

RESEARCHES REGARDING MORPHOLOGIC FEATURES IN SOME GOAT POPULATIONS FROM THE SOUTH OF ROMANIA

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Abstract

The paper studied some morphologic features in four goat populations located in the Southern Romania., having as final aim the study of their genetic potential for different productions. There were analyzed males, females and young individuals in two breeds, Carpathian breed and Banat White, reared in different areas, with different rearing and environmental conditions. There were made body weight and body size measurements at different ages with the aid of the specific method. The recorded data were statistically processed. The results reveal the fact that the Banat White population is taller and longer than the Carpathian population, with a typical dolicomorph body shape, specific to the dairy populations, with a higher genetic potential straighten to the milk production.

Key words: goat populations body weight, body measurement

INTRODUCTION

Goats' rearing represents an important niche from the economic and ecologic point of view, especially within the small agricultural systems and generally in agriculture, due to the species adaptability, rusticity and the remarkable possibilities of using the cellulosic fodders and also the savoury milk products sorts. (Escareno and col. 2012; Taftă, 2008) [1, 5].

In Romania, goats rearing also represents an economic activity easy to be done by many inhabitants in the rural areas, but it has not be forgotten the fact that the price of the used forages and milk and milk products determine the future rearing activity. In addition, the price for milk and milk products is influenced by the market, and this one is affected by the high quality products demand of the final consumer.

So the local goat populations' identification and the characterization of their rearing technologies having as aim their genetic potential for different productions quantification represent a necessity in the actual social economic status in our country.

MATERIALS AND METHODS

The biologic material studied in the present paper was represented by the adult and youth goat livestock from four private farms in the south of Romania.

The research was made on 718 adult goats, as follows: 130 females and 4 bucks from Carpathian breed in Argeş county farm, 306 females and 9 bucks from Banat White in Ialomița county farm, 104 females and 3 bucks from Prahova county farm and 158 females and 4 bucks in Giurgiu county farm.

The body weight establishment in the adult stage was achieved by individual weighing of the animals in the morning, before feeding. The weighing was made with the aid of a weighing machine with fixed platform with a vertical grating adapted to animal heights, there were made two weightings in two consecutive days, by the same weighing procedure, the final weigh being considered the average of the two determinations.

The researches regarding the body weight in the adult stage were carried out on 25 females and all the bucks in the studied four farms and the ones for the body development only on the 25 females in each studied farm.

To establishing the body development range (body weight, body sizes and indices) there were carried out the specific measurements and there were weighed each individuals in the farms (kids weighing at birth, at weaning, 3 months, six months and also the adult animals).

The data obtained following all the researches were processed and statistic analyzed by usual statistic methods, being established the average values and the main variability parameters (average, standard deviation, variance, average error and the variability coefficient).

To establishing the statistic parameters the Statistic functions application included in Microsoft Excel 2007 package was used. Also, the Student T test was used to estimate the differences among the analyzed groups significance.

RESULTS AND DISCUSSIONS

In table 1 there are presented the results regarding the adult body weight in Carpathian breed populations. Thus, these data revealed the fact that average body weight in the three studied population was 38.76 ± 0.68 kg in females and 51.51 ± 1.38 kg in males.

The highest value of the body weight is the one in Giurgiu farm, both in females and males, being recorded a value over the average, the lowest one was recorded in animals from Prahova farm.

The animals in Arges are situated in the middle of the values, close to the average of the studied populations. (Chart 1).

From these results it may conclude that the body weight is influenced by the breeding range and the environmental conditions, the nutrition level especially, the goats in Arges and Giurgiu having a superior feeding level (the food ratios are calculated depending on weight, age category and physiologic status) because in these two farms the semi intensive rearing system is used.

The results regarding the body weight recorded in the adult stage are almost the same met in the special literature for this breed. Thus, in goat populations in Carpathian breed in Mizil, Hațeg and Zlatna areas, the

female body weight is situated between 38.5 ± 0.16 kg and 41.8 ± 0.82 kg (Taftă, 1996) [4].

Table1. Body weight in the Carpathian breeds goat populations

Specificatio n	Catego ry	n	$X \pm s_x$	S	V%
Argeș Farm	Female	25	38.71 ± 1.20	6.01	15.52
	Males	4	51.08 ± 1.18	3.61	7.07
Giurgiu Farm	Female	25	40.73 ± 1.32	6.61	16.23
	Males	4	53.38 ± 2.78	5.55	10.40
Prahova Farm	Female	25	36.84 ± 0.85	4.27	11.60
	Males	3	49.60 ± 2.95	5.10	10.29
Average Carpathian breed	Female	75	38.76 ± 0.68	5.86	15.12
	Males	11	51.51 ± 1.38	4.58	8.88

