THE ZOOTECHNICAL EVALUATION OF THE SHEEPS IN THE BAŞTINA FARM

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Abstract

In order to have valuable lambs, it is necessary to know all the reproduction indices, especially in the imminent case of an efficiency of the farm given by the increase of the positive results (prolificity, birth rate, etc.) and the decrease of the negative results of the reproduction characters (mortality, percentage of returns, abortions etc).

In this paper we analyzed the following characteristics: weight of lambs at calving, average daily gain, yield at calving, age at first calf, age at first calving, gestation duration, prolificity and number of products obtained from twin calves during 2017 - 2019.

Regarding the weight of the lambs at calving, the highest average value was obtained for females obtained from calves, namely 5.17 ± 0.08 Kg. The values obtained for the average daily spray showed a mean of 0.250 ± 0.01 kg for males and 0.230 ± 0.01 Kg for females.

Regarding the age recorded at the first mount, the average obtained was 569.94 ± 0.63 days and the age at first calving recorded an average value of 725.04 ± 0.77 days.

The data collected are for monitoring the performance of the products but also of the males and adult females within the farm.

Key words: weight, mount, increase daily average, prolificacy

INTRODUCTION

In Romania, as in the rest of the world, the tendency is represented by the growth of specialized animals for meat production. This fact is largely due to the demographic growth of the Earth and because the man becoming generally carnivorous does not compete with the ruminant animals [2].

Zootechnical evaluation in animals of all species, including sheep, means appreciation of the characters studied in the animals used for breeding, in order to improve a population. These characters that can be targets for the improvement of sheep populations fall into three categories: morphological, production and reproductive characters [8].

The desire not to import year after year males from breeds perfected for meat production leads to the need to breed in a clean breed. This brings two benefits: the first is the provision of the need for breeders, males and females for the continuation of the activity, the second benefit represented by the possibility of selling the excess of male breeders, to the production farms. The obtained lambs are selected, and those that do not meet the criteria of the race, are sold for slaughter, this brings a new profit.

Breeding in a pure breed at the highest possible level, must take into account the knowledge of some essential indices of this practice, and therefore this necessity has given birth to this research.

The zootechnical sector has registered a stagnation of the research activity, especially in the field of sheep, since 1990 when all the research structures for this species were

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privatized, and the leaders prefer to destroy those institutions [1]. Especially for this reason Romania has to understand the development of such research for each farm within the country, in order to manage and bring as much profit to the farmers and implicitly to the state by collecting taxes [4], [5].

The purpose of the study was to prune the sheep from the Baştina farm, following the characteristics of the weight of the lambs at calving, the average daily increase, the yield at calving, the age at the first calf, the age at the first calving, the thoracic perimeter, the height at the herd and the crop, the length of the trunk , the width of the groin and the chest, the depth of the chest the duration of pregnancy, the prolificity and the number of products obtained from twin calves during 2017 - 2019.

MATERIAL AND METHOD

In order to reach the proposed purpose, the study was carried out on the sheep existing in the Baştina Farm, which are of different ages (tab.1) and belong to several genetic groups.

Aries on the farm are of different ages but all are pure-bred Ile de France. The lambs also come from mixed mothers but also from pure-bred mothers, it is worth mentioning that during the assessment of the daily average increase a lot of 100 lambs was subjected to weighing, although at that time the lambs were completed. It was ordered to do this precisely so as not to injure the animals following the containment of the lambs, considering that they were still in the sucking period.

Table 1 Sheep by age categories from Baştina Farm on 16.04.2019

Farm	Number of sheep by categories				Total
	Ewes	Rams	Gimmers	Ram lambs	
Baştina	421	6	4	57	479
Total farm					497

The animals are kept in the two savannahs, the first and the oldest have a length of 50 m with a width of 10 m, the height at the eaves is 1.5 m and at the ridge of 4 m. The second shelter is built in the summer of 2018 and it has dimensions: length 50 m and width 24 m. The height at the ridge is 6 m and the height at the eaves differs in position (1.5 m in the western part and 3 m in the east.

