

THE IMPROVEMENT OF THE MILK PRODUCTION IN THE SHEEP BREEDS AND POPULATIONS FROM VARIOUS CLIMATIC AREAS

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Abstract

The researches made aimed to create certain sheep populations with high milk productions using the method of crossbreeding and selection, and also assuring optimum conditions of foddering and exploitation.

During the experiments there were aimed: testing the capacity of combining of the local sheep with specialized breeds, establishing the optimum variants of crossbreeding, creating the first link of some populations (lines, breeds) specialized for milk, the milk productions at the half-breeds and the evolution of the body weight at the F_1 and R_1 half-breeds.

The milk production of the F_1 half-breeds, at the first lactation was superior to the local breeds as follows:

- **F_1 Lacaune x Prolific Line-Palas half-breeds** – made a total production of 176.43 ± 8.97 liters besides 146.78 ± 9.99 liters at the Prolific Line, the production of milked milk of 104.50 ± 9.39 liters besides 87.66 ± 8.48 liters at the Prolific Line;
- **F_1 Lacaune x Țurcană half-breeds**– made the total milk production of 152.74 ± 9.69 liters besides 116.92 ± 2.16 liters at the Țurcană breeds, and the production of milked milk was of 94.50 ± 1.46 liters and respectively of 69.0 ± 0.96 liters;
- **F_1 Awassi x Țigaie half-breeds**– made a total production of 218.0 ± 4.7548 liters besides 132.43 ± 2.4786 liters at the Țigaie breed, and the production of milked milk was of 162.44 ± 4.9408 liters, respectively of 80.0 ± 1.6634 liters.

The results regarding the dynamics of the body weight at the R_1 half-breeds from the five genotypes comparatively to the half-bred breeds (local) reveals that the specialized breeds have an improving effect upon the growing and development of the body weight in the interval of birth -9 months.

The general conclusion is that through crossbreeding with specialized breeds and especially with Lacaune breed, the milk production of the half-breeds since the first lactation grows significantly in comparison with the local breeds.

The method of improvement through crossbreeding is fast and efficient, the half-breed sheep perfectly adapting themselves to the climatic conditions from Romania.

Key words: improvement, half-breed sheep, milk, body weight

INTRODUCTION

Romania is among the few European countries where the tradition, the relief and environment conditions, even in the absence of certain sheep breeds good for the milk production can be an important provider of milk and dairy products, facts which would assure a perspective also for the development of this species.

Nowadays the sheep breeds in our country have modest performances at the milk production, as a result of the fact that the sheep are exploited by the breeders in large farms but of small sizes, have small areas of land and the program of improvement is inoperable.

ICDCOC Palas-Constanța and the research units which are under scientific coordination are at present the single solution

for improving the sheep effectiveness in the way of milk production, by creating new specialized breeds which will participate through the diffusion of the genetic progress achieved at the improvement of the performances at the effectiveness owned by the breeders.

The cross breeding represent the fastest method to improve the milk production of sheep, as results of researches made by various authors [1,3,5]

MATERIAL AND METHOD

The works were made at ICDCOC Palas-Constanța and at the research units in the field, since 2007, and the presented results refer strictly to the milk production, made by the new genotypes compared to the witness local breeds and to the evolution of the body weight of the R₁ crossbred male youth and the local breeds..

The effectiveness on which the experiments were made consist in the main sheep breeds from the research units and they are presented in Table 1.

Table 1 The sheep effectiveness included in the research activity

Specification	Total no. of ewes (animal)	Out of which:	
		Witness lot	Experimental lot
Milk breed of Palas	280	230	50
Prolific line of Palas	323	223	100
Population of Țigaie Reghin – Bacău	174	74	100
Population of Țigaie Bucălaie – Bilciurești	347	247	100
Population of White Turcan – Caransebeș	322	222	100
Total	1440	996	450

The evaluation of the total milk production and of the milked milk was made comparatively to the F₁ half-breed sheep from the 5 genotypes and under the aspect of the growing dynamics R₁ products (75% Milk breed and 25% local breeds) were evaluated according to the following scheme (Table 2).

