

EVALUATION OF GRAY RAMS OF MOLDOVAN KARAKUL TYPE AND FACTOR DYNAMICS OF GRAY LAMBS

O. MASHNER¹, S. EVTODIENKO¹, P. LYUTSKANOV¹ and I. BUZU²

¹ *Scientific and Practical Institute of Biotechnologies in Zootechnics and Veterinary Medicine, MD-25, Maximovca village, District of Anenii-Noi, R. of Moldova*

² *Institute of Zoology ASM*

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Abstract

1384 offspring of gray Moldovan Karakul line rams part of herd of sheep of Moldovan type Astrakhan were evaluated. 82.7% of the grey rams were referred as “elite” and “first” class. On this indicator gray rams’ line (2049) significantly exceeds average for the herd ($P \leq 0.05$). Percentage ratio of the obtained gray Karakul lambs of the total number of lambs for three years was 32%. Newborn lambs during the evaluation period were characterized by high live weight and large body length; jacket, ribbed and flat fur types prevail; flat curl type is the most represented – 39.2%. The majority of gray lambs have medium (41.8%) and large (42.3%) curl with high silkiness and hair luster.

Key words: Moldovan Karakul sheep type, gray color, marking, fur type, live weight, body length, silkiness and hair luster

Introduction

On the territory of the Republic of Moldova, from the most ancient times the sheep are bred for sheep skins, in particular the aboriginal breed called Tsushca (Iliev, 1957). Over the course of several decades, the sheep of this breed have been subjected to cross-breed with Rams of Karakul breed that stem from Middle Asia.

As a result of the cross-breeding and selection work carried out especially in the second half of the last century, over the course of many years there was created a new intra-racial type of sheep - Moldovan Karakul (Buzu, 2009). The created type possesses high qualities for mixed productivity – skins-meat-milk, having specific correlations between these three indices (Buzu, 2009; Buzu, 2002).

Biological material of new type, with three lines of Moldovan Karakul sheep (black, grey, sur), is raised in breeding farms in the country, of which the basic farm is that of Technological-Experimental Station farm of the Institute.

Due to the fact that gray colored sheepskins enjoy an increased popularity among breeders of Karakul sheep, being marketed at favorable prices on the internal and external markets, a greater attention is paid to sheep of this color in the

selection and improvement works. This trend is not only specific to the Republic of Moldova, but also to other countries with traditions in raising sheep for the production of sheepskins (Buzu, 1992; Ukbaev, 2012).

Material and Methods

The object of the research were the lambs of gray color of the Moldovan Karakul sheep type. The results of their evaluation at appraisal, as well as the results of testing on the quality of offspring of rams of gray color line (2049).

The aim of the research was to examine the main characteristics of the Karakul lambs of gray color in the herd of Karakul sheep of Moldovan type Astrakhan in comparative aspect for 2012-2014, as well as in comparison with the average indices for the herd, in order to determine future directions of adjustment selection process at breeding in small populations.

The evaluation of ram producers based on progeny and lambs was carried out according to the Instruction for evaluation of Karakul lambs with elements of selection in the Republic of Moldova (Instructions, 1996).

The statistical analysis was carried out according to generally accepted methods with calculating the value of the reliability of differences criteria (Plohinskij, 1978).

Results and Discussion

In accordance with the current Instruction for appraisal of lambs of Karakul breed, the quality assessment of young sheep of this breed is held after their birth in first or second day of life. This is mainly due to the feature of wool on newborn lambs, which keeps its best qualities during the first days after birth. At this age it can be more accurately determined the quality of the Karakul lamb and if the lamb will not be kept for the herd slaughter is conducted to obtain lambskin with no overgrown hair (curl).

In the Karakul sheep farms of Moldovan type, all viable lambs undergone the expanded (full) assessment which includes 47 indicators, including color, type of curl, class of parents, etc. According to the results, the lamb is assigned in a class and its further destination is defined. If lamb remains for further raising, the most important information is its class (elite, first, or second class), fur type (jacket, ribbed, flat, or Caucasian type), the size of curl (width - small, medium, or large) is determined by hair pulling method on the ears of a lamb.

