ESTIMATION OF BREEDING ACTIVITY FOR THE KARAKUL OF BOTOSANI BREED

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Abstract

Research has had as its main purpose the carrying out of an analysis of the reproductive activity to one of the breeds formed in Romania, respective the Karakul of Botosani. To obtain more real results, the analysis was based on data obtained during several consecutive seasons of breeding carried out in the period between 2012 and 2016. In every season treatment was the same and referred to: stimulant feeding of type flushing, drawing up a list naming of homogeneous, detection of sheep in estruses, mating and if needed repeat mating.

Based on the processing of data, it was found that the proportion of female mounted at the first sexual cycle registered the lowest value in the year 2012, reaching the value of 66.59%, after which in the years 2013 and 2014 there is a considerable increase with 6.23% respectively with 3.87%. From 2014 to 2016 the differences are not very large, the highest value is passed in the year 2016, being of 77.69%.

Also, the percentage of un-mounted females recorded the highest value in 2012, of 11.1% after that in 2013 it has a significant drop with 6.35%. The smallest value is recorded in the year 2015, respectively 2% and a slight increase is recorded in the year 2016 with about 0.52%.

Calving index at the adult females recorded the highest value in the breeding season 2013-2014 and was of 84.67%, and the lowest value is recorded in the breeding season 2012-2013 respectively of 79.06%.

For the adult females the double calving index has recorded the highest value in the breeding season 2015-2016, being of 10.76%, and lowest in 2012-2013 when it was only 4.25%.

Based on the data obtained may indicate that through technological interventions aimed at a better management of reproduction of the Karakul of Botosani breed, from one season to the other, the main indices specific to the reproductive function have a positive and rising trend.

Key words: pelts, Karakul of Botosani, reproduction sheep, fecundity

INTRODUCTION

Breeding activity constitutes an important aspect in the operation of farms and refers to the resumption of a new productive cycle, in order to obtain new productions for recovery. From a theoretical point of view, it can be said that reproduction represents the physiological act in which bodies give birth to similar beings, so far as the environmental conditions have not caused some morph-physiological changes [7, 3, 2].

From a genetic point of view, reproduction is based on the union of nuclear material between the two sexual cells. This phenomenon involves the entire genetic material, such as plants and animals, or only exchange of chromosome segments producing bacteria [Hafez, quoted by Pascal 2015]. The farm animals, as well as to all mammals, reproduction includes the following phases, but successively: gametogenesis, insemination, fecundation, gestation and the birth.

Regarding the breeding activity that takes place at the sheep breed for their pelts this adds new and important meanings because of the way in which the genitors are chosen and how they mate with each other depend many

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of the characters which affects the quality of pelts [1, 3, 5]. Given the complex nature of reproduction applied to pelt breeds we analyze important aspects to be taken into account for the quality of production for the Karakul of Botosani breed.

MATERIAL AND METHOD

Biological material belonging to the breed Karakul of Botosani is in growth and exploitation at a research and development station. They have been the subject of analyses of sheep categories that are commonly used for breeding purposes, namely adult female sheep, adult mount rams and young mount rams.

Every reproduction season there is an analysis of the quality of genitors and based on complex information is passed to the drawing up of a list of mating which is strictly respected. In this respect to each female is distributed a mount ram and a backup one. Also, in order to obtain positive results before each covering season, with about 30 days before, there is a stimulant feeding of flushing type of all categories. This is based on the administration of supplementary rations consisting of forage with high nutritional value to speed up the biological restoration of breeding herds.

During the campaign of breeding the sheep showing ovulate oestrus were detected with trying rams that had abdominal protection not to be able to perform the mount. All the sheep that were detected in oestrus were mounted in accordance with the list of mating immediately after the screening and a resumption of the mounting act at 12 hours after.

After the calving which followed each breeding season there were determined indices specific for the Karakul of Botosani breed.

RESULTS AND DISCUSSION

Breeding season for the sheep of Karakul of Botosani breed starts in the moths August-September when the light diminishes during the day (at the end of the winter and spring, the ovary is at rest, with very low ovarian activity).

In the case of youth from the normal calving, made in the spring, the sexual maturity occurs at 7-8 months, at which time the body weight is 50-60% of the adult female, which is why many farmers delay the mounting of the youth for next season. At that time the youth categories have over 16 months and living weight represents more than 80% of the adult weight.

