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Wool productivity and quality of wool of Karakul sheep, depending on their type and age of birth

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Abstract

The paper presents materials on the dynamics of the growth of the absolute and relative length of lamb's hair, depending on the lamb type, also the physic-mechanical properties and the cutting of the wool.

Keywords: Karakul sheep, wool length, productivity, type of curl, wool shaving, birth periods, age periods, variability

Introduction

Actuality

Karakul sheep are bred in the desert and semi-desert zones producing high-value karakul skins, meat, wool, sheepskin, etc. which are in great demand both in the inner and outer rinks.

The wool of Karakul sheep is used in many branches of the national economy and at the same time it protects the organism of sheep in the summer from heat, and in winter from cold weather in the conditions of a sharply continental climate actively participates in metabolic processes of amino acids and is a "storehouse" of minerals.

At the same time, it is a valuable natural fiber in terms of its physico-mechanical and ecological properties, and therefore the use of wool in human life is of great importance.

Considering that wool is a valuable cheese for easy production and also an important biological derivative for the animal organism, the study of wool productivity of sheep has actual biological and economic importance.

In order to increase the wool productivity and its quality, the absolute and relative length of the hair was studied, depending on the lambs' shamrocks and the physicomachanical properties of the animal hair of different birth periods.

Material and Methods

Researches were carried out on black karakul sheep of the Mubarek factory type. The length of the hair and its physico-mechanical properties were investigated by the method of VV. Kalinin (1970) ^[2]. The haircut of the wool has been investigated by individual weighing of the cut wool from each animal on a plate-shaped electric scale, the length of the wool fibers with the help of a millimeter metal ruler. The data obtained were processed by the method of variation statistics (NA Plokhinsky, 1969) ^[3].

Results of the research

When appraisal and in assessing the karakul raw material, great importance is given to the length of the coat, since with the long hair of the scrawl the dimensions of the curl increase, its length becomes shorter, the clarity of the pattern and its attractiveness diminishes, and the degree of silkiness and shine of the hair decreases, which reduces the value of the karakul skins.

Data on the study of the variability of hair length of Karakul lambs of different littoral types at birth (2-3 days), 10-15 days, 4-4.5 and 6-6.5 months of age are summarized in Table 1.

Table 1: Age variability of the hair length of lambs of different type of sheepskin (n = 84)

Type of sheepskin	Age							
	2-3 days, mm.		10-15 days, mm.		4-4.5 months, cm		6-6.5 months, cm	
	M±m	C _v	M±m	C _v	M±m	C _v	M±m	C _v
Jacket	9,3±0,26	12,8	14,4±0,22	7,12	8,7±0,20	10,47	10,5±0,21	9,13
Ribbed	8,5±0,20	11,4	12,9±0,19	6,89	8,2±0,23	12,71	9,7±0,21	9,84
Flat	7,8±0,19	11,2	11,7±0,23	9,18	7,7±0,13	7,82	9,2±0,13	6,62
Caucasian	11,3±0,27	10,7	16,3±0,24	6,66	9,2±0,19	9,19	10,2±0,26	11,36

Analysis of the data in the table shows that the hair length of Caucasian lambs at birth has the longest hair (11.3 mm) which exceeded their peers from the jacket group by 21.5%, ribbed by 32.9, flat by 44.8%.

The length of the lamb's hair at 10-15 days of age in karakul culture is of great importance because the safety of the curls at this age shows the genetic stability of the forms and types of curls and this determines the pedigree value of the animal.

The results of research in this direction revealed that the longest hair at this age have lambs of the Caucasian type. Their superiority from lambs than that of a jacket, ribbed and flat type is 13.2; 26.3 and 39.3% respectively. The same trend is observed in the length of the lamb's wool at 4-4.5 months of age.

The study of the length of the wool of lambs 6-6.5 months of age, when shearing the wool coat shows that the longest hair was of a lambskin type that was longer than the wool of the Caucasian type by 0.3 cm or 2.9%, ribbed and flat of the littoral types by 8.2 and 14.1%, respectively.

From the data of the table it can be concluded that for the full formation of a semi-circular curl of Karakul lambs, the optimal length of hair is required, which is of the lambskin type of the lambskin type. Therefore, they are a valuable breed group.

For the formation of a complete understanding of the growth of hair, the relative increase in the length of the hair of lambs of different lambs types was studied depending on the age. The obtained data are given in Table 2.

Table 2: Indicators of relative increase in hair length of experimental lambs, %

Type of Sheep Skin	Age periods					
	From birth to 10-15 days of age		From birth to 4-4.5 months of age		From birth to 6-6.5 months of age	
	M±m	C _v	M±m	C _v	M±m	C _v
Jacket	55,2±3,0	25,4	85,3±2,7	14,5	103,8±3,9	17,2
Ribbed	59,6±3,1	23,8	92,1±2,3	11,8	110,1±2,8	11,9
Flat	49,7±2,1	20,8	87,2±4,6	24,9	108,7±3,1	13,7
Caucasian	45,6±2,4	23,7	73,1±2,5	15,4	81,8±4,1	5,74

Since the early days of the postembryonic development of lambs, the length of the hair of various lambskins has grown intensively. At the same time, it should be noted that the relative increase in hair length in lambs of different lambs is not the same.

From the data obtained, it can be seen that the relative length of the hair of lambs of the finned, light-brown type in all the periods studied was higher than the peers of the jacket, flat and Caucasian types: from birth to 10-15 days old, 4.4; 9.9 and 14.0%; from birth to 4-4.5 months of age 4.9; 6.8 and 19.0% and from birth to 6-6.5 months of age 7.7; 1.4 and 28.3% respectively.

