RESEARCH CONCERNING THE INFLUENCE OF STIMULATIVE FEEDING OVER REPRODUCTION ACTIVITY OF KARAKUL OF BOTOSANI BREED

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Abstract

The main purpose of the research was to verify how the Karakul de Botoşani ewes respond to a stimulating feeding period for a new breeding season. In order to compare the data obtained and to interpret them properly, two groups of ewes were formed, each with a total of 250 females.

First group was subjected to stimulating feeding, in set up areas of resting shelter, with 250 grams of a mixture of bits from the selection of cereal and legume seeds. The additional feeding was done in the morning, before ewes were grazed, for 30 consecutive days.

The second group had the same number of females, the difference being that they did not benefit from additional feed and nutritional requirements were strictly mobilized from the green meadow consumed by grazing.

After the set interval, experimental rams were introduced each morning in the flock; the females who manifested ovulate heat were mated with breeding rams nominated through the mating routing list.

Key words: pelts, photoperiod, sheep

INTRODUCTION

Compared to other species, sheep's diet does not pose any particular problems in the season when the herds are on the pasture because a good level of grass or green weight ensures the daily nutritional requirements at a level that does not involve the mobilization of body reserves.

Rare situations include the need for additional feeding based on providing at stable or pasture of additional food or flushing. However, in order to achieve the best possible results in reproductive activity, the nutritional requirements necessary for the biological rehabilitation of females must be ensured during the period preceding the onset of a new breeding season.

Additional feed or flushing has been a subject of analysis and research since the early part of the last century, and many researchers have tried to define this term as accurately as possible. Although there are various definitions of the word “flushing”, there is a great similarity between them.

Most authors indicate that flushing means increasing the level of nutrition before and during reproduction [1, 3, 5] and Hafez, 1952, Watkins, 1955, Miller, 1913, Bray, 1925, Pope et al., 1956 – all authors cited by Hoversland, 1958).

Other authors define the technique of stimulating feeding as an activity aimed for improving the status and the body condition of sheep before reproduction and has the effect of bringing the females into a suitable condition for mating (Winters, 1949, McKenna, 1953, Shearer, 1932, Anderson, 1934, Griswold, 1936, Reed, 1927, Marshall, 1927, Miller, 1939, cited by Hoversland, 1958).

MATERIALS AND METHODS

The biological material was represented by the Karakul of Botoşani adult sheep, forming the live stock of SDCDCOC

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Popăuţi-Botoşani. The size of the flock included in the research program was dimensioned so that the obtained data were relevant and ensured a statistical processing that would reveal the effect of the experimental treatment to which the two groups of Karakul de Botoşani ewes were subjected, for three consecutive seasons.

In the research carried out in each of the three consecutive seasons (2013, 2014, 2015), stock preparation, by stimulate feeding, was done with 30 days before the onset of breeding season (Figure 1). Additional feeding was performed using a mixture of grains resulted from the selection of grain and legume seeds administered in the morning before the females were grazed. The amount of additional food was 250 grams per female, and for a good assimilation, was done a coarse grinding of those.

After the beginning of the ovulate heat season, each morning the females showing heat were identified with trying rams that had abdominal protection not to be able to perform the mount.

Data were statistically evaluated with the algorithm REML (REstricted Maximum Likelihood), which provides the achievements of the statistical parametric estimators within the normal range.

RESULTS AND DISCUSSION

Due to the centralization of data and statistical processing, it has been found that administering a reduced amount of additional feed has a particular effect on the behaviour of sheep in each mating season. This conclusion is supported by the fact that in each of the three seasons in which this experimental treatment was applied, a different manifestation of the females in the two lots was found in response to the stimulating feeding.

In autumn 2013 the proportion of sheep mounted at the first ovulates cycle was 69% in the group that benefited from stimulating feed while in the control group the share of the same category was only 39%. The same situation is observed in the following seasons.

Fig. 1. Supplementary feeding of sheep during the mating preparation period

Throughout the research period, it is found that in the experimental group the effect of additional fodder is well highlighted and has resulted in an increase proportion of sheep that have been detected in heat since the first sexual cycle from 72% in 2014 to 72.5% in 2015.

The control group shows that in the 2014 season the proportion of those who have been mounted and became pregnant after the first sexual cycle is reduced to 33% in 2014 and has a slither increase to 35.5% in the 2015 season (Figure 2).

Statistical data processing highlights the positive effect of stimulate feeding, materialized in this case by statistically significant differences for $P<0.001$.

The practical importance of this data is extraordinary because it highlights the fact that with a minimum effort the farmers can better manage breeding activity in sheep farms. Also, the practical and economic importance of stimulating feeding has also a direct effect in grouping mating and lambing periods in a shorter time, offsetting the sex cycle by at least one interval, meaning 15-20 days compared to the sheep that are maintained under normal conditions where the nutritional requirements are ensured exclusively by the green weight consumed by grazing.

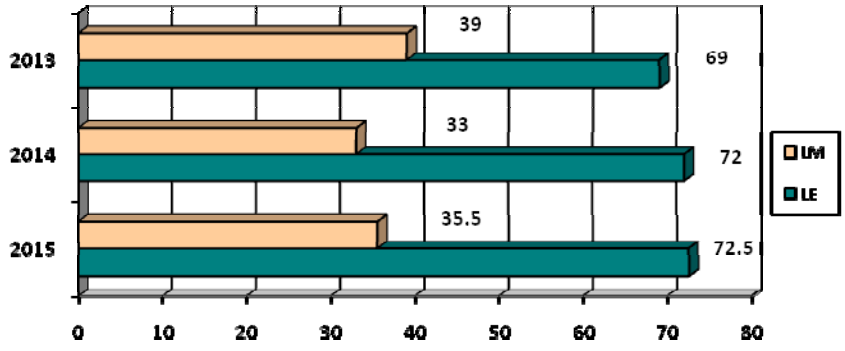
By analyzing the data regarding the proportion of sheep mounted in the second sex cycle shows that in the sheep group that benefited of stimulate feeding the percentage falls below 30%, with a maximum of 29% in 2013 and a minimum of 26% in the year 2015.

