Scientific Papers. Series D. Animal Science. Vol. LIX, 2016
ISSN 2285-5750; ISSN CD-ROM 2285-5769; ISSN Online 2393-2260; ISSN-L 2285-5750

RESEARCH REGARDING THE QUALITY OF PELTS FROM KARAKUL LAMBS OF BOTOŞANI AS EFFECT OF CROSSINGS BETWEEN BREEDERS BELONGING TO THE VARIETY OF BROWN COLOR

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Abstract

Interest of sheep breeders of Karakul of Botoşani breed led to the pursuit of activities of technical evaluation and management of quality of pelts to a variety of colour approved in Romania in the year 2012. The entire batch of lambs subjected to assessments in each generation analysed come from crossings between genitors who belonged to the same variety of black colour. The aim was to study the mode of transmission of the characteristics that influence directly the quality of pelts when applying homogeneous crossings. Breeding activity was based on matching-pairs and was made on the basis of a number of different couples, taking into account, however, the origin, the home line and the goal of improvement. Appraisal method of transmission of the characters which depends on the quality of pelts was realised on the first day after birth, taking account of the technical instructions and specifications of the certificate of origin and productive value. Classification of lambs in relation to the productive performance was done on the basis of final total average score. The study was conducted on successive generations of lambs obtained in the calving season between 2010 and 2015. From the analysis of the way in which descends in descent the waited characters is found that the process of improvement must be based, in particular, on an intensification of selection and on retention for breeding only the rams which show an improvement effect. Character analysis represented by the curl shape indicates that the desired types show a considerable improvement, as the last generation of assessed lambs, the valuable curl forms to be identified in over 70% of the total number of lambs subjected to research. Also, the effect of the selection applied it notes that at the apprizing of the curls after size, the desired type has rising values which confirms that the process of genetic improvement is one way. Instead, variations observed in ranking lambs in livestock classes after the total score value indicates a decrease from 33.3% to only 9% of lambs that meet the minimum requirements for the record. This suggests that it is necessary to measure the immediate reassessment of the reproductive couples and on the medium and long term a stronger selection for base characters and the application of more effective testing of males.

Key words: *lamb, pelts, Karakul of Botoşani, Romanian sheep.*

INTRODUCTION

Interest of sheep breeders of Karakul of Botoşani breed led to the pursuit of activities of technical evaluation and management of quality of pelts to a variety of colour approved in Romania in the year 2012.

The entire batch of lambs subjected to assessments in each generation analysed come from crossings between genitors who belonged to the same variety of black colour. The aim was to study the mode of transmission of the characteristics that influence directly the quality of pelts when applying homogeneous crossings.

Breeding activity was based on matching-pairs and was made on the basis of a number of different couples, taking into account, however, the origin, the home line and the goal of improvement.

Appraisal method of transmission of the characters which depends on the quality of pelts was realised on the first day after birth, taking account of the technical instructions and specifications of the certificate of origin and productive value. Classification of lambs in relation to the productive performance was done on the basis of final total average score.

The study was conducted on successive generations of lambs obtained in the calving season between 2010 and 2015. From the analysis of the way in which descends in descent the waited characters is found that the process of improvement must be based, in particular, on an intensification of selection and

on retention for breeding only the rams which show an improvement effect.
Character analysis represented by the curl shape indicates that the desired types show a considerable improvement, as the last generation of assessed lambs, the valuable curl forms to be identified in over 70% of the total number of lambs subjected to research. Also, the effect of the selection applied it notes that at the apprizing of the curls after size, the desired type has rising values which confirms that the process of genetic improvement is one way.
Instead, variations observed in ranking lambs in livestock classes after the total score value indicates a decrease from 33.3% to only 9% of lambs that meet the minimum requirements for the record. This suggests that it is necessary to measure the immediate reassessment of the reproductive couples and on the medium and long term a stronger selection for base characters and the application of more effective testing of males.

MATERIALS AND METHODS

All researches, studies and analyses conducted on the biological material Karakul of Botoşani of the brown variety and which is entered in the Genealogical Register of the breed. To increase the accuracy of the data range of the data collection was extended on five successive generations of lambs obtained in seasons of breeding and calving, between 2010 and 2015.
At the whole reviewed herd the applied reproduction was based on the crossing of genitors belonging to the dark brown variety, and for each breeding season the mating was made in accordance with the list of directing mating.
This document has been previously prepared and has been drawn up on the basis of a careful analysis of the particularities and specific characteristics of the paternalist forms, so that, the effect on the properties and quality of pelts from new generations of lambs to be quantifiable and easy to reveal.
Quality evaluation of character traits of which depends the quality of pelts was performed in the first 24 hours after birth, and to have the same level of efficiency the appreciation requirements of the work was performed by a single person.

