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Influence of Selection Options on the Color and Turn of Karakalpak Sur Lambs

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Annotation: The article highlights research materials in the direction of studying the characteristics of the manifestation of certain indicators of colors and curls in lambs, depending on different options for selecting parents according to colors. Similarities and differences in the manifestation of the studied indicators have been established.

Keywords: Karakul sheep, lambs, coloring, coloring, hereditary factor, selection, selection, breeding, inheritance, stability, variability

Introduction. The Karakalpak sur is one of the most valuable genotypes of the Karakul sheep breed. In the structure of sheep of this color, there are such original colors as candle flame (shamchiroq), steel (pulat), apricot flower (uryuk-gul), sunset (kamar) and others, which, due to their nobility and beauty, are in high demand in domestic and foreign markets [5].

The colors of this color are inherited by a complex mechanism, and establishing a certain stability is too difficult. For this reason, when breeding these sheep and conducting selection and marking, greater variability in the manifestation of these colors is observed.

In the studies of A.S. Akhmetshiev (1989), when selecting sheep homogeneously, the following distribution of lambs of maternal color was observed: "steel x steel" - 83.6±3.3%; "candle flame x candle flame" - 89.3±2.5%; "apricot flower x apricot flower" - 78.7±4.0% [1].

Similar homogeneous samples conducted by R. U. Turganbayev (2017) yielded somewhat different results. In this case, when selecting colored sheep homogeneously, the candle flame in the offspring yielded 71.6% of the parents' colored lambs. These indicators in the offspring of the parents of the apricot flower were 68.5%, the polat - 71.5%, and the camar - 65.9% [3].

Similar results with the data of R. U. Turganbayev can be observed in the studies of A. Kh. Khatamov (2019) and other researchers [4.6].

In connection with the above, conducting research on the inheritance of the colors of Karakul sheep of the Karakalpak Sur breed remains relevant and in demand.

Purpose of the research. The purpose of the study is to study the features of the manifestation of the indicators of the color and curl of the Karakalpak sura in offspring obtained from homogeneous and heterogeneous variants of selection of parents for this indicator.

Object, and research methods. Studies were conducted on Karakul sheep of the Karakalpak Sur breed bred at the "Scientific and Breeding Experimental Station" located in the Takhtakupir district of the Republic of Karakalpakstan. Evaluation of lambs was carried out according to the "Instructions for Carrying Out Breeding Work in Karakul Breeding and Evaluating (Boning) Lambs" (S. Yu. Yusupov et al., 2015), processing of digital material according to the methodology of N. A. Plokhinsky (1969) [2.7].

Research results. Color is considered one of the important traits in the selection of Sur Karakul sheep. Its vivid expression determines the value of animal and commercial karakul. The transmission of a given trait from parents to offspring occurs according to the laws of inheritance of quantitative traits, i.e., even with homogeneous selection, disintegration into different colors occurs.

In the conducted studies, the degree of flowering manifestation was studied in different variants of parental selection for this trait. The results are presented in Table 1.

Table 1. Manifestation of colors in lambs

Selection options		Received lambs, head. Candle flame	Distribution of lambs by colouration, % (X±Sx)			
♀	♀		Stell-blue	Apricot flower	Sunset	Камар
Candle flame	Candle flame	100	70,0±4,58	15,0±3,57	15,0±3,57	-
Candle flame	Stell-blue	100	45,0±4,97	30,0±4,58	17,0±3,75	8,0±2,71
Candle flame	Apricot flower	100	37,0±4,82	18,0±3,84	36,0±4,8	9,0±2,71
Candle flame	Sunset	100	42,0±4,93	14,0±3,46	6,0±2,37	38,0±4,85

Studies have shown that homogeneous selection generally ensures an increase in the yield of lambs with parental traits. In particular, such an increase in the selection of "shamchiroq x shamchiroq" reaches 70.0±4.57%, while the transition to heterogeneous selection leads to a decrease in the yield of such lambs to 37.0-45.0%. Heterogeneous selection ensures an increase in the variability of other color patterns.

During the research, the influence of mating parents' coat colors on the manifestation of color intensity and curl length in offspring was studied.

The expressiveness of the coloring is considered one of the main selection indicators. The high degree of color expression gives the karakul a distinct appearance of color, increases the breeding value of the animal and the commercial value of the karakul products.

We studied the degree of color expression in lambs obtained from different selection variants based on colors. The results are presented in Table-2.

Table 2. Expression of the coloring of the resulting offspring

Selection options		Obtained offspring, goal	Brightness of color, % (X±Sx)		
♂	♀		strong	medium	insufficient
Candle flame	Candle flame	100	90,0±3,0	-	10,0±3,0
Candle flame	Stell-blue	100	68,0±4,66[x)]	21,0±4,07	11,0±3,12
Candle flame	Apricot flower	100	65,0±4,76[x)]	24,0±4,27	11,0±3,12
Candle flame	Sunset	100	39,0±7,87[x)]	32,0±4,66	29,0±4,53

X)- P<0,001

From the data in Table 2, it can be seen that depending on the colors of the parents and their selection in different variants, there is a significant variation in the yield of lambs in terms of the severity of the colors. A significant advantage was established in the homogeneous selection of "Shamchiroq" colored sheep compared to other selection options for the yield of lambs with a strongly expressed color (90.0±3.0%).

This advantage was 22.0% compared to the second sampling variant, 35.0% to the third, and 51.0% to the fourth. At the same time, it was established that the fourth selection variant ("Shamchirak x Kamar") significantly increases the yield of lambs with medium (29.0±4.53%) and insufficient (32.0±4.66%) coloring.

During the research, the influence of the parents' colors on the length of the offspring's curls was studied. At the same time, it should be noted that the intensity of the coloring and the length of the curls are very valuable indicators and significantly increase the value of animals and karakul.

The results of the research conducted in this area are presented in Table 3.

Table 3. Distribution of lambs by curl length

Selection options		Obtained offspring, goal	Из них, % (X±Sx)		
♂	♀		long	curled medium	curled short curled
Candle flame	Candle flame	100	60,0±4,89	20,0±4,0	20,0±4,0
Candle flame	Stell-blue	100	31,0±4,62[x)]	52,0±4,39[x)]	17,0±3,75
Candle flame	Apricot flower	100	25,0±4,93[x)]	58,0±4,93[x)]	17,0±3,75
Candle flame	Sunset	100	28,0±4,48[x)]	55,0±4,37[x)]	17,0±3,75

X)- P<0,001

The results presented in Table 3 show the presence of a certain relationship between the length of the curls and the coloring of the mating parents. At the same time, the offspring obtained from the "Shamchiroq x Shamchiroq" selection significantly (P<0.001) surpassed the indicators of other variants (25.0-31.0%) in terms of the yield of long-curled lambs (60.0±4.89%). In the last three selection variants, the offspring mainly had medium-length curls (52.0-58.0%).

Based on the results of the conducted research, it can be concluded that when selecting parents, although the main mass of offspring has a parental trait, a certain splitting of other colors occurs, which should be taken into account in the selection work.

Conclusion. It should be noted that the "Shamchiroq" sheep are a more valuable genotype in the Karakalpak sura. The sharp contrast of this coloring contributes to a significant improvement in the expressiveness and lengthening of the curls.

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