The eastern part is completely open, the savannah being semi-open with the possibility to close completely with the help of special wooden panels. The access is via the two gates arranged on the ends.

Starting from the registration of the mounts and the calves, the weighing of the products at the calving and on the date of 16/04/2019, the yield at slaughter, data provided by two companies that purchased and slaughtered the lambs from the Baştina farm, data on the age at the first calving and the age at the first mount taken from the single register of the farm, all in order to calculate all the indices mentioned at the beginning of the work.

The raw data were provided by carrying out measurements with accredited instruments, metrologically verified, specific to each character. Hand weights were used for weights, zoometers, ribbon and compass were used for lengths [3], [6].

The weighing at birth was performed by the chief engineer of the farm in the first 12 hours after calving, with a hand scale, which is equipped with a special harness, at which time the lambs' crotalization with farm rattles (small rattles) was carried out.

The second weighing was done on 16/04/2019, with a Kern-type scale scales that can carry a maximum load of 300 kg, the margin of error being 5 grams.

The positioning of the scale during the weighing procedure was horizontal so as not to affect the weighing results.

The feeding of lambs is also done in vats made of iron (fig. 1) and the secretion is administered in vats which ensure a constant level of concentrated feed [8].

Fig. 1 The feeders used in the farm

The data on mounting and making were obtained from the farm specimens, where they were updated, the mounting and the making.

The raw data are obtained from the measurements that have been made on the farm to be processed and analyze the results

An important step in the processing of information is to establish the estimators, representing the arithmetic mean (X), the standard deviation (s), the standard deviation of the mean ($s\bar{x}$) and the coefficient of variability (V%), following the centralization of the data and their processing with the help of the program Excel.

RESULTS AND DISCUSSION

The weight of the fetus was studied for the whole group of lambs, but also separately for the females and for the males. The weight of the fetus and for the lambs from twin calves was also studied.

The total number of lambs analyzed is 521, in which lambs are found with a maximum calf weight of 8 kg and a minimum weight of only two kg. The average weight of the lot was 5.01 kg, with a variability of 20.40%, which leads to the conclusion that the lot is very heterogeneous (V%> 15%) (tab. 2).

Table 2 Weight (Kg) of lambs depending on the type of lambing

Specification	Total	Total simple birth	Total twin births	Total males	Total females
N	**521**	164	357	**269**	**252**
$\bar{X} \pm s_{\bar{X}}$	5.01±0.04	4.99±0.08	5.02±0.05	4.94±0.06	5.09±0.07
V%	20.40	20.51	20.37	20.24	20.49
Min	8.00	8.00	8.00	8.00	7.8
Max	2.00	2.30	2.00	2.00	2.4

Of the 521 lambs studied, 164 were obtained from simple calves. They have an average calf weight of 4.99 kg, lower than the average of the whole lot (5.01 kg), but also smaller than the lambs group of twin calves (5.02). (tab. 2) Like the other lots, the lot of the products obtained from simple calves is of average homogeneity, being a coefficient of variation of 20,51%, greater than 15%, the theoretical limit.

The products obtained from simple calves vary in weight at birth between 2.3 kg and 8 kg.

The difference of 357 lambs was obtained from twin calves. Their average birth weight was 5.02 kg, with a variation between 2 and 8 kg. Like lots considered separately for females and males, and the lot of the products obtained from twin calves is heterogeneous.

The data obtained for lambs from twin calves do not differ from those obtained for the whole group of lambs, but due to the high variability, weights for females and males must be studied.

Out of the total 521 lambs obtained, 269 of them are male, with a maximum weight of 8 kg and a minimum weight of 2 kg. The average weight of the male lot was 4.94 kg, lower than the average for the whole lot. The coefficient of variability is over 15% (V% = 20.24%), which indicates the heterogeneity of the lot. Of the 269 macules 81 were obtained from simple calves and 188 thousand from twins.

