

RESEARCH ON TRANSMISSION OF COLOR AT KARAKULUL OF BOTOȘANI

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Abstract

Research has been conducted on livestock of Karakul of Botoșani breed, used in homogeneous cross for several reproduction seasons. The aim was to assess how colour transmission resulting from the crossing of parent males and females within the variety of silver grey colour. In order to achieve the objectives of the investigations initiated, was nominated for mount a number of 57 females and two rams belonging to the respective color variety.

The main followed features were: color, respectively the basis shade which is transmitted to the progeny, and the other predominant traits (type of curls, the size of the loop, fibre quality, gloss of curls).

The appraisal method of transmitting the color and traits of which depends the quality of pelts was made in the first 24 hours after birth, based on the technical specifications and instructions of the origin certificate and productive value. Classification of lambs in relation to the productive performance was done on the basis of the total final score.

The study was conducted over a period of five successive generations of lambs obtained during the calving period between 2010 and 2015. From the analysis of the way in which the color is transmitted to the progeny produced lambs, through the crossing of parents within the variety of silver grey color and during many breeding seasons, it is found that 73.5% had the grey color, and for 26.5% of the total the base color of the curls was another. This data allows us to conclude that in the case of homogenous crossings between parents silver grey this variety of color is of dominant type.

Key words: Karakul, Romanian sheep, pelts, Botoșani

INTRODUCTION

Breeding Karakul of Botoșani sheep represents a traditional activity for breeders from the North-East part of Romania. After a period in which the interest for pelts has diminished, lately it is observed an increase in requests for those coming from the breeding of colored varieties, respectively, brown, grey, white and silver. This is due to the stresses that come from the Republic of Moldova, Ukraine and Russia. Against this backdrop, the objective of the work of selection for the Karakul of Botoșani breed is that each generation of lambs to be bigger

than the previous one. To induce this aspect, the selection works applied to the quality of the curls for lambs from Karakul of Botoșani are intens and continuous. The basis of the genetic gain is represented by testing the rams, on the basis of the assumption that other refiners are able to pass on to their offsprings their valuable qualities. Also, an important role in creating the kinds of color, tints, have the small variations that occur within a population identified during the selection process. These small variations, as signalled in time and carefully analyzed in terms of their usefulness and value, can be pinned to the offspring through mating males with females who exhibit the same quality [4,6,7].

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MATERIAL AND METHOD

Research has been carried out on biological material that belongs to the breed Karakul of Botoșani which are registered in the Genealogical Register of the breed. To increase the accuracy degree of the data, the range of the data collection was extended in five successive generations of lambs obtained in seasons of breeding and calving between the interval 2010-2015.

Reproduction applied was based on crossing the genitors belonging to black color variety, and for each breeding season the reproduction has been based on the development and enforcement of homogeneous routing list of mating. This document has been previous developed and has been drawn up on the basis of a careful analysis of the specific particularities and features specific to the parenting form. This is so that the effect on the properties and quality of pelts from the new generations of lambs to be quantifiable and easier highlighted.

Each year the breeding season was between the months September and October, and the fecundation process was based on the reproduction. So that the livestock to manifest the best breeding function with 30 days before the fixed date for the onset of reproductions, they have been subjected to a period of intensive feeding, a fact that allowed the breeding activity to extend only for the duration of two sexual cycles.

Evaluation of quality features and character traits of which depends the quality of pelts as performed in the first 24 hours after birth, and to have the same level of appreciation of the requirements of the work was done by the same authorized person.

RESULTS AND DISCUSSIONS

The main productive feature specific to the Karakul of Botoșani breed is the manner in which the hair coverage of the pelts is ordered. Generally, the pelt is characterized by beauty and outstanding reflexes, conferred by the basic colour, by the drawing and uniformity of curls, gloss, silkness and other particularities. The name of pelts are attributed to the fur obtained by the slaughter

of lambs in the first days after birth, when the follicle shell presents a specific aspect, in the form of curls, which gives a special aesthetic aspect.

Occurrence of new type for production of sheep pelts and the interest of farmers for valuable biological qualities, the Karakul of Botoșani breed has known a continuous and steady expansion in areas located in the North-East of Romania [5]. In the present, in Romania, for the selection of Karakul of Botosani sheep are followed the specific characters of the pets with flattened curls, tendency imposed by the researchers from Namibia and South Africa [1, 2, 5, 8].

After the year 2007 the genealogical registers have been set up for each breeds of sheep, and for Karakul of Botosani the activity and the work of testing and evaluation of breeders is managed by ACOOC Moldoovis from Botoșani. The Genealogical Register of Karakul of Botosani sheep is structured as follows:

1. Principal Genealogical Register.
2. Additional Register (Secondary).

To be included in one of the sections in question, any proposed individual must fulfill certain requirements that can be tracked, evaluated and determined. Present situation of the effective belonging to the Karakul of Botoșani breed which is included in the two sections is presented in table 1. Analysing the data presented in table 1 it can be seen that the most numerous nucleus is located in Botoșani, and in Vaslui and Iași the percentage effective which can be found in the Genealogical Register of the breed is only 15%. This aspect is due to the high interest and outlined tradition in the growth of this breed and due to the attachment of farmers to the behaviour, biology and specificity of the obtained productions from this breed. If in Neamț and Suceava the Karakul of Botoșani sheep effective entered in the register of the breed is of 4.1% and respectively 1.98%, in Bacău county are not effectives included in this document which certifies the origin of the quality of the biological material [3].