The results of the evaluation of the lambs provide the basic material for the evaluation of rams according to quality of offspring. So, as a result of the analysis of the evaluation data for progeny of linear rams of grey karakul sheep of Moldovan type (in total there were evaluated 1384 descendants), it was found that 82.7 per cent of the descendants were classified as "elite" and "first" class. In comparison with black and golden brown color lines, this indicator for the line of grey rams (2049) exceeds the average of the herd ($p \leq 0.05$).

To characterize the physique (general development) of appraised lambs, the indicator of live weight and body length is used. The live weight as a general criterion for the development of the body of the lamb and serves to judge productivity of ewes and characterize the viability of lambs.

The length of the body also reflects the general development and shape and gives an indication of the possible size of lambskin and if it is matching the specific characteristics of the breed.

Analysis of the results of the evaluation of grey lambs over the past three years showed that the total number of lambs of gray color in the herd obtained in 2012-2014 years is 194 heads and fluctuates from year to year from 55 to 76 heads. The total number of gray lambs (all colors) for the same period totaled 605. On this basis, the percentage of gray lambs in herd of the total over the three years is 32%.

According to the weighing of lambs on appraisal (qualifying) (Table 1), the average live weight of grey lambs over three years was 4.59 ± 0.05 kg, the coefficient of variation is 15.7%.

According to years, this index ranged within 4.31 - 4.83 kg. Also in comparison with the average live weight for all estimated lambs at the farm for three years (605), live weight of grey lambs is higher (by 0.39 kg or by 9.3%, $p \leq 0.001$). This suggests that the lambs of gray color in the herd of Karakul sheep of Moldovan type have good physique development.

When assessing the body length of grey lambs, there were also established high levels of this trait (Table 2). Variation of torso length coefficient of the lambs according to years is fairly low and practically is within the same limits.

On average across all grey-colored lambs over three years, the length of the body on appraisal (qualifying) was 37.56 ± 0.14 cm and in the years was practically identical. These data show a good development of the physique of the lambs and their overall development that generally affect live weight and makes it possible to obtain large lambskins.

The main indicators for assessing the quality of Karakul lambskins include the determination of curls and their values (bob, mane, ring, semi-ring, etc.) prevailing on the lambskin. According to the results of the evaluation of the curls, lambs are allocated to one of the 4 fur types, of whom jacket, ribbed and flat types are the most desirable. These types include all colors of hair coloring of Karakul lambs. Evaluation of the

Table 1
Characteristics of lambs of gray color according to live weight

Years	n	M ± m	σ	Cv, %
2012	76	4.83 ± 0.09	0.83	17.2
2013	55	4.31 ± 0.08	0.59	13.8
2014	63	4.55 ± 0.11	0.93	20.4
Total nr of grey lambs	194	4.59 ± 0.05***	0.72	15.7
Total evaluated lambs on the farm over 3 years	605	4.20 ± 0.03	0.61	14.5

data of fur type of grey lambs by year (Table 3) showed that gray-colored lambs are typical for all four available fur types in the herd. According to the percentage of the various types, the lambs of flat fur type have a high enough percentage (36.8 – 41.8%).

The jacket fur type (predominance of semi-circular curls) varied from 22.4% in 2012 to 30.2% in 2014, and the most stable over the years remain the percentage of lambs of ribbed fur type (19.7-23.6%). On Caucasian fur type of the lambs, it should be noted that the greatest percentage of such animals was in the year 2012, after which it decreased to 7.3% in 2013 and 7.9% in year 2014. In gray-colored lambs over the three years the fur types have the following ratio: jacket – 26.2%, ribbed – 21.6%, flat – 39.2%, Caucasian – 13.0% , on average.

In comparison with the same indicators for the herd as a whole, among grey lambs the lesser ratio is that of the gray jacket type, slightly higher is that of the ribbed type and more

than 6% higher is that of the Caucasian type of curls, which is a less valuable quality of curls.

The qualitative indicators of lambskins are also affected by the size of curls, which is measured as the width of the curl and is classified as small (fine), medium and large.

When analyzing the appraisal data based on the specified indicator, it was found that, on average, for the three years, among the gray-colored lambs a high percentage is held by animals with average (41.8%) and major (42.3%) swirls, and the number of lambs with fine curl is 15.9% (Table 4). The distribution of lambs from year to year depending on the size (width) of curl showed a declining trend of lambs with fine type of curl and the predominance of medium and large curls.