Table 3 Weight (Kg) at birth by sex and type of birth

Specification	Total males	Males from simple birth	Males from twin births	Total females	Females from simple birth	Females from twin births
N	**269**	81	188	**252**	83	169
$\bar{X} \pm s_{\bar{X}}$	4.94±0.06	5.07±0.12	4.89±0.07	5.09±0.07	4.91±0.11	5.17±0.08
V%	20.24	21.12	19.76	20.49	19.85	20.61
Min	8.00	8.00	8.00	7.8	7.00	7.80
Max	2.00	2.3	2.00	2.4	3.00	2.40

The average birth weight of males from single calves has a value of 5.07 kg, higher than females of the same category which have an average weight of only 4.91 kg. It should be emphasized that the maximum weight of the males is higher than that of the females with a difference of 1 kg, but the males have a lower weight than the females. The coefficient of variation in the two groups registered values greater than 15%, which means that the groups of females and males obtained from simple calves are heterogeneous. (21.12%, in males and 19, 85%, in females).

The 188 male lambs obtained from twin calves gave birth at an average weight of 4.89 kg, with variations between 2 and 8 kg. The coefficient of variability, and in this case, is over 15%, which shows the heterogeneity of the lot. The average weight of the male group is less than the average of the whole lot (5.01 kg), but also less than the average weight of the group of lambs obtained from twin calves (5.02 kg).

The 169 lambs obtained from twin calves were born at an average weight of 5.17 kg, with variations between 2.4 and 7.8 kg. The coefficient of variability, and in this case, is over 15%, which shows the heterogeneity of the lot. The average weight of the female lot is greater than the average of the whole lot (5.01 kg) and the average weight of the group of lambs obtained from twin calves (5.02 kg)

In order to determine the daily average increase near the mother, we weighed a control group of 100 lambs, they were different ages at the time of the song, but they were maintained under the same environmental and nutritional conditions. An interesting thing that was observed during the singing, is the finding of lambs presenting "beads" in the neck area, in the specialized literature for the Ile de France standard, this feature is not specified, but in the Merinos de Palas breed the "beads" are found. in a very small percentage.

The fact that this character appears after many years of crossing with the Ile de France breed and did not appear in the first generation indicates to us that the gene that determines the beads is a recessive gene. If desired this difference appeared represented by the beads can be a character for the production of a line "Ile de France Mărgelat".

Analyzing the average daily increase over the whole lot of 100 lambs, an average of 0.240 kg with a maximum of 0.482 Kg and a minimum of 0.111 Kg is observed. For this character a very small variability of 0.71% (V%> 15%) is observed (tab. 4)

With an average of 0.250 kg SMZ, a maximum of 0.482 kg and a minimum of 0.147 kg it can be clearly seen that the maximum value of the average daily gain is in the male category. The male group has a coefficient of variability of 0.64%, which shows that for the average daily increase the lot is very homogeneous.

Table 4 Average daily gain (ADG, Kg)

Specification	Total	Males	Females
N	**100**	53	47
$\bar{X} \pm s_{\bar{X}}$	0.24±0.01	0.250±0.01	0.23±0.01
V%	0.71	0.64	0.76
Min	0.482	0.482	0.456
Max	0.111	0.147	0.111

The total number of females analyzed is 47 heads with an average value of 0.230 Kg SMZ, with a maximum of 0.456 kg and a minimum of 0.111 kg daily average increase.

At the same time, the recorded values of both maxima are below the values obtained by the male group, this fact proves once again that the females are more sensitive but that they have a rather large potential, considering that the maximum value of the increase is very close to the maximum value of the males. The females have a daily average increase smaller than the males and smaller than the whole lot. (0.23 kg, compared to 0.25 kg in males and 0, 24 in the whole lot

In terms of yield at slaughter, at the first slaughterhouse, the average of 64.6% for yield at slaughter varies from 55.8% to 73.4%. At the second slaughterhouse it was an average of 63.6%, with variations between 53% and 66.4%. Compared to the standard for slaughter yield in specialty literature, it can be said that the values from the two slaughterhouses are in the standard. (tab. 5)

Table 5 Yield to slaughter of lambs

Specification	ABBATOIR 1	ABBATOIR 2	STANDARD
N	**350**	120	
X	64.6	63.6	63
Min	73.4	69.4	66.4
Max	55.8	57.8	53.0

Although the average of the values in both slaughterhouses does not exceed the average value of the breed, it can be clearly seen that in both cases, the minimum and maximum exceed the values of the same categories in the Ile de France breed standard. This fact shows that by selecting animals by stopping only breeding mothers who produce products with a higher slaughter yield, this value can be substantially increased. Taking into account the fact that in this farm there are not only breeding animals but also breeding, the result obtained is satisfactory but perfectable, which is tried with each generation of products.