Categories of sheep used in the production of pelts. In the elite farm of the Research and Development Station for Sheep and Goat Breeding "Popăuți" Botosani the main categories of sheep used for the production of pelts are represented by: ewes (over two years), young ewes (aged less than two years), rams (age between 2 and 9 years) and young rams (age less than 2 years).

The proportion of these sheep categories suffers changes from year to year by replacing reformed individuals with young ones. In the elite farm where the research took place, during the last four years is observed an increase in the total herd of sheep used for pelt production (table 1). Thus, if in 2012 the total number assigned to the mount was of 978, in 2016 it has increased by over 20%. The increase of the total is due to the fact that managerial policies are through national subsidies that encourage sheep husbandry.

Table 1 Dynamics of sheep number that have been used for breeding in each reviewed season

Age category	Breeding season									
	2012		2013		2014		2015		2016	
	n	%	n	%	n	%	n	%	n	%
Ewes	760	77.71	754	78.72	790	79.63	830	74.43	902	73.75
Rams	29	2.95	35	3.65	33	3.33	37	3.33	39	3.28
Young ewes	168	17.18	151	15.76	154	15.52	221	19.82	250	20.28
Young rams	21	2.16	18	1.87	15	1.52	27	2.42	42	2.69
TOTAL	978	100.0	958	100.0	992	100.0	1115	100.0	1233	100.0

If in the case of the categories represented by males for breeding, rams and young rams, their proportions is situated throughout the entire period analyzed around the same values, in the case of categories of females is found a certain dynamic in the total number (fig. 1).

Thus, the category represented by the adult sheep held the largest proportion in the breeding season from the year 2014, it being very close to 80%. In the case of category formed of young ewes proportion thereof lays around average values between 15 and 20%. This proportion is relatively constant due to the fact that this level corresponds to the proportion of reformed sheep, given that in the farm is desired and a keeping of the same level of total effective forming the live stock.

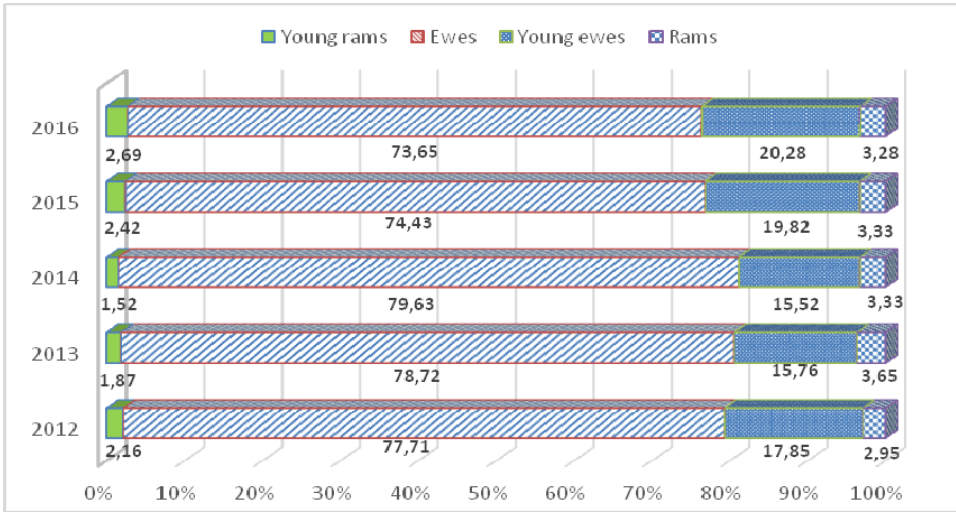


Fig. 1 Dynamics of sheep category which forms the live stock

The organization and the results obtained from the mount. Mounting the Karakul of Botosani sheep begins after composing the matching plan of pairs and is based on the purposive assisted mating.

