ABSTRACT

Karakul of Botoșani represents a population of animals characterized by a phenotype and a genotype distinct and has as the basic objective of breeding and improvement, in addition to other specific productions and other breeds of sheep, and the production of pelts.

The usefulness and necessity of the present research is because the Karakul of Botoșani breed, as a biological creation of recent date, is not fully known at a national and international level.

The aim of the planned research is also due to the fact that the breed Karakul de Botoșani has local and regional importance, as well as the complexity of the production characters which aim assessing the current level of improvement of the quality of pelts, to identify new targets that, later on, to be included in a more efficiently program of improvement in order to diversify colors and shades, but also the way of expressing the specific characters of pelts production.

Also, the aim of the research targets a real assessment of the actual level of improvement, specific to the entire population entered in the **Genealogical Register** of the breed in the two sections.

The finality of the present research pursued also to establish the present level of production performance, of conformation and body constitution, specific for Karakul of Botoșani sheep and to compare the effect due to the selection which had place in the period of time that has passed since the establishing of the present Genealogical Register of the breeds until the present.

Research results will form a current database, objective, that will be especially helpful for breeders in the field, so that, through the application of improvement principles the genetic progress to become a certainty, with a direct effect on the increase in the degree of expression of the characteristic valences of the breed Karakul of Botoșani and of significant improvement in the quality of the basic characters of which depends on the value of the pelt and the efficiency of breeding this breed.

The performance of all researches is in full agreement with the recent trend in the breeding small ruminants in our country, their number steadily increasing, the products obtained being required, increasingly more, on the local and the European Union market.

For the data to be accurate and be able to contribute to the issue of the conclusions, all the objectives of the research were determined on three successive generations of lambs obtained and subjected to the assessments regarding the establishment of its own performance in specific calving seasons from the years 2013, 2014 and respectively 2015 and their comparison with the data obtained from the assessment of the same characters from the first generation of lambs that had been subject to productive evaluation after the establishment of the breed register.

The first objective was to analyze the characters of which depends the quality of the fibers whereas their determination has a practical significance and a major influence on the loop and the looping, of the resistance and shape the loops, regarding the appreciation of the gloss, silkiness, length, thickness, elasticity, etc.

The second objective has been represented by the evaluation of loop types depending on the variety of color and establishing the ties with the quality of pelts on the basis of determining the desired loop incidence for the varieties of the Karakul of Botoșani breed.

The third objective of the research referred in overall to the features of the looping because the quality of the pelt depends a lot on ensuring a uniformity regarding the length, height, width, closure degree and mode of arrangement of the loops on the pelt surface, generating a very good degree of modeling or of some well contoured loops.

The fourth objective had intended to assess concretely, on the livestock included in the official control of production, of the breed characters, type of constitution and other characters on which not only the size and uniformity depends, but also the quality of the loop in its entirety.

The fifth objective had the role to determine the performance of production, body conformation and constitution specific to the lambs of the Karakul of Botoșani breed obtained from sheep that are included in the two sections of the breed registry.

The sixth objective was also to evaluate the mode of transmission of the colors within the practice of crossing genitors belonging either to the same color varieties or to different ones. The aim of introducing in the research of some aspects of genetic transmission of color at the breed Karakul of Botoșani is also of practical importance because of market trend indicates an increase in demand in relation to the colored pelts.

The seventh objective was to determine the generic parameters specific to the breed Karakul of Botoșani in order to establish a more efficient improvement program to support a faster genetic progress.

The importance of the studies is due and the fact that the changes in the structure of breed and the form of ownership, which also contributed to a diminution of the interest for pelt productions specific to sheep, the Karakul of Botosani breed declined with a total number from 750 thousand to 350 thousand individuals. This issue could also have a negative effect because by the existence of a small number of individuals in the population, may limit the mating opportunities in order to diversify the characters and colors of pelts.

The biological material subject to research belong to the breed Karakul of Botoșani, with known origin, included in one of the specific forms of the performance control of the breeds bred for pelts, namely those based on the evaluation in **PP** system (***own performances***) and based on the assessment of the **OP** control type (***origin and productivity***).

More specifically, the analyzed biological material was represented by purebred lambs Karakul of Botoșani belonging to all varieties of color, obtained on the interval of three successive generations, from calving which occurred in the seasons from 2013, 2014 and respectively 2015.

The evaluation of the degree of body development of adult categories highlighted some differences statistically insignificant for the approved varieties, indicating an obvious genetic stability for this character, and the analysis of the indicators on which reproduction depends shows a high fecundity, but the average prolificacy has smaller values than 110%, aspect which is due to the fact that it is not desired to obtain more lambs because it involves a reduction of the total area of pelts.