As stated from the beginning, the reproductive characteristics analyzed are the age at the first mount, the age at first calving, the duration of gestation, the number of products obtained from twin calves, the prolificity and the percentage of returns. Knowing these indices helps to calculate the intergenerational interval more accurately and in this way one can see if we manage to do three calves in two years as is desirable in the breeds exploited for meat production and at the same time ensuring the necessary replacement.

In order to determine the age at the first mount, a total number of 336 female sheep were analyzed, the data being collected from the unique mountain and calf register found at the farm's premises.

With an average duration of about 570 days (1.5 years), the age at the first mount does not express an animal precocity but it cannot contradict this fact because in the Baştina farm the lambs are mounted at an older age to ensure a good age. development of the basin, due to the low number of dystocia. The age at the first mount varies between 537 and 599 days, with a variability of 2.03%. (tab. 6).

Table 6 Age (days) at the first mountain

Estimators	Value
N	**336**
$\bar{X} \pm s_{\bar{X}}$	569.94±0.63
V%	2.03
Min	599
Max	537

It should be emphasized that the animals kept in the herd for breeding use are kept on pasture, the only periods when they benefit from mating is during the lactation-fattening period (the first 5 months) and immediately before the mount, according to the type feeding technique "Flushing".

For sheep farmers, it is very important to know the age at first calving, which was recorded with limits between 687 and 752 days, with an average of 725.04 days. (tab. 7)

Table 7 Age (days) at the first birth

Estimators	Value
N	**336**
$\bar{X} \pm s_{\bar{X}}$	725.04±0.77
V%	1.95
Min	752
Max	687

A single remark can be made by analyzing the table above, the fact that the age of the first calf (24.1 months) does not exceed the Ile de France breed standard of 30 months. We remind that females who are born later than 30 months are recommended to be removed from reproduction, as they are prone to excessive fattening and at the same time reproductive problems due to depositing fat on the genital tract.

Besides the average age at first mount and at first calving, it is of interest for the study and the duration of pregnancy.
The average duration of pregnancy of the 336 females analyzed is 155.09 days, with the maximum and the minimum limit falling within the limits described by the specialized literature (150 days ± 6%) (tab. 8).

Table 8 Duration (days) of pregnancy

Estimators	Value
N	**336**
$\bar{X} \pm s_{\bar{X}}$	155.09±0.43
V%	5.11
Min	169.00
Max	142.00

One method to shorten the intergenerational interval is to choose mothers who have a gestation period as close to the minimum limit as possible, but this measure leads to obtaining products with a lower birth weight and implicitly with a higher environmental sensitivity in the first days of pregnancy. life.

The number of products obtained from twin calves from the total of 521 lambs studied, 357 lambs come from twin calves. Of these, there are 188 males and 169 females, showing a slight superiority of the male category. The sex ratio was 0.9 females per male. The 357 lambs were made by 170 females, which means that in the case of double calves, 2.1 products per female were obtained on average.

In the case of Baștina farm, the prolificity registers a percentage of 156%, the value is slightly below the average limit of the Ile de France breed, which is 160%. This is correlated with the lack of Flushing power supply before the mountains start, as confirmed by the farm manager. In 2019, the heat will be synchronized with an additional ration. The aim is to find the sheep in the heat before the sponges are introduced for the synchronization of the oestrus, so as not to disturb the menstrual cycle of the sheep and, as a result, no false heat appears at the end of the treatment scheme.