In the group consisting of sheep which did not have stimulate feeding, it is noticed that during the second sexual cycle, the proportion of mounted females increases from 52% in 2013 to 56.5% in the next campaign (Table 1 and Figure 3, 2, 1).

Table 1 Influence of stimulating feeding on sheep Karakul of Botoşani mating

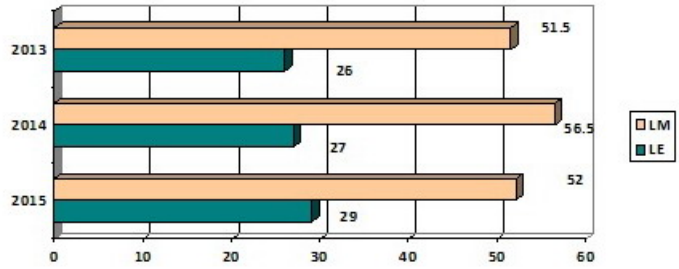
Mating situation by sex cycles	Period					
	2013		2014		2015	
	n	%	n	%	n	%
Experimental group						
- pregnant at first sex cycle	138	69.0***	144	72.0***	145	72.5***
- pregnant at second sex cycle	58	29.0	54	27.0	52	26.0
- pregnant >third sex cycle	4	2.0^{d}	2	1.0^{bc}	3	1.5^{cd}
Control group						
- pregnant at first sex cycle	78	39.0	66	33.0	71	35.5
- pregnant at second sex cycle	104	52.0	113	56.5	103	51.5
- pregnant >third sex cycle	18	9.0	21	10.5	26	13.0

$^{a, b, c, d}$ – 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).



Note: LM = Control group; LE = Experimental group

Fig. 2. Dynamics of ewes mounted at first heat cycles (%)



Note: LM = Control group; LE = Experimental group

Fig. 3. Dynamics of ewes mounted at first heat cycles (%)

However, the positive effect of additional feeding is evidenced by the data obtained from the analysis of the number of sheep that needed more than three sexual cycles to get pregnant.

In the first season of research conducted in the autumn of 2013, it was found that following the experimental treatment, the proportion of those who had more than three sexual cycles to get pregnant was 9% in the control group, while in the group that benefited from additional feeding the proportion of females to which the gestation was installed after having undergone additional sexual cycles was reduced to 2%.

In the seasons to be carried out in the following years it is found that the proportion of sheep which go through more than three sexual cycles is higher than 10% of the total number, in the control group and is reduced to a proportion of 1% in the group that had additional feeding in 2014 and 1.5% in autumn 2015 (Table 1). Statistical data processing reveals that differences between groups have different statistical significance ($P<0.05$).

Also, statistical processing of data on sheep that needed more than three sex cycles to get pregnant reveals that differences between groups have different statistical significance ($P<0.05$).

Similar research carried out in other countries also highlights the positive effect of stimulating feeding on the results specific to breeding in sheep. In a similar study involving 170 merino sheep it was found that for the parameters monitored (body weight, blood glucose concentrations, ovulation rate and reproductive performance) there were no significant differences in body weight between the groups who underwent the treatment of administering 600 g of corn before the start of the mating season (Wooster 2005 cited by Pascal 2015).

Instead, in a study by Vente et al. 1994, by cited by Pascal et all. 2011 [8], shows that the ovulation rate after three weeks of flushing was significantly higher ($P<0.01$) than the control groups. And for fecundity (123%) the differences were also significant ($P <0.05$) between groups. In contrast, there was no significant difference in the rate of conception between the different groups undergoing experimental treatment.

In Romania, in an experience carried out in 1979, it was found that by administering a hyper protective diet and vitamin-mineral supplements in the sheep's diet in the natural season of mating, fecundity increased from 68% to 93-100% and the prolificacy ranged between 120 and 140% [9].

In other bibliographic sources it is stated that when mating is desired to be outside the mating season, the sheep's receptivity to stimulating feeding is less intense. In this regard, it is stated that "even in conditions of flushing and proper care, at sheep with fine wool in icy springs with cold and long-lasting rain, the percentage of sheep in heat was only 10-25%" [6].

CONCLUSIONS

In the autumn of 2013, the proportion of sheep in the first cycle was 69% in the batch that benefited from stimulating feed and in the witness batch the same category had only 39%.

The same situation is also observed in the following seasons, for the experimental batch there is an increase in the sheep proportion that have been detected in heat since the first sexual cycle from 72% in 2014 to 72.5% in 2015.

The control group shows that compared to 2013 the proportion of those who were mounted in the first sex cycle is reduced to 33% in 2014 and increases very slightly to 35.5% in the 2015 season

The proportion of ewes mounted in the second sex cycle is found to have dropped below 30% in sheep flocks, with a peak of 29% in 2013 and a minimum of 26% in 2015.

Compared to control batch consisting of sheep which did not have supplementary food, it can be noticed that at the second sexual cycle the proportion of the mounted ones increases from 52% in 2013 to 56.5% in the next campaign.

The statistical processing of data specific to sheep that took more than three sexual cycles to be fertilized reveals that differences in batches have different statistical significance ($P < 0.05$).

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