1. Evaluation of the degree of improvement for the quality of fibers

Evaluation of the length of the fibers from the loop from the generations of lambs subjected to researches show a progress and a selection efficiency for this character because it establishes a gradual reduction with 0.44% in 2013, with 1.94% in 2014 and with 7.45% in 2015, approaching the average values of 12 mm which is associated with a more correct expression for the other characters of this production. Due to the lengthy selection it is found that at the grey variety the average length of the fibers from the loop had a positive trend, dropping from 17,22 ±0,52 mm to only 15,98±0.23 mm very important aspect because the stabilization of this character, at this level, will facilitate the emergence of individuals at which the tubular looping and uniformity will be better expressed.

The smoothness of the fibers from the loop has seen a noticeable improvement in all varieties, but the stabilization of this character at a level that is associated with a good quality looping is found in several varieties. Thus, at the black variety the improvement of this character is more advanced and if the same intensity of selection is maintained in the following generations, it will stabilize around 13 mμ, being the optimal one.

The gloss of the fibers has been improved considerably as a result of a more accurate match of the breeding pairs, and in 2015 the proportion of lambs that represented the desired type for this character was of 85%, and the proportion of lambs with the desired type of smoothness increased in 2015 compared to 2013 by more than 6%, and the difference between the average values was significant for $p<0.01$.

2. Evaluation of the degree of improvement in uniformity of color

The improvement of the uniformity of color at the grey variety is evident because the average score value of 89,03±0,336 obtained on three successive generations of lambs within the grey variety it can be observed an obvious improvement of the desired type. To justify the current state of improvement of this character, it can be said that at the generation obtained in the 2005 season, the proportion of lambs which received the maximum score at evaluation was smaller with 2.38% in 2013 and higher with 1.15% respectively 3.14% at the evaluations that occurred in generations of lambs obtained in the other two calving seasons.

3. Evaluation of the degree of improvement of the loop type

The data obtained from the assessment of improvement for the loop type shows that if in 2015 expressing the type of tubular loops, of different sizes, was present only at approximately 50% of lambs belonging to the brown, grizzle and pink varieties, at the black variety was identified a ratio less than 50%. Instead, at the pink variety the desired type is represented by flattened loops, increasing from 57.16% in 2013 at over 75% at the generation of 2015, results which confirm not only the effectiveness of the selection but also the fact that improvement is on favorable coordinates.

4. Evaluation of the degree of improvement of loop size

At the lambs from the black and grey varieties it was obtained an average score situated at just 7% from the maximum score value, at the black the score value was of 23,40±0,159 and respectively of 23,11±0,092 at grey, aspect which causes us to affirm that improvement is certain and is close to the maximum desired threshold. The difference between the average score obtained in the

assessment of the size of the loops at the pink-grey, pink-black, brown-black and respectively brown-grey varieties was significant for $p < 0.05$.

5. Evaluation of the degree of improvement in the closure degree

At the assessment of the closure degree of the brown variety is found that in relation to the average values obtained at evaluation in the year 2005, it is observe a tendency of growth at lambs with closure degree 3/4 from 51.66% at 57.04% in the year 2015, and from the practical point of view this trend attests to the effectiveness of the selection applied and the severe respective of the retention criteria at reproduction will determined a constant improvement of this character. Statistical processing of the points awarded after the assessment of the closure degree highlights significant differences between varieties, the highest average score being determined in the evaluation of lambs belonging to the black variety (40.88±0.403).

6. Evaluation of the degree of improvement of the rolling direction

At the black variety the average score was of 22,08±0,231 indicating a high degree of improvement because, by this expression, the phenotypic expression lies at only 2.92 points of the maximum score level in this case. At the grey variety the meaning and the evolution of improvement for this character follows the same direction but at lower intensities because the proportion of lambs with a cranial type rolling direction increased from 58.14% to 67.12% on a total interval of 10 years.

7. Evaluation of the degree of improvement of the looping uniformity

Based on the average score obtained, it is observed the existence of a different degree of improvement of this character, being more advanced at the black and grey variety where there were obtained more than 43 points, lower at grizzle (26.69 points) and in an intermediate phase in pink and brown (39.59 and respectively 39.87 points).

8. Evaluation of the degree of improvement of thickness and modeling of the looping

Improvement of the thickness of the loops has a continuous character and at the brown variety this process runs at parameters that ensure a genetic progress which can be easily quantified because the proportion of lambs with a desired expression increases to 67.37% in 2005 an to over 72% of the assessed individuals in 2015.

After the assessment of the modeling degree is observed a great variability of this character and to continuing improving this character should be intensified the activities that can induce a correct outline of loops, an intense luster and arrangement of loops in concentric or parallel formations.

9. Evaluation of the degree of improvement based on their performance

The statistical processing of data relating to the average total score of the productive performance shows that at each variety is fulfilled the minimum requirement of enclosure in the RECORD class, and the fact that the average score had high values, ranging between 534,62±1,86 points at brown and 585,08±1,86 at black variety, show that at a large proportion of lambs was attributed an average individual score well above the minimum 500 required points for the enclosure in the record.