As the main criteria for evaluating the quality of hair, which in general raises or lowers the overall assessment of the lamb, there were taken 2 indicators – hair silkiness and

Table 2
Characteristics of lambs of gray color according to torso length on appraisal (qualifying)

Years	The number of heads	M ± m, cm	σ	Cv, %
2012	76	37.55 ± 0. 26	2.33	6.2
2013	55	37.56 ± 0. 31	2.28	6.1
2014	63	37.57 ± 0. 28	2.24	6.3
Total nr of grey lambs	194	37.56 ± 0. 14	2.06	5.5

Table 3
The distribution of lambs of gray color according to the type of curl

Years	n	Jacket		Ribbed		Flat		Caucasian	
		heads	%	heads	%	heads	%	heads	%
2012	76	17	22.4	15	19.7	28	36.8	15	19.7
2013	55	15	27.3	13	23.6	23	41.8	4	7.3
2014	63	19	30.2	14	22.2	25	39.7	5	7.9
Total nr of grey lambs	194	51	26.2	42	21.6	76	39.2	24	13.0
Total lambs cx farm over 3 years	605	220	36.4	113	18.7	234	38.7	40	6.2

Table 4
Characteristics of lambs gray color according to size (width) of curl when qualifying (on appraisal)

Years	n	Small (fine)		Medium		Large	
		heads	%	heads	%	heads	%
2012	76	15	19.7	29	38.2	32	42.1
2013	55	9	16.3	20	36.4	26	47.3
2014	63	7	11.1	32	50.8	24	38.1
Total nr of grey lambs	194	31	15.9	81	41.8	82	42.3

hair luster (shininess) (Tables 5 and 6), qualities which are determined by an expert (visually).

The results of the evaluation of gray lambs according to hair silkiness showed that, in general over the three years, 55.6% of gray lambs had “excellent” silkiness, 32.9% - “normal” silkiness and 11.5% “low” silkiness. In general, more than 85% of grey lambs had high enough quality on this indicator.

Compared to the total number of lambs in the herd over the three years according to hair silkiness, the grey lambs exceeded the average for the herd.

Analyzing the quality of lambs according to hair luster (shininess) showed that on average 89.1% of grey lambs had intense and normal luster, 10,9% - weak, over the three years.

Considering the percentage of lambs with intense luster, the grey lambs are of some better quality in comparison with the total figures for the herd.

As a result of a comprehensive appraisal (qualification) the lambs were assigned to a class, based on summation of quality assessment.

Analyzing the class composition of grey lambs (Table 7) showed that the greatest number of lambs received the first class when appraised for each reported year. Lambs outlet of first class ranged from 47.7% in 2012 to 63.5% in year 2014. At the same time, the percentage of grey lambs of first class increases every year, while the lambs of “elite” class and the second class are not stable from year to year. In total, over the three years for 194 lambs of gray color the percentage

Table 5
Characteristics of lambs of gray color according to hair silkiness

Years	n	Excellent		Normal		Low	
		heads	%	heads	%	heads	%
2012	76	41	53.9	22	28.9	13	17.1
2013	55	31	56.4	20	36.4	4	7.3
2014	63	36	57.2	22	34.9	5	7.9
Total nr of grey lambs	194	108	55.6	64	32.9	22	11.5
Total lambs on the farm over 3 years	605	291	48.1	276	45.6	38	6.3

Table 6
Characteristics of lambs of gray color according to hair luster (shininess)

Years	n	Intense		Normal		Weak	
		heads	%	heads	%	heads	%
2012	76	41	53.9	22	28.9	13	17.2
2013	55	31	56.4	21	38.2	3	5.4
2014	63	34	54.0	24	38.1	5	7.9
Total nr of grey lambs	194	106	54.6	67	34.5	21	10.9
Total lambs on the farm over 3 years	605	280	46.3	285	47.1	38	6.6

Table 7
Class composition of Karakul lambs of gray color

Years	n	Elite		(I) class		(II) class		Spoilage	
		heads	%	heads	%	heads	%	heads	%
2012	76	14	18.4	36	47.4	25	32.9	1	1.3
2013	55	20	36.4	29	52.7	6	10.9	-	-
2014	63	12	19.0	40	63.5	11	17.5	-	-
Total nr of grey lambs	194	46	23.7	105	54.2	42	21.6	1	0.5
Total lambs on farm over 3 years	605	161	26.6	368	60.8	73	12.0	3	0.5

of classes is: elite – 23.7%, first class – 54.2% and second class – 21.6%.

