

RESEARCHES REGARDING THE PRODUCTIVE CAPACITY OF HALF-BREEDS F1 OBTAINED IN ROMANIA FROM THE CROSSING OF TSIGAI SHEEP WITH BLACKHEAD TELEORMAN BREED RAMS

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Abstract: The researches have had as the main object the studying of the productive capacity of the sheep populations F1 obtained by crossing the local sheep Tsigai with the Blackhead Teleorman rams brought from southern Romania. The principal objectives of this research were the following: studying the evolution dynamics of weight and the corporal development starting from birth until the age used to mount, ability to secrete milk evaluation, assessment of quantity and quality of wool. The researches have been made in a private exploitation from the North-East part of Romania, and the conducted study emphasize that if the birth body weight of the lots were analyzed at birth there were close to the live weight at 28 days determined by the weight differences that are favourable for the half-breeds lots and are significant for the statistical thresholds that are considered. At age of 16 months, when females were used to mount the first time, the absolute difference between the live weight of half-breeds and Tsigai breed was over 3 kg and was significantly distinct statistically speaking from the limit of $p < 0.01$. The production of milk control has been made during the first lactation following that in the next period to continue this research. The first lactation had a total duration of 225 days, and the total production of milk obtained from half-breed females was higher by 13.68% compared to the performance achieved by the sheep of the pure breed Tsigai, justifying this in terms of expanding the type of matting. The researches have continued also with the evaluation of wool production, and the obtained values show that are not significant differences for the total amount of wool obtained from the first cut of. Instead, when there were evaluated some characteristics of which the wool quality depends (length, degree of flexuosity, fine, return to washing) was found that at the Tsigai breed these had higher values, a consequence of the genetic consolidation degree and of the good selection level for this race.

Key words: ovine, Tsigai, sheep, Romanian breeds, Blackhead Teleorman

Introduction

Most studies made in Romania (*Ionescu et al., 1985; Mochnacs et al., 1978*) and in other countries (*Borys et al., 2011; Dawson et al., 2006; Hammond, 1961*) shows that in order to achieve good results in the increase in sheep and particularly those breeding, special attention is given tangible development. From this point of view, to improve some poor ownership such as height, body weight, the precocious and others in the unit have been carried out research to appeal to the importation of breeding rams. Since Tsigai breed is one in transition, based on studies concluded that the best option is to use Blackhead Teleorman rams. The first breeding season in which they were using rams race was 2004, after which all concerns have been directed to assess productive capacity specific to the half-breed population compared with the performance achieved by maternal race. The results obtained are original because they were obtained on the base of studying for the first time in Romania of half-breed resulting from the crossing of Tsigai sheep with Blackhead Teleorman rammers. To characterise well the biological value of these, we consider many aspects in which we wanted to emphasize the defining elements.

Materials and Methods

Research has been conducted on biological material, of pure race and half-breed, existing in an agro-zootechnical farm located in the north-eastern part of Romania. The purpose of these surveys was to highlight the productive capacity, especially for the production of milk, specify to the F1 generation obtained from the type copulative mentioned. Working methods were applied to this specific type of determinations. Thus, to highlight the evolution dynamics of bodyweight there were made weightings at birth, at 28 days and at 12 months and 16 months. As the experimental protocol requires the mount to the age of 16 months, to assess the development of this body to real data were performed also body measurements. The milking capacity of sheep was appreciated for both periods: the exclusive breast-feeding and milking. Milking capacity assessment was done in compliance with the formal procedures applied in the European Union. In assessing the amount of wool and of the quality characteristics, have been used formal methods applied in Romania. In terms of performance appraisal for the production of wool the assessment was made on making the first cut of the individuals. For the quantity and wool length were made values recalculations for a period of 365 days of wool increasing, finesse, the fiber curls and washing the wool yield was determined using laboratory methods.

The achieved result have been input into a data base, used to run statistical analysis through the with REML algorithm (REstricted Maximum Likelihood), which provide the achievements of the statistical estimators within the normal parametric range.