Table 1 Present situation of the effective of Karakul of Botoșani sheep included in the Genealogical Register

County	No. of individuals	Frequency (%)
Botoșani	3416	63.72
Vaslui	860	16.04
Iași	759	14.16
Neamț	220	4.10
Suceava	106	1.98
Bacău	-	-
TOTAL	5361	100.00

Concluding it can be said that in the growing area of the sheep Karakul of Botoșani the interest is directed towards the achievement of pelts with new characters, particularly glossy and with an original way of arrangements of curls that generate a special modeling.

Regarding the color of pelts, one it can be said that black is the wanted one, followed by the smoky one, grey, brown and white. Within each variety, depending on various factors and matings, various shades of color appear that can increase the commercial value and beauty of pelts.

Coming in response to these trends, research have focused on evaluating the method of color transfer in the case of genitors matings belonging to black color variety, but also the analysis of the incidence of valuable shades belonging to black color. In this regard, for five years was analyzed the transmission of colors within this type of cross. In this sense the rams use for mating were five and are part of the male nursery group which are certified for this purpose. The base of the reproduction activity has been of matching pairs and was made on the basis of a number of 193 females, taking into

account the origin, the line from which are part of and the intended purpose for improvement.

Livestock and commercial value of the pelts of the grey Karakul depends on the ratio of fibers from the loop, colour contrast, length of the fiber segment, the degree of opening of the curls and the rolling mode of the fibres. Shades of grey colour are given by the nature of the pigment color.

The color silver grey is a composed one, the fibers that are components of the loop are of heterocromatic type, with shades of dark brown placed at the base of the fibres. In the case of this variety of colour, the fibres of hair have a very dark brown -to blackish dark pigment, in the middle the pigment is brown, and at the top the base color of the fibres is light with different colors, namely gold, silver, antique, platinum, tanning.

For the purposes of propagation and consolidation of the Karakul of Botoșani sheep from the color variety grey-silver, during the research were applied different outlines of crossings between parents belonging to different varieties of color, and the results are presented in a centralized manner in table 2.

Table 2 Transmission degree of color and shades at Karakul of Botoșani breed

Parents color	Total mounted sheep	Total lams	Color of descendants									
			Grey		Brown		Black		Halili		Other colors	
			n	%	n	%	n	%	n	%	n	%
♂ x ♀ KS x KS	139	136	100	73.5	25	18	4	3	4	3	3	2.5
KM x KS	58	57	19	33.5	26	45.5	8	14	3	5	1	2
KS x KM	15	15	3	20	9	60	3	20	-	-	-	-

Note: KS- Karakul grey; KM-Karakul brown; KN- Karakul black

From the analysis of the data submitted is found that through the pairings of grey

parents, transmitting to the descendants of the same type of color is found only at 73.5%

of total number of lambs. The difference represented by 26.5% had the following distribution of color: 18% were brown, 3% black and halili and 2.5% present other colors.

In the case of heterogeneous crossings of Karakul of Botoșani rams of brown variety with sheep from the grey variety, it was found that 45.5% of the total number of resulted lambs have the base color of pelts brown. These data prove that in the case of this type of cross, dominant is the brown type. Desired type of color, meaning grey silver, was registered to a share of just 33.5%. The black color was found at 14%, and the other 2% represented other colors.

In the case of crossings between the Karakul of Botoșani rams of grey silver color with ewes from the brown color, the dominant type was of brown color, acknowledging that this color occurs in 60% of the total obtained descendents. The difference of 40% presented equally the grey color (20%) and black (20%). So by crossing brown sheep with grey rams will result a progeny of dark brown heterozygotes, which shows that brown is epistatic vs. grey.

The data obtained are similar in meaning and with others published in the speciality literature [1, 2, 3, 4, 5]. Thus, in a more detail study related to how color transmission of Karakul sheep, performed by Nel [1966] quoted by Taftă, it obviously shows that the dominance cannot be complete throughout the series of alleles, and that the gene that is responsible for determining the light color of this breed is epistatic incomplete from those who favour the emergence in descent of the colors black and brown.

CONCLUSIONS

In the case of crossing of brown Karakul of Botoșani rams with sheep belonging to the grey-silver variety, at the obtained lambs the color distribution was as follows: a share of 45% have the color brown, another share of 33.5% have color grey and other 14% presenting with black color. In this case the color grey is considered recessive (hypostatic) to the black or brown color.

The making of crossings between brown Karakul of Botoșani rams with grey Karakul females favour at offspring the next color distribution: at 45.5% the transmitted color belonged to the male parent, at 35.5% the transmitted color was similar to the femal parents, and at 14% the base color was black. In this case it is established that brown is an incomplete dominant type compared to the color grey-silver.

In the case of crossing KS x KN, the obtained descendants were of brown in proportion of 60%, the difference being apportioned equally to the grey colour and the black color. In this case the ratio between the colors was of 1 to 2 to 1.

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