Comparing the results for gray-colored lambs with indicators for all lambs of the flock over three years (605), you will notice that the number of gray lambs of elite class is slightly inferior to this indicator in the whole herd (23.7% vs. 26.6%). The number of gray lambs of first class is lower by 6.6% and the difference in the number of lambs of second class even more – 21.6% to 12.0% respectively for gray and for total of all evaluated lambs over the three years. The percentage of losses among viable lambs in the herd is low.

According to the evaluation of grey Karakul lambs of Moldovan type on the farm of the Experimental Technological Station of the Institute we can conclude that in General, grey lambs meet the requirements, but according to class composition are somewhat inferior in comparison with the total number of lambs in the herd of elite and first class. Accordingly, there is a high percentage of gray-colored lambs of second class compared to the total number of second class lambs in the herd (21.6% vs. 12.0%).

Conclusions

The linear rams of Karakul sheep of Moldovan gray color type are characterized by high quality offspring – 82.7% of them are classified as “elite” and “first”. According to the above indicator, the line of gray rams (2049) reliably exceeds the average indicators of the herd at $P \leq 0.05$.

Taking into account the heterogeneous selection of Karakul sheep by the color, in the flock of Experimental Technological Station of the Institute over the past three years, the output of the lambs of gray color is 32% of the total number of lambs in herd.

Grey-colored lambs are characterised by high levels of body weight and body length at birth. The average body weight of grey lambs over the three years amounted to 4.59 kg with body length of 37.56 cm and was significantly higher compared to the live weight of lambs in the flock - by 9.3% ($P \leq 0,001$).

Grey lambs, regardless of the year, were dominated by jacket, ribbed and flat types of curls that is most desirable

in the breeding for quality of fur. In general, over the three years, the greatest number of grey lambs were relegated to the flat fur type – 39.2%.

The most of the grey lambs had medium and large size curl – 41.8 and 42.3% respectively with high hair quality – excellent silkiness and intense luster, exceeding the average values of these parameters in the whole flock.

Class composition of grey lambs, on average, over the three years, is fairly high, but inferior to the average for the herd - elite class by 9.5%, first class by 6.6%. This in general needs to be adjusted by the appropriate selection of couplings, in particular for the gray linear rams it is necessary to choose black and golden brown colored ewes not below first class.

References

- Appraisal instructions of Karakul sheep with the improvement principles in the Republic of Moldova. Chisinau, (Md).
- Buzu, I., O. Maşner and P. Liuşcanov**, 2009. Elite type of Moldovan Tsigae of Alexanderfeld. Iaşi, pp. 49-56 (Ro).
- Buzu, I. and S. Evtodienko**, 2002. The relation between milk production of Karakul sheep and the qualities of lambskins. Iasi, pp. 36 (Ro).
- Buzu, I., S. Evtodienko, S. Tentiuc, O. Maşner, P. Liuşcanov, M. Scripnic, N. Zelinschii, N. Nazarco, I. Prozorovschii and P. Moroz**, 2009. Karakul sheep of Moldovan type. Invention Patent MD 3825 (Md).
- Buzu, I. A., N. A. Zelinsky and S. A. Evtodienko**, 1992. The selection of Karakul sheep of gray color by color nuances. In: *Questions of theory and animal husbandry practice in Moldova*. Chisinau, pp. 16-19 (Md).
- Iliev, F. V.**, 1957. Crossing methods used in obtaining the Moldovan Karakul sheep and the results obtained. Chisinau, pp. 25-108 (Md).
- Krasota, V. F. and V. T. Lobanov**, 1976. Breeding of farm animals. Moscow, (Ru).
- Plohinskij, N. A.**, 1978. Mathematical methods in animal husbandry. *Moscow University*, (Ru).
- Ukbaev, K. H.**, 2012. The scientific basis and practical results of creating colored Karakul sheep breeding in new regions. In: *The materials of the International Scientific-Practical Conference*. Chimkent, pp. 19-22 (Cz).
- Taftă, V.** 2008. Breeding sheep and goats. Bucureşti, (Ro).