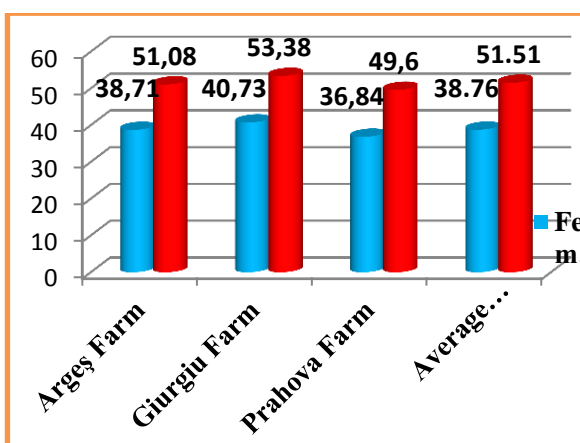


Chart 1. Body weights in the Carpathian breed goat populations

Other studies show that Carpathian breed goat height and weight are different depending the eco type, so the weight in females is between 31 and 44 kg, and male weight is between 38 and 55 kg (Vlad and col., 2003) [7]. Meanwhile, a recent study of ICDCOC Palas Constanța, carried out on many populations of Carpathian breed (Reghin, Constanța, Bilciurești), reveals the fact that the average body weight in adult females is situated between 34.85 kg and 38.22 kg, and males between 44.43 kg and 49.62 kg (Zamfir, 2014). [10]

Regarding the body weight of the animals in Banat White population, from the data in table 2, it may seen that the average was 45.08 ± 1.19 kg in females and 56.63 ± 1.92 kg in

males.

Following these results, it may notice that the body weights recorded in this study are close to the ones quoted in the special literature. Thus, Taftă (1996) [4], showed that the body weight in Banat White varies among very large limits, respectively 30-58 kg, with an average of 45 kg. Vlad and col. (2003) [7], showed that the body weight in this breed is situated between 32-47 kg in females and 40-58 kg in males.

Zamfir (2014), in a study on a goat population in this breed in Mures County found average

values of 43.75 kg in females and 58.67 kg in males. [10]

Table 2. Body weight in the Banat White breed goat population

Specification	Category	N	X±s _x	S	V%
Ialomița Farm	Females	25	45.08 ± 1.19	5.97	13.24
		9	56.63 ± 1.92	5.77	10.18
	Males				

Table 3. The significance of differences between breeds

Specification	Banat White average	Carpathian average	Difference	Calculated t value	Table t value	Significance
Female weight	45.08	38.76	6.32	4.60	t _[0.001; 98] = 3.39	***
Male weight	56.63	51.51	5.12	2.16	t _[0.05; 18] = 2.10	*

n.s. = non significant differences; * = significant differences; ** = distinct significant differences; *** = very significant differences

The Student T test was used to notice the differences between the weight average in Carpathian breed population and the weight average in Banat White population, the results being presented in table 3.

From table 3 data it may notice the fact that regarding the female weight, the difference between the average values is 6.32 kg, but after the test we can conclude that between the two population values there are very significant differences (P≤0.001).

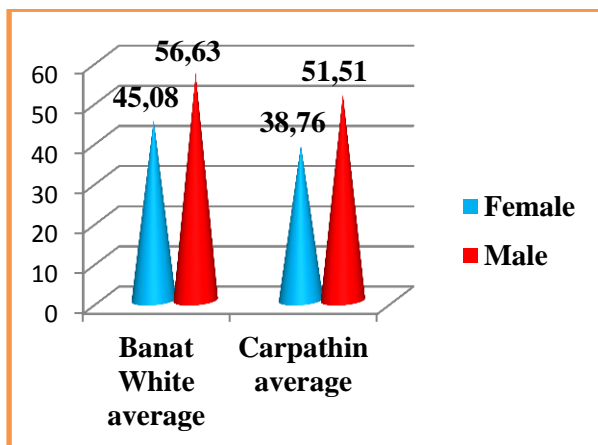


Chart.2. Body weight in Banat White and Carpathian breed goat populations

Regarding the males weight, the difference between average is 5.12 kg, but after the test there were recorded significant differences (P≤0.05).

This fact could be noticed in the comparative situation between the average body weights in the two populations, presented in chart 2.

Regarding the body development, in table 4 it may notice that in the Carpathian breed studied population, the height is situated between 60.84±0,77 cm and 63.68±0.82 cm, with an average of 61.93 cm, the value is almost 4% lower beside the data quoted in the special literature (table 4., table.6.) (Taftă, 1996). [4]

Regarding the comparative situation of the body sizes in the studied Carpathian goat populations, it may noticed that the height, the body length, the thorax width and perimeters recorded the highest values in Giurgiu Farm goats, and the lowest in Prahova Farm goats, the differences appeared due to the feeding and keeping conditions.

Table 4. The main body measurements in the Carpathian breed goat populations (cm)

No.	Specification	Argeş Farm		Giurgiu Farm		Prahova Ffarm	
		X±s _x	V%	X±s _x	V%	X±s _x	V%
1.	Height	61.28±0.64	5.25	63.68±0.82	6.44	60.84±0.77	6.35
2.	Body Length	66.00±0.96	7.28	67.32±0.86	6.40	64.96±0.99	7.63
3.	Thorax width	17.44±0.26	7.45	17.81±0.24	6.63	17.12±0.25	7.17
4.	Thorax perimeter	76.70±0.95	6.18	80.06±0.78	4.89	75.90±0.94	6.17
5.	Canon perimeter	7.86±0.17	10.98	8.19±0.16	9.71	7.62±0.16	10.29

In the studied White Banat population, the height recorded a value of 69.27±1.33 cm, being almost 12% higher than the average value of the Carpathian goat

breed (table 5, chart 3.) and only 0.1% higher than the data quoted in the special literature. (Taftă, 1996) [4].