Results and Discussion

1. Dynamic development of the youth body sheep. Weight at birth is an important indicator of reproduction, as expressed in the way that was conducted during the development of the fetus in the period of gestation, and is considered an index of growth antenatal (Pascal *et al.*, 2008). The index is studied intensively in an attempt to find mathematical terms which subsequently can be used to optimize this indicator. Thus, since the early 1960 and Stephenson Lamborne, summoned by Mochnacs *et al.* (1978) conclude that to get real in terms of effect on maternal weight at birth lambs research be intensified in the period and antenatal in the post.

Most researchers (Borys *et al.*, 1998; Hammond, 1961; Pascal *et al.*, 2008) admit that the increase in sheep and in particular for the production of meat be taken into account that the birth lambs weight is higher, would be recommended 4-5, 5 kg. Lambs with a weight are able to record the highest daily increases in growth whereas the consumption capacity of ca. 3-5 times higher than the poorly developed, under 2 kg, pier in proportion to about 65% (Mochnacs *et al.*, 1978).

In the research weight at birth was determined within 2 days after calving, opportunity with which lambs and individualized. The data were statistically processed and are presented in table 1. Analyzing data could see that, at birth, the average body weight of the consignment of males is higher in half-breed group. The same situation is found in the analysis and body weight in lots of females. From a statistical viewpoint between groups are not significant differences, difficulties falling living in the biological limits of the species.

Table 1. Average difference and significance of difference on youth sheep weight (kg)

Age group	Males				Females			
	Tsigai		Half-breed F1		Tsigai		Half-breed F1	
	$\bar{X} \pm s_{\bar{X}}$	S	$\bar{X} \pm s_{\bar{X}}$	S	$\bar{X} \pm s_{\bar{X}}$	S	$\bar{X} \pm s_{\bar{X}}$	S
birth	4.20 ± 0.22	0.6	4.55 ± 0.29	0.7	3.32 ± 0.151	0.3	3.777±0.12	0.4
28 days	10.08 ± 0.13	0.3	12.08 ± 0.10	0.4	9.88 ± 0.121	0.2	10.82 ± 0.10	0.2
90 days	23.16 ± 0.19	0.7	25.14 ± 0.12	0.8	19.75 ± 0.199	0.5	21.647±0.19	0.8
12 months					36.86 ± 0.106	6.3	40.13 ± 0.20	7.4
16 months					42.90 ± 0.207	9.7	46.11 ± 0.17	9.5
Tukey Test – Weight at 28 days							d.	sd
Tsigai males x F1 males							2.00	**
Tsigai females x F1 half-breed females							0.945	ns
Tukey Test – Weight at 90 days								
Tsigai males x F1 males							1.980	*
Tsigai females x F1 half-breed females							1.892	*
Tukey Test – Weight at 12 months								
Tsigai females x F1 half-breed females							3.275	**
Tukey Test – Weight at 16 months								
Tsigai females x F1 half-breed females							3.211	**
W _{5%} = 1.31 ; W _{1%} = 1.99. Note: * significantly; ** significantly distinct								

Live weight at 28 days. Live weight at 28 days. In terms of average body weight of youth to 28 days of analysis of the dynamics that are found most obvious difference of live mass between batches of same sex. In the speech of these differences are cumulative influences of different factors, among which the most important is the ability of nursing of mother sheep. In the research we have opted for determining the weight to 28 days, whereas to evaluate the intensity of the link between the amount of sucking milk and increase the speed of the lamb give precise indication of the specific growth rate of the first 4 weeks postpartum. The obtained data can serve as a criterion for selection when seeking knowledge capacity lactation. Processing of data obtained by weights made the fulfilment of 28 days from the bring-forth date reveals the existence of differences between groups. For results to be as close as possible to the actual weight of lambs was conducted morning. Average and other indicators are included statistics presented in Table 1 and the difference between lots and meanings in Table 2. Analysis of the results obtained after processing statistics show that while the average body weight of lambs, due to lots of male was $10,080 \pm 0229$ kg in the case of race Tsigai, half-breed male group had an average weight at 28 days higher with 15.62%, due primarily to their hybrid vigour. Between lots of females, differences are still favourable to the half-breed at the age of 28 days had a higher body mass of 8.73%.

