RESEARCH REGARDING THE INFLUENCE OF TECHNOLOGICAL FACTORS ON THE BODY DEVELOPMENT OF THE KARAKUL DE BOTOSANI LAMBS

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Abstract

In order to determine the effect of conducting the process of body growth and development on the Karakul of Botoșani breed lambs, two lots were organized, in which the experimental treatment was represented by the fact that only one lot benefited from improved feeding and maintenance conditions, the other lot being maintained throughout the lactation period together with the mother sheep.

The statistical processing of data obtained from the weightings performed in the lots that have benefited from different experimental treatments during nursing period shows a more intense rate of body mass accumulations in the lot that benefited from a directed growth realized in a separate space in which they received additional food resources. At the age of 60 days in the group that benefited from an improvement of the comfort conditions but also from an additional feed, the average body weight was 18.970 ± 0.106 kg while in the group of females kept in common compartments with the mother sheep this parameter was smaller, namely 15.710 ± 0.160 kg. The difference in body mass between the average values determined for the two groups based on the live weight determined at the age of 60 days was 3.26 kg and had a high statistical significance level for P <0.05.

At the time of weaning, near the age of 90 days, the same aspect is observed, meaning that the weight had higher average values also in the lambs who benefited from an improvement of the maintenance technology, the difference between lots being +2.44 kg and was significant for P <0.05.

All the data obtained as well as the statistical significance of the differences between lots confirms that the extension of this practice can have favorable effects on the degree of body development, the increase of precocity and on the significant improvement of the main indices of reproduction.

Key words: lamb, Karakul of Botoșani, tehnologic factors

INTRODUCTION

Knowing that the adult animal organisms, meaning those directly involved in obtaining the productions, represents the result of the interaction between the hereditary endowment and the environmental conditions in which the growth and exploitation process takes place, it turns out that the possibility of improving the quality of the biological material is realized by two ways:

- obtaining and multiplying individuals who have a hereditary basis favorable to the purpose and always improved by applying a constant selection and intervention in reproductive management;
- coordinating the development process of this hereditary base by optimizing the environmental conditions.

Regarding these aspects Furtunescu, quoted by Mochnacs et al. (1978) stated: "while the first aspect creates only the premises and the possibilities, in the second, these features are realized concretely".

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From this, comes the idea that heredity sets only the limits between which the medium determines the way of expression, under different conditions, of a character. In the case of sheep breeding to ensure the fulfillment of the two aspects mentioned above, it is necessary to give an increased importance not only to the genetic factors but also to the non-genetic ones, factors that condition the growth and development processes of the young sheep categories.

MATERIAL AND WORKING METHODS

In the research conducted the main purpose was to carry out a complex analysis on how the directed growth effect the lambs from the first neonatal and how it influences the rate of their body development at different ages until they are introduced in the reproductive circuit.

In this way, two lots consisting of 100 sheep together with their lambs were constituted, the experimental treatment being represented only by the fact that one of them benefited from improved conditions of accommodation and comfort provided to the lambs. The feeding of the mother sheep from both groups was identical, so ware the microclimate factors and the maintenance conditions.

In the first lot the lambs were kept together with their mothers for the entire nursing period without the benefit of improving conditions or additional feeding. Basically the feeding of the lambs was represented by the milk and occasional consumption of food from their mothers feeding place.

In the second lot, during the nursing period all the lambs benefited from improved sheltering and feeding conditions. Starting with the second week after birth, all individuals received, in a first stage, good quality alfalfa hay, for the development of the enzymatic package that metabolize the fibrous feed, and then a mixture of cereals was introduced.

Fig. 1 Maintaining lamb with their mothers

Fig. 2 Suplimentary lambs feeding in designated places

Considering that the food, intended for additional feeding of the lambs, could also be consumed by the adult sheep, to prevent this situation it was resorted to the arrangement of a space separated by the common compartment, by a metal grid made of bars arranged vertically and at distances that allow only the passing of lambs. Inside this space was provided with feeders for the administration of concentrates, salt lumps and water jugs.

In order to verify the way in which the experimental factor exerts its influence on body rate development, periodically, weighing of the lambs from both lots were performed at different ages, respectively at birth, at 30 days, 60 days and at weaning at 90 days.

The collected data were processed using the MsExcel 2007 spreadsheet application. Thus, the database was prepared with the corresponding variation strings, each coded according to the specific parameters studied. In the first stage, the usual statistical estimators were calculated - the arithmetic average ($\overline{X}$), the variance (S2), the standard deviation (s), the standard error of the average (± s) and the coefficient of variability (V%), using the software calculation algorithm.

To test the statistical significance of the differences between the average values of the studied parameters, as well as the correlations between them, the variable analysis algorithm (ANOVA Single Factor) and Pearson Correlation were used, both included in the MsExcel 2007 software package.

RESULTS AND DISCUSSIONS

The statistical processing of data obtained from the weighing the two lots shows a more intense rate of body mass accumulations at the lot that benefited from that separate space in which they received additional food resources (table 1 and fig. 3). However, compared to the group maintained under normal conditions, it is found that, in the group that benefited from optimized technological factors, at the time of the first weighing the difference in weight accumulated was positive but also negative, but statistically insignificant.

The biggest difference was recorded at the age of 60 days regarding the weight. At that time, the lot that benefited from an improvement of the comfort conditions but also from an additional feed, had the average body weight of 18.970 ± 0.106 kg, while in the group of females kept in common compartments with the mother sheep at the same age the value of this parameter was smaller, respectively 15.710 ± 0.160 kg. The difference in body mass between the average values determined for the two lots at the age of 60 days was 3.26 kg and had a high statistical significance level for P <0.05.