Table 2 The scheme of the experiment organization

Unit	Genotypes	
	F ₁ half-breed sheep	R ₁ half-breeds
ICDCOC Palas-Constanța	-F ₁ (Lacaune x Milk breed-Palas) -F ₁ (Lacaune x Prolific line-Palas)	-R ₁ (75% Lacaune x 25% Milk breed) -R ₁ (75% Lacaune x 25% Prolific line)
SCDCOC Secuieni-Bacău	F ₁ (Awassi x Brown Țigaie)	R ₁ (75% Lacaune x 25% Brown Țigaie)
SCDCOC Bilciurești – Dâmbovița	F ₁ (Lacaune x Țigaie Bucălaie)	R ₁ (75% Lacaune x 25% Țigaie Bucălaie)
SCDCOC Caransebeș – Caraș-Severin	F ₁ (Lacaune x White Turcan)	R ₁ (75% Lacaune x 25% White Turcan)

The checking of milk production and the statistical estimation of the results were made according to standard proceedings used in the research activity [2,4,6,7] .

RESULTS AND DISCUSSIONS

It was noticed that the total milk production and the average daily production on the whole lactation is much superior at the F₁ half-bred sheep besides the sheep of local breeds, the differences being significant, excepting the F₁ half-bred sheep of Lacaune x Milk breed-Palas and Milk breed-Palas, in this case the production being similar (Table 3).

Table 3 The total milk production and the daily average at the 5 genotypes and the local breeds

No.	Genotype	Total production (liters/animal)	Duration of lactation (days)	Daily average production (l)	Signification
		$X \pm sx$	X	$X \pm sx$	
1.	F ₁ Lacaune x Milk breed	237.05±11.8601	241	0.98±0.0444	p > 0.05 Insignificant
	Milk breed-Palas	241.79±16.7522	254	0.95±0.0610	
2.	F ₁ Lacaune x Prolific line	176.43±8.9779	239	0.74±0.0369	p < 0.05 Significant
	Prolific line	146.78±9.9929	246	0.597±0.0387	
3.	F ₁ Awassi x Brown Țigaie	218.0±4.7548	245	0.89±0.0185	p < 0.001 Very Significant
	Brown Țigaie breed	132.43±2.4786	244	0.54±0.0102	
4.	F ₁ Lacaune x Țigaie Bucălaie	136.12±3.8165	247	0.551±0.156	p < 0.001 Very Significant
	Țigaie Bucălaie breed	87.13±1.5049	233	0.372±0.0078	
5.	F ₁ Lacaune x White Turcan	152.74±3.6374	230	0.66±0.0158	p < 0.001 Very Significant
	White Turcan breed	116.92±2.1695	230	0.51±0.094	

Table 4 The production of milked milk and the average daily production during milking period

No.	Genotype	Average production (liters/head)	Duration of milking (days)	Average daily production (l)	Significance
		$X \pm sx$	X	$X \pm sx$	
1.	F ₁ Lacaune x Milk breed	166.90±13.3284	167.58	0.98±0.0757	p > 0.05 Insignificant
	Milk breed-Palas	179.70±16.5197	180.61	0.99±0.0838	
2.	F ₁ Lacaune x Prolific line	104.50±9.3939	165.83	0.629±0.0531	p < 0.05 Significant
	Prolific line	87.66±8.4828	172.60	0.508±0.0489	
3.	F ₁ Awassi x Brown Țigaie	162.44±4.9408	154	1.06±0.0297	p < 0.001 Very Significant
	Brown Țigaie breed	80.0±1.6634	155	0.52±0.0110	
4.	F ₁ Lacaune x Țigaie Bucălaie	78.08±3.5231	177	0.441±0.0200	p < 0.001 Very Significant
	Țigaie Bucălaie breed	41.11±0.3422	163	0.253±0.0022	
5.	F ₁ Lacaune x White Turcan	94.50±1.4628	150	0.63±0.099	p < 0.001 Very Significant
	White Turcan breed	69.00±0.9613	146	0.46±0.0064	

As in the case of the total milk production, the production of milked milk was superior at the F₁ half-bred sheep, no matter the used breeds were besides the local breeds, the differences being significant and very significant.

An overview upon the milk production from the F₁ half-bred sheep between the Lacaune and Awassi breeds and the Prolific line, the Țigaie and Țurcană breeds, demonstrate that the total and daily productions are significantly and very significantly higher than the local ewe breeds.

The evolution of the body weight of the young sheep

It was watched the evolution of the body development at the young sheep from all the crossbreeding variants and at the local breeds, the youth being grown in similar conditions.