RESULTS AND DISCUSSIONS

The brown variety within the breed Karakul of Botoşani is a biological creation of a more recent date, having been approved in 2012. This colour is a mixture of fibers which contain melanocytes yellow-orange, brown-black and dark-chestnut and resulted from mating the Black Karakul with the Gray Karakul, through the recombination of melanocytes in different colours (Taftă et al. 1977; Pascal 2015). Given the existence of a gene-fund proper to the colours brown and grey, these mutations have been fixed and strengthened by new breeding of homogenous type. Studies on the breed Karakul of Botoşani (Pipernea, 1976; Pascal 2011;Nechifor et al., 2014) emphasizes that the black sheep Karakul variety are heterozygous, also in its hereditary substrate, possess genes for brown colour in hypostatically state and which are designed to inhibit the activity of certain non-allelic genes.
In relation to the distribution and intensity of melanocytes contained in the chemical content of covering fibers, can be distinguished within the brown variety some shades from dark tones up to light, even beige. Promoting or producing the required shades depends upon the ability of the breeder to improve the reproductive activity between individuals which make the base batch.
Qualitative characteristics are numerous, complex and contributes greatly to the aesthetic and commercial value expression of pelts. That is why in matching pairs are of great help the information resulting from the evaluations on the quality of the curls at each breeder, information obtained since the first days of life and stored in certificates of origin and productive value.
According to the official technical regulations, assessing the quality of pelts in Romania is applied in the first 24 hours after birth and is carried out by specialized personnel authorized to do so.
Overall, each pelt depends on the expression of the character on which the curling depends, respectively the form of the curls, the size of the curls, fiber quality, the shine of curls. All these characters are favored in the expression of the way in which is every couple of reproduction of female and male is consisting.

The proportion of valuable forms increases significantly when the reproduction is based on homogeneous mating within each varieties of colour. This is confirmed by other studies conducted both in Romania (Taftă et al.1997; Pascal, 2011; Pascal, 2015) as well as in other countries where growing sheep for pelts (Buzu, 2012; Clote et al. 2014; Bravenboer, 2007).

The research activity has been carried out on different generations of lambs resulting from seasons of breeding and calving that had place between 2010 and 2015. The total number of lambs which were subject to direct assessments was 227, all belonging to the dark brown variety, resulting from the genitors breed variety belonging to the same colour.

All evaluations regarding the quality of the curling is determined by subjective methods, which is why the person authorized in such assessments must have experience in this field and know well the wanted kind of expression. In table 1 are presented and centralized, a result of all the planned assessments through the research plan approved.

Curl shape represents an extremely important character for the quality of the curling in overall, and through the activities of improving the objectives are shaping and fixing some valuable form of curls to be as close as possible to the requirements and demands of existing operators on the market.

Table 1. Result of assessment of main characters

Specific characters of pelts		Appraisal period					
		2010-2011		2012-2013		2014-2015	
		n = 65	%	n = 72	%	n = 90	%
Curl shape	tube	20	30.8	37	51.5	6	6.7
	tube + kernel	2	3.1	7	9.7	11	12.3
	flattened	23	35.4	14	19.4	61	67.7
	other shapes	20	30.7	14	19.4	12	13.3
The size of the curls	medium	41	63.1	33	45.8	55	61
	medium-small	10	15.4	30	41.6	31	34.5
	small	-	-	1	1.4	-	-
	big	14	21.5	8	11.1	4	4.5
The quality of the fibers	silky smooth	16	24.6	32	44.5	66	73.3
	normal	34	52.3	39	54.1	23	25.5
	rough	-	-	-	-	1	1.2
	soft	1	1.6	1	1.4	-	-
The shine of the curls	intense	9	13.8	13	18	20	22.3
	very good	38	58.5	41	57	22	24.5
	good	18	27.7	17	23.6	41	45.5
	satisfactory	-	-	1	1.4	1	1.2

Considering the fact that this variety has been approved relatively recent, in the year 2010, the first generation of valued lambs was obtained during the parturition season in the coming year. If the appreciation of this character on this generation may find that cylindrical curls, it will be represented by tube shapes and bob represented 33.9% of the overall analysed population.

Although for the cylindrical shape of the curls is found a variation in expression, the proportion being higher, respectively of 61.2%, of the total number of lambs assessed during the parturition season in 2013, through better control of the breeding, the wanted curl shape, meaning those flattened, increases the proportion above 65%. The preference towards fixing the curls with a flattened shape is due to the fact that these curls have the longitudinal axis parallel to the dermal layer willing and have the ability to better reflect the natural light, having a lustre and a silky smooth better expressed.

Fig. 1. Pelt brown with lustre good

Fig. 2. Karakul of Botoșani– pelts with brown colours

The size of the curls represents a very important character and therefore represents a selection criterion applied to sheep bred for their pelts. This character is favoured in the expression by length, height and width of the curl. Ideally, on the surface of the pelts to retrieve curls which have values close to the specified size, thing that seems impossible to reach. That is why, to improve this character, the main objective is the fixing of the curls as being uniform.