The live weight at 90 days and virtually coincides with the date on which occurred wean youth sheep. At that time it was found that differences between groups are significant for $p < 0.05$. Between batches consisting of male individuals was recorded the highest difference between the live weight. The difference between the male groups, in absolute terms, it is favourable to half-breeds lambs which exceeded by nearly 2 kg mass of live lambs maternal lot. Approximately the same value was found between the two groups of females.

Compared with other data cited by the literature data obtained from early youth weaning subject research, are close in value. Thus, in some studies conducted in the same area by *Pascal et al. (2008)* shows that if weaned after 97 days of lactation while lambs Tsigai race had an average body weight of $20,170 \pm 0418$ kg half-breed Merinos derived from crosses the Caucasus x Tsigai had a weight of $27,940 \pm 0159$ kg. In other studies, the author (*Pascal et al., 2008*) notes that weaned applied to 65 days if half-breeds obtained through participation in sheep Tsigai crosses with Texel rams and Ile de France, there were differences in live weight, which expressed percentages were higher by 18.61% for half-breeds, made with Texel rams and 12.27% for those with Ile de France.

Live weight at 12 months. This indicator has been investigated only for lots whereas females were males go compartment fattening. At that time the live weight of the consignment consists of half-breed females can be considered very good considering that they had a live weight of more than 40 kg. Difference between groups was significant for distinct $p < 0.01$.

The live weight at 16 months was favourable net half-breed lot. This exceeded the live weight of the consignment of local breed Tsigai over 3 kg, the

difference between lots and having a high threshold for statistical significance considered. Live weight at that age was extremely important in that moment whereas females were used to mount. In terms of physical development half-breed group meet to be used in the breeding and 87% were mounted from the first heat cycle. In terms of age and weight best use for the first time to mount a youth sheep, there is a great variation between and inter races (*Boikovski et al., 2000; Genkovski 2006; Raicheva et al., 2004*).

2. Average tangible development in youth female sheep used to mount and was based on making tangible measurements. We took this decision because various studies show that the conduct of body measurements allow a more precise characterization of a core group of sheep (*Ionescu et al., 1985*). If assessments were carried out routine measurements of length, height, width and premises necessary for any type of technical work.

Table 2. Body dimensions of youth females (cm)

Specification	Genotype			
	Tsigai female		F1 female	
	$\bar{X} \pm s_{\bar{X}}$	S	$\bar{X} \pm s_{\bar{X}}$	S
The height of the waist	64.580 ± 0.151	0.358	65.900 ± 0.331	0.655
The height of the rump	66.320 ± 0.202	0.445	68.700 ± 0.339	0.758
Oblique length of the trunk	66.840 ± 0.254	0.421	68.600 ± 0.244	0.547
Chest depth	31.550 ± 0.201	0.188	34.980 ± 0.080	0.178
Chest width	20.840 ± 0.108	0.232	22.100 ± 0.100	0.223
The width of croup	24.600 ± 0.054	0.270	25.800 ± 0.254	0.570
Thoracic perimeter	90.000 ± 0.141	0.441	97.100 ± 0.244	0.547
Perimeter of cannon	7.90 ± 0.211	0.289	8.80 ± 0.122	0.273

3. Milk production. In current conditions, both in Romania and the European milk production lies in the importance and practical interest that enjoyed since ancient times. Besides the economic importance, milk has a great biological value. The role of the biological and derives from the fact that the first 2 months after birth contribute to this crucial to avoiding losses hunger lambs infants and subsequently increase production of meat and wool (*Mochnacs et al., 1978*). Studies in this field confirm that the installation states during the agalaxy period of the sheep mother directly influences the development of future body lambs future production and indirectly derived from them (*Raicheva et al., 2004*).

To obtain more data on the real milking capacity potential of sheep mothers throughout the lactation, it must control the production of milk for breast-feeding as well as one in which the sheep are in the process of milking only. In the current research milking capacity potential assessment was based on data obtained from control during the first lactation, following that in future years continue to investigate this issue. From the dates presented in Table 3 can be seen that if half-breeds females milk production obtained on the first lactation than about 15% thus justifying the use of this type of mating when it is the only produce more milk.

