RESEARCH REGARDING THE YOUTH FEMALE KARAKUL OF BOTOȘANI REPRODUCTIVE FUNCTION

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Abstract

The aim of the research was to analyze the possibility of early use in breeding of young sheep in the current year in order to increase the degree of efficiency in the breed exploitation.

The biological material subject to research belongs to the Karakul of Botoșani breed, has a known origin and is bred and improved for the production of skins. In order to be able to compare the results, three groups were differentiated by their age at the time of breeding, respectively a group that was 9 months old (L1) and two other groups were young females that were 15 and 20 months old (L2). and (L3). All three groups received the same experimental treatment, the only differentiating factor being age at the time of use in reproduction.

Based on the data obtained towards the end of the breeding season, the main indicators specific to the breeding activity were determined. Regarding the fertility index, higher average values were obtained in the groups formed by females with 15 and 20 months of age, respectively 88.57% and 94.28%. In the case of the group of 9-month-old females, the value of this indicator was only 68.57%. On the other hand, when evaluating the prolificacy index, close values are found between the three groups, the differences being small and statistically insignificant.

The obtained results confirm that over time fertility is influenced by the age of females at the time of lambing in a more intense way, its influence on prolificacy and fertility is reduced in intensity.

Key words: reproduction indices, youth sheep, Karakul sheep, precocity

INTRODUCTION

Currently, within the Popăuți-Botoșani Sheep and Goat Breeding Research and Development Station, special attention is paid to the growth of the replacement youth. In accordance with the technology applied in the case of this age group, the aim is to ensure optimal conditions that support a bodily development but also an early use in reproduction. When the destination of the youth is for breeding, weaning is done when two major requirements are met, namely age and live weight at weaning.

In order for an animal organism to have the capacity to give birth to offspring, two major conditions must be met, namely reaching sexual maturity and a high degree of body development. Only in these conditions the gestation does not negatively affect the subsequent evolution of the body development. Accelerating and performing mating at lower body weights and at younger ages can affect body development, with effects the waist and reducing the live weight of that population.

Neither the delay of the mating moment is indicated because it attracts not only economic losses and an unprofitable growth but also a delay in obtaining the genetic progress and an increase of the interval between generations.

In sheep farming, in order to obtain good results, it is considered that the optimal moment to pass in the active stock for use in reproduction is when any organism has reached physiological maturity and body maturity (minimum 70-75% of the weight of the categories represented by adult individuals of the respective population [6].

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MATERIAL AND METHODS

The biological material belongs to the Karakul of Botoșani breed grown and exploited at the Popăuți-Botoșani Sheep and Goat Breeding Research and Development Station. Were analyzed the categories of sheep from the previous and current year used for the first time for breeding. In this sense, three lots were set up that were 9, 15 and respectively 20 months old at the time of breeding. All three groups benefited from the same experimental treatment, and at the end the main reproductive activity indicators were determined.

During the breeding campaign, the females that show ovulatory heat were detected with test rams equipped with an abdominal protection in order to not be able to mount. All females detected in heat were mounted according to the mating list immediately after detection followed by a repetition of mating after 12 hours.

The collected data were processed using the MsExcel 2007 spreadsheet application. Thus, the database was prepared with the corresponding variation strings, each being coded according to the specifics of the studied parameters.

RESULTS AND DISCUSSIONS

Because one of the major objectives included in the experimental plan, the analysis of the factors that can contribute to an obvious improvement of the reproductive function, referred to the research of possibilities to use the young female at mating in early age, groups of young sheep were established. with different ages in which females of the Karakul of Botoșani breed used for the first time for reproduction were included.

The young females included in the groups benefited from the same conditions of maintenance and food, the only experimental factor being the age at the date of breeding. The diet was based only on the grass consumed directly from the pasture, without intervening with additional feed. Females who were 9 months old were selected from those with the best body development, representing top of the range of generation to which they belonged. Even under these conditions, during the respective breeding season it was found that the proportion of young females that showed heat was high (Table 1 and Figure 1).

Analyzing the total number of 9-month-old females who showed heat during the respective season, it is found that out of the total distributed, 94.28% showed heat since their first year of life.

These data allow us to state, without fear of error, that if in the future we want to apply a reproduction based on elements specific to industrial technologies, optimizing the growing conditions of young categories can be a positive element with a direct effect on the level of production, improving and reducing the generation gap because a significant proportion of the current year's livestock can be introduced earlier into the reproductive and productive circuit.

From present data analysis we can also see differentiations of the value calculated for the main indices specific to the reproduction function. In all batches, fecundity was variable as a mode of expression, slightly different from the age group of young sheep used for the first time in breeding (Table 1).

Fecundity in the younger groups, respectively in the nine and fifteen months, had average values between 68.57% and respectively 88.57%. This means that in the case of the first batch, 24 females of 9 months of age remained pregnant and from the batch aged 15 months, the total number of those who got fertile after the respective breeding season was 31 females.

If we analyze the data as a form of expression of absolute values we can appreciate that this indicator had a very good degree of expression, especially as in the group of females aged 20 months the fecundity exceeded 90% (figure 1). In the group of females with an average age of 20 months, the value was 94.28% (table 1). Statistical data processing shows that the differences between the first batch and the other two show different values as a level of statistical significance for $P < 0.05$.

The prolificacy in all the researched lots fits, as an average value, within the limits of the Karakul of Botoșani breed. The lowest value was obtained in the group of the

youngest females (104.16 ± 0.31). However, the statistical processing of the data found that the differences between the lots are not significant for the statistical thresholds taken into account.