Assessing the size of the curling at lambs from the brown variety of the breed Karakul of Botoşani indicates a favourable expression for the wanted type of curls represented with small or medium size. Values greater than 95% of the proportion of lambs with such a size shows that the choice of the breeders and the nomination of the crossings were done better in the last season of breeding-parturition researched.

The gloss and silky smooth directly participates in the aesthetic value of pelts, and if you take into account the tendencies, desired type of curling is the one that is associated with a high well expressed gloss. Overall, this character is determined by the size, shape and arrangement of cells at the level of the cuticle layer of fibers.

Because the smoothness of the fibers from average curl exceeds 45 μm, the cuticle layer cells have an arrangement on a single row of round, irregular edges, they exhibit a mostly oval shape and are larger compared to the cells of the same histological layer, being present thin fibers and intermediates. Studies conducted for the evaluation of the basic characteristics of which depend the gloss expression specific to fibers forming the curls at the lambs from Karakul of Botoşani, indicate that this character is positively correlated with average thickness and silky smoothness (Pascal, 2011; Buzu, 2012;Taftă, 1997;Nechifor, 2015). Therefore, in the selection applied for the Karakul of Botoşani breed it shall be taken into account the quality of the fibers. This character is well expressed, when there is a decrease in the average thickness of the fibers components to values smaller than 40 μm. The quality will improve because this type of fiber will have a layout of cuticular flatter cells, and by standardizing their size, both the gloss and smoothness will be externalized.

Taking into account all these data and information, during the research period has been given an increased attention to the routing plan of the mating and as a direct consequence is the increased proportion of lambs that were the desired type for both the quality of the fibers and the gloss of the curls. If in the assessment of the first generation of lambs, the proportion of those who had silky fibers was just 24.6%, their share increased to 44.5% respectively 73.3%. This situation has contributed to the improvement of gloss, character which has improved obviously, increasing the proportion of lambs that had an intense gloss of the curling from 13.8% to lambs assessed in the action conducted in 2011, to 18% respectively and 22.3% in the other two generations be subject to assessments.

Flock hierarchy analysed in relation to the performance of which depends the quality of curling represent the technical activity which conclude the whole process of assessment and evaluation of the quality of pelts. Based on the data contained in the certificate of origin and productive value, at the end, is determine the class after the self performance. This result from the summation of points awarded due to an appreciation of how each character externalizes, taking however into account also the scale of general minimum total score, for enrolment in the partial class after productive performance. The data resulting from the hierarchy of lambs Karakul of Botoşani breed, belonging to the brown variety, are presented in table 2.

Table 2. Ranking of lambs from Karakul of Botoşani breed, of brown variety, after the production performance

Specific characters of pelts		Appraisal period					
		2010-2011		2012-2013		2014-2015	
		n = 65	%	n = 72	%	n = 90	%
Framing after production performance	Record	14	21.5	24	33.3	61	68
	Elite	27	41.5	25	34.7	21	23
	Class I	24	37	23	32	8	9
	Class II	-	-	-	-	-	-

Analysing the final results we can see that the lambs which presented a total score that was achieved with the minimum requirement for

enrolment in higher classes, as record and elite, has grown constantly. If at the first generation of lambs subjected to assessments their share was only 63%, the proportion of subsequent generation increases at 68% and 81%. This aspect is due to the correct nomination of the mating between the breeders, and this positive direction of lambs which constitute a valuable curling, show that many of the quality of characters of the curling have a high degree of transmission and can be easily modified and fixed in future generations by intensifying a controlled reproduction and selection. As regards to the biological quality of breeders, Pipernea (1974) states that the promotion of breeding must be a result of testing how they convey the desired characters, which represent the basis of the genetically win, starting from the assumption that other improving breeders are able to pass on to their valuable qualities to offspring.

CONCLUSIONS

In the case of assessments relating to the form of the curls, the desired types record an increase in the wanted proportion, reaching the last generation of lambs assessed the valuable curl forms, to be identified in over 70% of the total number of lambs subjected to research.

As an effect of the applied selection, following the conducted research, it notes that at the appreciation of curls after size, is found that the desired type, which is associated with small to medium sized curls registers rising values which confirms that the process of genetic improvement is on the efficient way.

The gloss participates in the expression of the beauty of pelts, also representing an important criterion of market requests in relation to this product. By the fact that the appreciation of this character at the lambs from the last assessed generation, the proportion of individuals with good lustre exceeding 40% indicates that the selection should be intensified and the promotion of breeders should be applied a more efficient management.

The fluctuations determined in lamb ranking in performance classes of production shall certify that the basis for reducing the proportion of lambs that meet the minimum requirements for class record, from 33.3% to just 9% in the last generation, that the establishment of criteria for breeding couples to be reassessed.

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