From the data of the table, it can be concluded that the lowest relative increase in hair length is of ribbed type lambs, which is associated with a low hair growth peculiar to this lambskin type.

To determine the influence of birth periods on the woolen productivity of sheep, wool cuttings and wool coefficients were studied. Experienced lambs were divided into three groups for the decade of the lambing season.

In studies on the study of the woolly productivity of the karakul sheep and its quality, depending on the periods of birth, it was revealed that the shaving of the wool of lambs born in the first decade amounted to 990.8 g, which was more than for the peers of the II and III birth periods by 113.2 and 330.5 g respectively.

The index of wooliness coefficient at this age shows that it was more at this age in lambs of the second period of birth than in lambs of the I and III birth periods by 2.6 and 10.5g/kg, respectively ($P<0.001$).

Table 3: Wool productivity of Karakul sheep, depending on the periods of lambing

Performance	Periods of lambing					
	I		II		III	
	M ± m	C _v	M ± m	C _v	M ± m	C _v
Haircut of felt at 6 months of age, g	990,8±26,5	12,0	887,5±34,5	17,6	660,3±30,0	19,9
Coefficient of woolness, g/kg	38,1±0,39	10,5	40,7±1,4	15,6	30,2±0,9	14,6
Haircut of felt at 12 months of age, g	1188,5±27,1	10,2	1145,0±22,9	8,9	1096,5±22,1	9,1
Coefficient of woolness, g/kg	31,7±0,3	10,6	32,5±1,1	13,9	31,7±0,9	12,4
Annual wool cutting, g	2235,3±50,8	10,2	2023,5±35,7	7,9	1756,7±35,9	9,1
Coefficient of woolness, g/kg	60,5±1,3	9,7	57,4±1,2	12,5	49,3±1,2	10,3

The indicators of wool cutting and wooliness coefficient at the age of 12 months had the same tendency as in the previous age periods.

The analysis of the annual cutting (for two haircuts) of wool shows that in animals of the I period of birth, the wool was cut more than the peers of the II and III birth periods by 208.7 and 478.5 g, respectively. An analysis of the annual coefficient of wooliness shows that in animals of the I period of birth this index was higher than in peers of the II and III period by 3.1 and 11.2g / kg, respectively ($P<0.001$). From the table, we can conclude that the animals of the first lambing period significantly outperform their peers in the haircut and wool ratio, which shows the expediency of leaving the lambs of this period of birth on the tribe.

The mechanical properties of wool are determined by a number of indicators. One of the important is the strength of the fibers, which determines the technological value of the wool. Wool with low strength is not used in worsted production. Another of the most important properties of fibers is elongation-the ability to extend the primary length under the action of the load during operation.

With a high ability to elongate the fibers, an equal and strong yarn is obtained. In research in the Karakul sheep of different periods of birth, the strength and elongation of wool fibers was studied. The data obtained are summarized in Table 4.

Table 4: Strength and lengthening of woolen fibers of Karakul sheep of different periods of lambing

Performance	n	periods of birth					
		I		II		III	
		M ± m	C _v	M ± m	C _v	M ± m	C _v
Strength of woolen fibers in 4-4.5 months of age, kgm	10	31,1±0,6	17,4	33,3±1,8	17,4	34,8±2,5	22,7
Strength of woolen fibers in 6-6.5 months of age, kgm	10	33,2±2,0	22,2	35,6±1,4	13,5	30,4±1,8	18,2
Elongation of wool fibers in 4-4.5 months of age,%	10	36,3±2,2	21,3	42,5±2,5	19,4	41,9±1,5	11,6
Elongation of wool fibers in 6-6.5 months of age,%	10	36,7±2,5	24,4	42,3±1,1	8,8	38,7±1,8	14,9

An analysis of the data of the table shows that the strength of the fibers of animals aged 4-4.5 months was greater in lambs born in the III period of birth, which exceeded their peers of the I and II birth periods by 3.7 and 1.5 kg/m, respectively ($P<0.001$). High-strength fibers at 6-6.5 months of age differed in animals of the II period of birth, which exceeded their peer group I by 2.4 kg/m, group III by 5.2 kg/m ($P<0.001$).

The study of the lengthening properties of lamb's wool fibers at 4-4.5 months of age shows that the animals of the II lambing period in this indicator exceeded their peers of the I lambing period by 6.2 kg/m, and the animals of the III lambing period by 0.6 kg/m ($P<0.001$).

The lengthening of wool fibers at 6-6.5 months of age was also greater in lambs II of the second lambing period, which exceeded the lambs of the I and III periods of lambs by 5.6 and 3.6 kg/m, respectively.

Conclusions

1. The length of the hair of lambs in 10-15 days of age in karakul breeding is of great importance because the safety of the curls at this age shows the genetic stability of the forms and types of curls and this determines the pedigree value of the animal.
2. For the full formation of a semicircular curl of the Karakul lambs, the optimal length of the hair is required, which the lambs of the jacket type have. Therefore, they are a valuable breed group.
3. The lowest relative increase in hair length is of ribbed type lambs, which is associated with a low hair growth peculiar to this lambskin type.
4. Animal animals of the first lambing period significantly surpass their peers in haircutting and wooliness coefficient, which shows the expediency of leaving lambs of this period of birth on the tribe.
5. One of the important properties is the strength and elongation of the fibers, which determines the technological value of the wool. In this case, it is necessary to take into account the timing of the birth of animals that affect these indicators.

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