Table 3. Monthly milk production

Lactation month	Genotype			
	Tsigai		Half-breed F1 females	
	$\bar{X} \pm s_{\bar{x}}$	% din total	$\bar{X} \pm s_{\bar{x}}$	% from total
March	12.61 \pm 0.13	12.98	13.40 \pm 0.12	11.82
April	14.55 \pm 0.19	15.00	20.70 \pm 0.15	18.37
May	15.52 \pm 0.12	15.61	19.08 \pm 0.21	16.84
June	14.19 \pm 0.13	14.61	16.80 \pm 0.23	14.82
July	11.64 \pm 0.15	11.99	15.52 \pm 0.16	13.73
August	10.67 \pm 0.14	10.99	12.35 \pm 0.31	10.90
September	9.15 \pm 0.07	9.72	8.80 \pm 0.22	7.66
October	8.75 \pm 0.12	9.10	6.65 \pm 0.20	5.86
Total lactation	97.08	100	113.30	100

Analyzing data on the distribution of a monthly amount of milk produced in the corresponding first lactation, we find that in both cases increase the amount of milk during the first three months. In female race Tsigai, the highest monthly production was 15.52 l amount representing 15.61% of the total quantity of milk and was the third month of lactation. On consignment consisting of half-breed females from crossing Blackhead Teleorman rams with local Tsigai breed female maximum monthly amount was 20.70 l and was the second month of lactation, representing 18.37% of the total quantity of milk. Analyzing lactation curve (table 3) we find that in both cases it is descending evolving after reaching the maximum decrease is more pronounced at half-breed females. If in the last two months of the lactation, yields are obtained by 8.80 l and 6.65 l, both cumulative amounts represents 13.52% of total milk. Making the same analysis we find that when the sheep race Tsigai amount of milk produced in the last two months is 18.82% of total production. However the calculation shows that the statistical production absolute difference between the two groups was 16.22 l and has a high degree of statistical significance for thresholds considered.

Conclusion

1. Analyzing data on live weight determined for youth at different ages and body sizes obtained at reproduction moment, it looked like half-breed sheep present features close with original sheep.

2. Controls on the production of sheep milk reveals half-breed superiority, they produce in the first lactation with over 14% more milk.

3. Applying a year of a rigorous selection, led to increasing average production of wool from the Tsigai sheep breed, although the quantities are higher than the average obtained from the half-breed sheep difference between groups is insignificant from a statistical viewpoint.

4. The quantity of milk best obtained from the batch of half-breed females Teleorman Blackhead recommend breed to be used to cover crossings when they are only targets of this production.

Ispitivanje proizvodnih osobina meleza F1 generacije dobijenih u Rumuniji ukrštanjem ovaca rase cigaja sa ovnovima crnoglave teleorman rase

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Rezime

Ova istraživanja imaju za cilj proučavanje produktivnosti F1 generacije dobijene ukrštanjem lokalne ovce Cigaje sa ovnovima Crnoglave Teleorman koji potiču iz Južne Rumunije. Ciljevi istraživanja su sledeći: proučavanje dinamike rasta, telesnog razvoja počev od rođenja do starosti kad se grla izvode na pašu, ocena sposobnosti sekrecije mleka, procena količine i kvaliteta vune. Istraživanja su bila izvedena na privatnoj farmi u severo-istočnom delu Rumunije. Postavljena istraživanja naglašavaju da u telesne težine meleza F1 generacije na rođenju kao is a 28 dana statistički značajno bile veće u odnosu na grla Cigaja rase. U uzrastu od 16 meseci, ženska grla su izvedena na pašu po prvi put, pri čemu su ustanovljene statistički značajne razlike, na nivou $p < 0.01$, u pogledu telesne mase od preko 3 kg u korist meleza F1 generacije. Kontrola mlečnosti je izvršena u prvoj laktaciji. Dužina laktacije je bila 225 dana i ukupna proizvodnja mleka od ženskih meleza je bila veća za 13,68% u poređenju sa grlima Cigaja rase. Ocenom proizvodnje vune ustanovljeno je da nije bilo značajnih razlika u količini dobijene vune pri prvoj striži. Analizom parametara kvaliteta vune (dužina, rastegljivost, finoća...) ustanovljeno je da su grla Cigaja rase imala veće vrednosti navedenih parametara, što je genetski uslovljeno.

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