Table 1 The growth intensity evolution of young ewes keept for reproduction in nursing time taking into account the breeding technology(n = 50)

Age at weighing	Breeding sistem applyied						Diference ± semnification
	Common breeding (L1)			Directed breeding (L2)			
	$\overline{X}$ ± s $\overline{X}$	V%	Limits	$\overline{X}$ ± s $\overline{X}$	V%	Limits	
At birth (kg)	4.030 ± 0.540	10.3	2.6-4.9	4.350 ± 0.212	10.8	3.1-5.5	+ 0.32^{ns}
At 30 days kg)	9.850 ± 0.310	11.1	7 - 11	9.560 ± 0.201	12.5	9 - 14	- 0.29^{ns}
At 60 days kg)	15.710 ± 0.160	8.4	13 - 18	18.970 ± 0.106	14.7	14 - 22	+ 3.26^{cd}
At 90 days kg)	19.810 ± 0.870	7.7	17 - 22	22.250 ± 0.010	12.4	19 - 26	+ 2.44*

Note $^{a, b, c, d}$ – environments with different symbols show significantly different values (*P<0.05*);
NS – non-statistically significant differences (P> 0.05); * - statistically significant differences (P <0.05); *** - statistically significant differences (P <0.001).

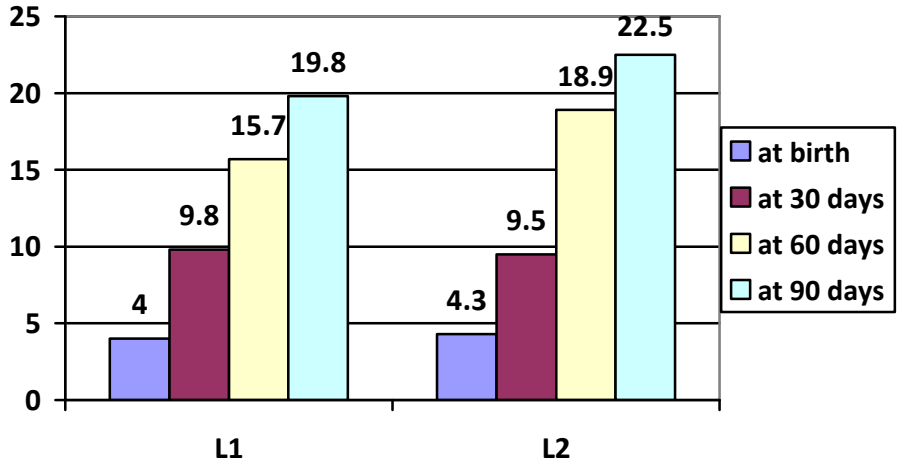

Fig. 3 Dynamics of body mass evolution in lambs grower differently (kg)

At the age of 90 days, the same aspect is observed, the live weight had higher average values in the case of the lot that benefited from the improvement of the maintenance technology but the difference in weight is reduced to +2.44 kg and was significant for $P<0.05$.

All these values confirm that the intervention in the breeding process in the first neonatal period, only by modifying some technological factors that do not require a special financial effort, and are also within the reach of any sheep breeder, can have favorable effects that will subsequently contribute to obtaining some superior results in their use in reproduction and production.

The studies carried out by categories of lambs during the nursing period highlight the advantages and the effects due to the additional feeding of the lambs from the first week, postpartum. Related to this, in many specialty studies [1], [2], [3] [4], [5], [6], [7], [8], [9], show that biological effects of the early stimulatory feeding consist of: stimulating the development of the digestive tract and the digestive capacity of the fodder, the intensification of the rumen motility, the development of the papillary layer, the rumen microbial flora and the enzymatic equipment.

In a wider way, based on the data obtained but also on the basis of other information and observations that have emerged from the applied research, it can be said that stimulating feeding of lambs from the lactation period has benefic effects and induces the following economic benefits:

- a more intense rate of accumulation of body mass and obtaining daily higher values of average gain weigh;
- it allows a more efficient consumption of the feeds administered additionally and obtaining a specific consumption at a more economically favorable level;
- shortening the nursing period if the destination of the lambs is for fattening and recovery of meat;
- by the early weaning of the lambs creates the premises for each sheep to enter milking period when the lactation curve is on an uphill slope, the respective lactation will have a longer time interval of the exclusive milking period, so they can also obtain larger quantities of milk;
- weaning will be very easy because the effects due to sudden weaning will be avoided, and the process of body development will be carried out according to the biological particularities of the respective breed;
- functionality and complete development of the gastric compartments and a better preparation of the digestive tract for growth;

- allows to maintain an intense rate of growth intensity and to reach body maturity at a younger age with direct effect on the fulfillment of the conditions of early use in reproduction.

CONCLUSIONS

1. The statistical processing of data obtained from weighing performed in the lots that have benefited from different experimental treatments during the nursing period shows a more intense rate of body mass accumulations in the lot that has benefited from a directed growth realized in a separate space in which they received additional food resources.

2. At the age of 60 days in the group that benefited from an improvement of the comfort conditions but also from an additional feed, the average body weight was 18.970 ± 0.106 kg whereas in the group of females kept in common compartments with the mother sheep at the same age the value of this parameter was lower, respectively 15.710 ± 0.160 kg.

3. The difference in body mass between the average values determined for the two lots based on the live weight determined at the age of 60 days was 3.26 kg and had a high statistical significance for $P < 0.05$.

4. At the time of weaning, that is, at the age of 90 days, the same aspect is observed, meaning that the living weight had higher average values also in the lambs who benefited from an improvement of the maintenance technology, the difference between lots being +2,44 kg and was significant for $P < 0.05$.

5. In the group maintained, after weaning, on the pasture the growth intensity was slower because during summer months, excessive heat, drought, wooding of vegetation and longer trips to find food had negative effects.

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