Table 5. The main body measurements in the Banat White goat population (cm)

No.	Specification	Ialomița Farm	
		X±s _x	V%
1.	Height	69.27 ± 1.33	9.62
2.	Body length	76.08 ± 1.26	8.30
3.	Thorax width	17.80 ± 0.22	6.21
4.	Thorax perimeter	82.94 ± 0.73	4.41
5.	Canon perimeter	8.11 ± 0.19	11.60

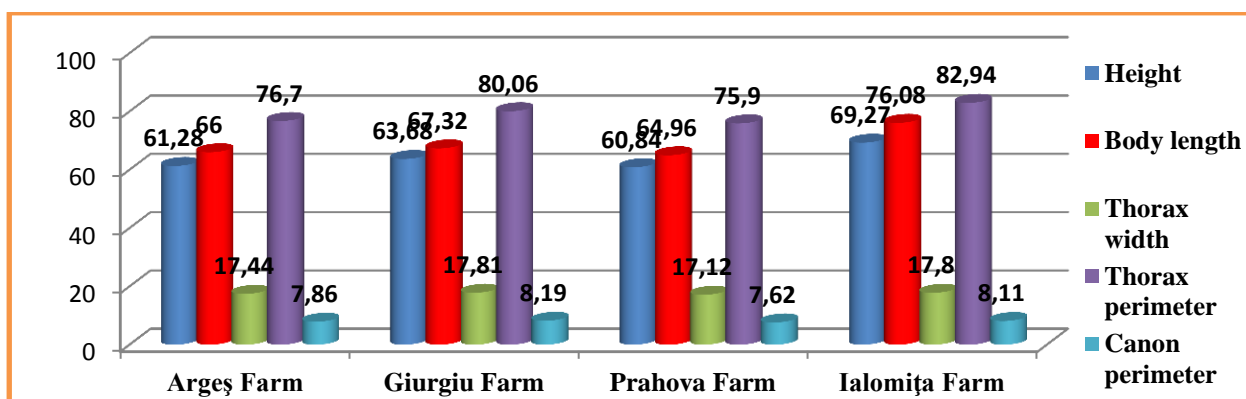


Chart.3. The main body measurements in the studied goat populations (cm)

Table 6. Comparative situation of body measurements in the studied populations (cm)

No.	Specification	Banat White average	% From height	Carpathian average	% From height
1.	Height	69.27	100.00	61.93	100.00
2.	Body length	76.08	109.83	66.09	106.72
3.	Thorax width	17.80	25.70	17.46	28.19
4.	Thorax perimeter	82.94	119.73	77.55	125.22
5.	Canon perimeter	8.11	11.71	7.89	12.74

Meanwhile, the obtained results confirm the fact that the length of the body is 66.09 cm in Carpathian goat populations, and the Banat White body length is almost 15% higher, respectively 76.08 ± 1.26 cm. The other body sizes (thorax length, thorax perimeter and canon perimeter) recorded higher values in the case of Banat White population beside the Carpathian populations. These data confirmed the fact that Banat White animals are taller and longer than the Carpathian ones, with a typical dolicomorph body shape, specific to the dairy populations, as reveal the special literature (Taftă, 1996, 2002, 2008; Vlad et al., 2003, Pascal, 2007, Pascal 2009; Zamfir, 2014, Zamfirescu 2009, Zaharia 2011a, Zaharia 2011b). [2,3, 4, 5, 6, 7, 8, 9, 10, 11]

CONCLUSIONS

The local goat populations' identification and the characterization represent a necessity in the actual social economic status in our country.

The average body weight in the three studied population was 38.76 ± 0.68 kg in females and 51.51 ± 1.38 kg in males. The highest value of the body weight is the one in Giurgiu farm, both in females and males, being recorded a value over the average, the lowest one was recorded in animals from Prahova farm. Regarding the body weight of the animals in Banat White population it may be seen that the average was 45.08 ± 1.19 kg in females and 56.63 ± 1.92 kg in males. So, the body weight is influenced by the breeding range and the environmental conditions, the nutrition level especially, the goats in Arges and Giurgiu having a superior feeding level.

Regarding the female weight, we can conclude that between the two populations the recorded values presented very significant differences ($P \leq 0.001$). Regarding the males weight, the difference between the average values recorded significant differences ($P \leq 0.05$).

The data regarding the body sizes in the four goat populations confirmed the fact that Banat White animals are taller and longer than the Carpathian ones, with a typical dolicomorph

body shape, specific to the dairy populations, as reveal the special literature, too.

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