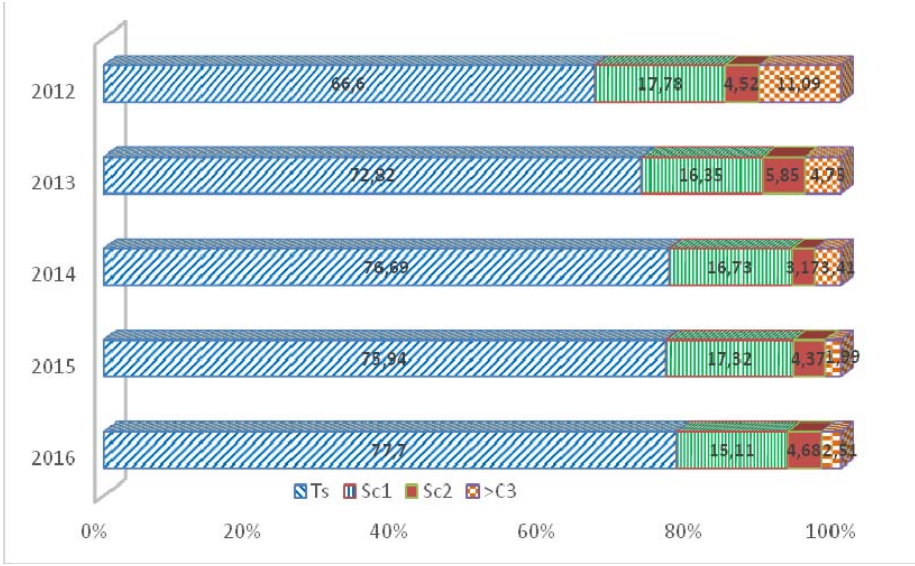
Depending on atmospheric conditions and other factors, studies conducted in different countries indicate that each season of sheep reproduction can be extended on a higher duration even of 90 days [4, 6, 7]. After analyzing the mounting distribution of sheep by colour varieties we analyze the number of mounted sheep number after the number of mounts, respectively the number of cycles. The total number of mounted females and their distribution by number of mounts is presented in table no. 2. From the data shown in table 1 and figure 2 it can be found that at the analysed herd the best results were obtained in mounting seasons carried out in the years 2015 and 2016.

Table 2 Dynamics of the mounting number of females' participant to the mount (n)

Mounting cycles	Breeding season									
	2012		2013		2014		2015		2016	
	n	%	n	%	n	%	n	%	n	%
Total sheep distributed for mounting	928	100.0	905	100.0	944	100.0	1051	100.0	1152	100.0
Sheep mounted at first cycle	618	66.60	659	72.82	724	76.69	798	75.94	895	77.70
Sheep mounted at second cycle	165	17.78	148	16.35	158	16.73	182	17.32	174	15.11
Sheep mounted at third cycle	42	4.52	53	5.85	30	3.17	46	4.37	54	4.68
Sheep mounted at forth cycle	-	-	2	0.23	0	-	4	0.38	0	-
Un-mounted	103	11.09	43	4.75	32	3.41	21	1.99	29	2.51

In 2015 a number of 798 females, representing 75.9% of those assigned to the mount, have been fertilized after the first sexual cycle. Another number of 182 females, accounting for 17.3% of the total, were mounted during the second sexual cycle, while other 46 females (representing 4.38%) were fertilized in the third sexual cycle.

Other 4 females, representing only 0.38% of the total, have repeated mating more than twice, and an effective of 21 females, representing 2% of the total, were not mounted in this season.



Notes: Ts – fecundated after first sexual cycle; Sc1- repeated sexual cycle only once; C2 - repeated sexual cycle twice; C3 – more than three sexual cycles

Fig. 2 Graphic representation of female entrance to the mount

In the mating season which had place in the year 2016, the situation was relatively similar. A number of 895 females, representing 77.69% of the total females distributed for the mount, had been fertilized during the first sexual cycle. Other 174 females, representing 15.1% of the total, have repeated the mating once, while another group of 54 females were fertilized in the third sexual cycle. In the concerned case the proportion of remaining non-pregnant ewes was of 2.52%.

Estimation of the reproductive activity. The mean values of the breeding indices are presented in table 3 for the categories of adult sheep. For calculating these indices were used data obtained in each analysed breeding season.

Index of fecundity at adult females has recorded the highest value in the 2015-2016 season, being of 94.31%, and the lowest value is recorded in the breeding season 2012-2013 respectively 83.31%.

For the ewe lambs the highest value of this index was obtained during the interval 2015-2016, being of 88.18%, and the lowest value is recorded in the breeding season 2012-2013 when it was only 71.13%.