In Table 5 there are presented the results obtained by the R₁ half-breeds and the contemporaries from the local breeds, as a result of control weighing at birth, at weaning, at the age of 6 and 9 months.

Table 5 The evolution of the body weight at the young sheep

No.	Genotype	Weight (kg)			
		Birth	Weaning	6 months	9 months
		X ± sx	X ± sx	X ± sx	X ± sx
1.	F ₁ Lacaune x Milk breed (R ₁)	3.11±0.0980	20.67±0.8940	32.58±1.3842	39.91±4.5103
	Milk breed	3.21±0.1609	19.43±1.0286	27.50±1.3858	34.67±1.5042
2.	F ₁ Lacaune x Prolific line (R ₁)	3.29±0.0785	22.03±0.9284	32.65±1.5193	36.70±1.5213
	Prolific line	2.94±0.1201	18.94±1.2288	26.43±1.9501	31.00±1.6931
3.	F ₁ Awassi x Brown Țigaie (R ₁)	4.11±0.1513	18.37±0.7492	29.17±1.9456	34.20±2.2251
	Brown Țigaie breed	3.78±0.1086	16.40±0.6615	26.00±1.1751	28.38±1.1796
4.	Lacaune x Țigaie Bucălaie (R ₁)	3.08±0.0301	17.53±0.5443	29.30±1.3432	33.17±1.5464
	Țigaie Bucălaie breed	3.02±0.0491	16.06±0.6109	24.45±0.7829	27.35±0.7727
5.	Lacaune x White Turcan (R ₁)	3.69±0.1930	20.58±0.6432	30.60±1.2259	38.47±1.9195
	White Turcan breed	3.62±0.1391	18.19±0.5090	28.60±1.1539	32.21±1.0334

It was noted that generally the R₁ male young sheep (75% of the specialized breed and 25% of local breed) registered higher weights at weaning, 6 months and 9 months besides the youth of local breeds.

The difference of the body weight from birth to the age of 9 months, at the 5 genotypes by analyzing the variance shows significant and very significant differences between genotypes, all in the favor of the R₁ half-breeds.

CONCLUSIONS

1. The specialized Lacaune and Awassi breeds used at crossbreeding had an improving effect upon the milk production, 4 of the 5 genotypes made at the first lactation a total production of milk, significantly bigger than the local breeds.

2. The milk productions, especially the milked milk productions were bigger at the F₁ half-breeds with 30-65% than at the local breeds.

3. The obtained results regarding the growing dynamics of the R₁ half-breed young sheep comparatively to the mother breeds revealed the fact that it was noted an improving effect of the Lacaune and Awassi breeds upon the growing and development of the body weight in the interval of birth-9 months.

4. The general conclusion is that by crossbreeding with the specialized breeds for milk, the production of the F₁ half-breed sheep is significantly superior to the local breeds.

Creating new breeds, Romanian breeds, specialized for the milk production, responds to the requirements of the sheep breeders to make superior milk productions, making the sheep breeding in Romania more profitable.

Through the researches of Ia ICDCOC Palas-Constanța and the units in this field, there were obtained the precursors of certain specialized breeds, with superior productions, adapted to the specific climatic conditions and also the proof that making certain commercial half-breeds for milk leads to the increase of production with 30-65%.

BIBLIOGRAPHY

Papers in journals :

- [1] Barillet F.: International regulation for milk recording in dairy sheep. Sheep Dairy News, Winter, vol.3, pag.57-61, 1994.
- [3] Ionescu A.: Achievements and perspectives in the scientific research from the field of sheep improvement. Scientific Works Palas, vol.VII., 1994
- [5] Radu R., C.A. Pivodă, Jitaru D.: Morph-productive Characters of the Sheep from the Milk Population of Palas. Magazine of Animal Breeding and Veterinary Medicine no.4. 2001

Books:

- [2] Drăgănescu C., Sandu Gh.: Quantitative procedures in animal breeding. IBNA Bucharest, 1984
- [4] Pascal C-tin.: Sheep and Goats Breeding. Editura PIM-Iași, 2007
- [6] Sandu Gh.: Engineering in sheep exploitation. Editura Ceres-București, 1993.
- [7] Taftă V.: Sheep and Goats Breeding Editura Ceres-București, 2008