Table 1 Average values of the main indicators in young females breeding function

Age	Total n	In heat (n)	Pregnant (n)	Fecundity		prolificacy		Fertility	
				$\overline{X} \pm s_{\overline{X}}$	V%	$\overline{X} \pm s_{\overline{X}}$	V%	$\overline{X} \pm s_{\overline{X}}$	V%
9 months	35	33	24	68.57±0.14	15.1	104.16±0.31	13,4	92.38±0.22	14.1
15 months	35	34	31	88.57±0.18^{bc}	7.9	106.42±0.14 ^{bc}	9.8	97.14±0.16^{bc}	12.2
20 months	35	35	33	94.28±0.31^{c,d}	8.4	106.25±0.45 ^{bc}	8.3	99.04±0.17 ^{cd}	15.7

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).

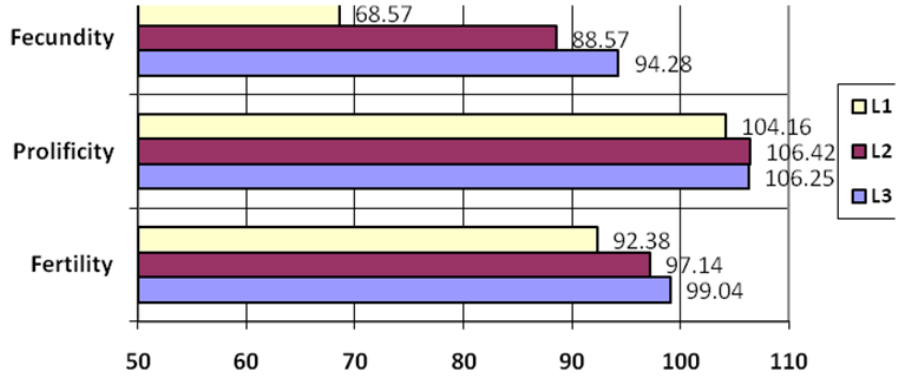

Figure 1. The reproduction indexes dynamics on young females considering mating age (%)

The fertility determined as a ratio between the number of lambs obtained from the total females distributed at breeding had a lower average value in the group of the youngest females, respectively 92.38 ± 0.22 in the group aged nine months and a maximum value of 99.04 ± 0.17 in the group of females with an average age of 20 months.

Between the average value determined in this batch and the average values of same character determined in the batches formed by females older than one year, there are differences with different meanings for P<0.05.

In our country, a research with relatively similar elements was carried out by a research team led by Pascal et al. 1995, but the biological material belonged to the Merinos of Palas breed from the Perieni-Vaslui ecotype. In that research, the values obtained were similar in terms of mode and level of manifestation. For example, in the group of females aged 9 months, it was found that fertility had a maximum value and prolificacy and fertility were 107% and respectively 77%.

Also, in the same research it was found that in the case of the group represented by females that at the date of breeding were 9 months the average value of the prolificacy index was 104.16% increases to 108% in the group of 17 females. months and reaches values of 117% and 123% for groups of young females aged 21 months and adult females, respectively.

Prolificity, as an important indicator of breeding activity, is always in the attention of farmers and researchers to find solutions to increase the average values, especially in

some breeds where the manifestation is lower, as is the case in Turcană and Țigaie which have 108% and 110%, respectively. One solution would be to apply melatonin treatments. By such a technique it was found that the average value of this indicator increased to 130.5% in sheep that were treated with melatonin Melovin ® type, result which was significant for P <0.01 compared to the sheep in the control group. in which the same indicator was only 108.5% [8].

Based on the data obtained in the research carried out on the youth of the Karakul of Botoșani breed, by the fact that the calculated prolificacy was between 104.16% in the group that had an average age of nine months at the date of use in breeding and 106.42% in the group with the age of one year leads us to conclude that the Karakul of Botoșani breed is not a very prolific one, instead the existence of quite high statistical meanings for P <0.05 entitles us to say that if we want an increase in this indicator, the selection based on the number of lamb obtained at the first lambing can also attract an improvement of the prolificacy of the breed.

Early use of young sheep has been tackled in other countries. More detailed research has shown that in youth under one year of age the breeding season is shorter during puberty in both sheep [4] and goats [9] compared to adult females of the two species. It was also found that the reproductive function is affected by genetic factors, environmental ones but also by the interaction between these factors [5].

Biological features create the appearance of differences between races compared to age at puberty or age at first parturition [2, 3] there is also evidence for age-varying genetic variation at puberty [1].

CONCLUSIONS

1. Analyzing the data obtained from the group of 9-month-old young females that showed heat during the respective season, it is found that out of the total distributed to mating, 94.28% showed ovulatory heat from the first year of life.

2. Fertility in the younger groups, respectively in the nine and fifteen months, had average values between 68.57% and 88.57%, respectively.

3. Statistical processing of data obtained based on the results collected in the first breeding season of female youth groups, by calculating fecundity shows that between the values from the groups of 9 months, 12 months and 15 months respectively the differences show different values in terms of significance statistics for P <0.05.

4. The fact that the calculated prolificacy was between 104.16% and 106.42% leads us to conclude that the Karakul of Botoșani breed is not a very prolific one, instead the existence of quite high statistical meanings for P <0.05 entitles us to we state that if an increase of this indicator is desired, the selection based on the number of lambs obtained at the first lambing can attract an improvement of the breed prolificacy.

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