. P. 22.

[8] Shevkhuzhev A.F., Kochkarov R.Kh., Smakuev D.R. The current state and prospects for the development of the agrarian sector of the Karachay-Cherkess Republic. Zootechny. 2016. 10. pp. 17-21.

[9] Kochkarov R.H. Import substitution: competitiveness of the agro-food market of Russia. Economics and management: problems, solutions. 2016. 2(3). pp. 119-123.

[10] Gadzhiyev Z.K. Feeding and meat qualities of sheep's lezgin and Andean breeds when kept in conditions of mountain and plain pastures. Sheep, goats, woolen business. 2008. 2. p. 35-36.

[11] Gabaev M.S., Gukezhev V.M. Efficiency of foraging young animals of sheep of different breeds in the mountainous zone. Agrarian Russia. 2016. 4. pp. 5-7.

[12] Shevkhuzhev A.F., Kochkarov R.Kh. Growth of production and demand for mutton in the Russian Federation. Livestock in Russia in accordance with the state program for the development of agriculture for 2013-2020: mater. International Scientific and Practical Conference. 2013. pp. 254-260.

[13] Shevkhuzhev A.F., Kochkarov R.Kh., Smakuev DR, Ponomareva A.I. Development of the organism of young sheep of Karachai breed // Izvestiya Orenburg State Agrarian University. 2017. No. 5 (67). Pp. 249-252.

[14] Kochkarov R.H. Growth, development and meat productivity of sheep of different constitutionally productive types. Izvestiya of the St. Petersburg State Agrarian University. 2016. 44. pp. 97-101.

[15] Shevkhuzhev A.F., Kochkarov R.Kh. Nutritional value of meat of young sheep of Soviet meat-and-meat breed. Izvestiya SevKavGGTA. 2013. 1. pp. 29-32.

[16] Kochkarov R.H. Productivity of young sheep of Soviet meat and wool breed // Izvestiya Orenburg State Agrarian University. 2013. 5(43). pp. 148-150.

[17] Kochkarov R.Kh. Chemical, protein and lipid composition of young sheep's meat. Chief livestock specialist. 2011. 4. pp. 37-41.