Birth index at adult females recorded the highest value in the breeding season 2015-2016, of 104.6%, and the lowest value is recorded in the breeding season 2012-2013 respectively 90.63%.

The same index of reproduction at ewe lambs had greater value after the mounting and calving in 2015-2016, being of 89.65%, and the lowest value is recorded in the breeding season 2012-2013 respectively 58.45%.

Table 3 Reproduction indices by age categories during four seasons

Reproduction season	2012-2013		2013-2014		2014-2015		2015-2016	
Age category	Adult females	Ewes	Adult females	Ewes	Adult females	Ewes	Adult females	Ewes
Fecundity %	83.31	71.13	90.47	86.95	92.45	81.21	94.31	88.18
Birth rate %	90.63	58.45	97.1	81.45	98.79	83.22	104.6	89.65
Prolificacy %	105.1	102.97	107.33	102.5	106.86	102.48	110.9	101.68
Sterility %	16.25	26.76	8.84	13.04	6.95	17.45	5.18	10.34
Miscarriage %	0.44	2.11	0.7	1.44	0.6	1.34	0.51	1.48
Simple calving %	79.06	69.01	84.67	81.88	81.07	79.19	83.04	83.74
Double calving %	4.25	2.11	6.21	3.62	8.86	2.01	10.76	2.96
Sex ratio	0.83	0.7	0.92	0.89	1.06	1.05	1.04	1.36
Index of simple lambs %	90.3	89.95	87.19	91.87	82.6	95.16	79.42	93.41
Index of double lambs %	9.7	2.12	12.8	8.13	8.97	2.42	10.29	3.29

Index of prolificacy in adult females has the highest value in the breeding season 2015-2016, respectively 110.9%, while the lowest value is recorded in the breeding season 2012-2013 respectively 105.1%.

At the ewe lambs this index had greater value in the 2012-2013 seasons the average value being of 102.97%. The smallest value is recorded after the breeding season from 2015-2016, and had a value of only 101.68%.

Index of sterility in adult females has the smallest value in the breeding season 2015-2016, respectively 10.34%, and the highest value is recorded in the breeding season 2012-2013 when it had a mean value of 26.76%.

For the ewe lambs the sterility index recorded the smallest value in the breeding season 2015-2016, being of 5.18%, and the highest value is recorded in the 2012-2013 season, respectively 16.25%.

The **miscarriage index** at adult females has the highest value in the breeding season 2015-2016, respectively 110.9 %, while the lowest value is recorded in the breeding season 2012-2013, being of 105.1%.

The same index, at the ewe lambs, has the highest value in the breeding season 2012-2013, respectively 102.97%, and the lowest value is recorded in the breeding season 2015-2016, being of 101.68%.

CONCLUSIONS

1. Even though in the year 2013 was a regression of the number of females at mounting, the unit was able to recover the livestock and to obtain their growth in the years ahead, observing it in the year 2016 an effective increase for the breeding activity.

2. Herds of females in the year 2016 compared with livestock since 2013 recorded value differences, more or less than the previous seasons.

3. The diminishing herds registered in 2013 is due to lack of fodder from the autumn of 2012 (drought and fire have contributed to the formation of this deficiency), and the unit had to size the livestock so as to effectively manage the available forage base.

4. If in 2012 a number of 618 females, representing 66.59%, were mounted at the first sexual cycle in the season that had place in the fall of 2016, their proportion was greater than 77.69%.

5. The fecundity at adult had the highest value in the breeding season 2015-2016, being of 94.31%, and the smallest in the breeding season 2012-2013, when there has been an average value of only 83.31%.

6. The index of simple calving at adult females has the highest value of 84.67% and was obtained in the season which had place in 2013-2014, and the lowest value is recorded in the breeding season 2012-2013, being of only 79.06%.

7. Index of sex ratio at adult females has the highest value of 84.67% in the breeding season 2014-2015, respectively 1.06, and the lower value is recorded in the breeding season 2012-2013, respectively 0.83.

8. The sex ratio index at ewe lambs had a higher in the 2015-2016 seasons, namely 1.36, and the lower value is recorded in the breeding season 2012-2013, when it was of only 0.7.

9. For most indicators, from one season to the other, the analysed indices have an upward trend, as improving the management applied in the farm.

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