Following the analysis of the 379 sheep assembled, it was found that for the 78 sheep it was necessary to repeat the mount, in some cases even several times. Of the total, the percentage of return was 20.58%. Taking into account that the detection of sheep in the heat was done with test rams, it is excluded the mount not made during the optimum period, but it can be deduced that the females had false heat or the semen of the rams was of poor quality. As the record allows and analysis on each ram used in the mount, the table below shows how many females returned from each ram, it should be mentioned that a number of 8 rams were used for the mount of the year 2018, these being coded with numbers. from 1 to 8 (tab. 9).

Table 9 The statistics of the mounts and the turns on each ram used at the mount

Ram cod	1	2	3	4	5	6	7	8
Mountings made	92	85	18	28	3	21	53	34
Number of return	25	6	3	15	3	6	15	5
% of attempts	27.17	7.06	16.67	53.57	100	28.57	28.30	14.71

The average return percentage of 25.15% is recorded in the Baştina farm. The best ram from this point of view is the one with the code 2, which had only 6 laps of 85, and the weakest was the one with the 4 code, which had 15 laps from 28. The carrying bull of the 5 code, a he was found ill, after which he was removed from the mountain, which is why the 3 returns out of 3 appear, which is irrelevant to his potential.

CONCLUSIONS

Completion of the study in the Baştina farm where the analysis of the performances of the products, as well as of the adult males and females, has been concluded, the following ideas can be concluded:

1. The unborn baby weight for the whole lot studied differs from the standard of the Merinos de Palas and Ile de France breeds (4.5-5.4 kg MP 100 and 2-6 Kg IF 100), with an average value of 5.01 kg.

•The weight of the unborn male has an average value of 4.94 kg, which places them below the average value of the entire herd of 5.01 kg.

• Females recorded a birth weight with an average value of 5.09 kg, it should be noted that the average exceeds the average value of the males.

• The calf weight of the lambs obtained from twin calves has an average calf weight of 5.02 kg. Also the weights fall within the limits calculated within the whole lot of lambs.

• The birth weight for males from twin calves is slightly below the average total weight of the herd with only 4.89 kg.

• For females from twin calves the average weight is 5.17 kg higher than the average value of males from twin calves.

• The products obtained from single calves have an average of 4.99 kg, so we notice that the average weight of the products from single calves is less than the weight of the products from double calves.

• The males from simple calves have an average of 5.07 Kg, which is above the total average of the herd.

2. The fetus weight for females from twin calves has a minimum value of 3 Kg and a maximum of 7 Kg and an average of 4.91 Kg.

3. The average daily gain for the whole herd has an average of 0.240 Kg with a maximum of 0.482 Kg and a minimum of 0.111 Kg.

• The average daily gain for men is 0.1 kg higher than the average for the whole lot.

• Females have an average daily gain of 0.230 Kg SMZ lower than the average of the whole herd.

4. The slaughtering yield is provided from two slaughterhouses and in the case of the slaughterhouse 1 the average is 64.6% and for the slaughterhouse 2 the average is 63.6. The maximums of both slaughterhouses (73.4% and 69.4%) exceed the maximum of the breed standard (66.4%)

5. The age at the first mountain has an average value of 570 days, the minimum being 537 days and the maximum 566 days.

6. The age at first calving has a maximum of 752 days, the minimum of 687 days and the average of 753 days.

7. For the duration of pregnancy, the average value is about 156 days with a maximum of 169 days and a minimum of 142 days. All these values fall within the values of the specialized literature 150 days ± 6%.

8. The number of products obtained from twin calves amounts to a total of 357 lambs, out of which 188 males and 169 females.

9. Prolificity is 156% below the Ile de France breed standard but above the Merinos de Palas breed standard.

10. The percentage of returns is 20.85%, which means that for 20.85% of the mounted females it took more than one mount to remain pregnant.

11. From the statistics of the mounting of each ram approved for the mount, it turns out that ram 1 made the most mounts performed but also the most returns. The ram with the fewest mounts performed is number 5 which out of the total of 3 mounts, all 3 females returned to the mount, after this event the ram was removed from the mount because he became ill.

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