Variance Estimation between Different Body Measurements at the Females Population from Romanian Mioritic Shepherd Dog Breed, to Develop a Genetic Improvement Program

Dorel Dronca[1]*, Nicolae Păcală[1], Ioan Bencsik[1], Marian Bura[1], Gabi Dumitrescu[1], Eliza Simiz[1], Razvan Popa[2], Adela Marcu[1], Marioara Nicula[1], Liliana Ciochina-Petculescu[1], Nicolae Marica[1], Mirela Ahmadi[1]

[1]*Banat University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, 300645-Timisoara, Calea Aradului, 119, Romania*
[2]*University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Animal Science*

Abstract
Romanian Mioritic Shepherd Dog, was selected from a natural population breed in Carpathian Mountains. The aim of this paper was to estimate variance at 12 body measurements using 23 females from Romanian Mioritic Shepherd Dog breed. The animals were registered with the Romanian Mioritic Association Club from Romania. In order to develop a genetic improvement program at this effective of 23 females from Romanian Sheperd Dog breed, found in evidence of Romanian Mioritic Association Club from Romania, should be considered the following conclusions on variance those 12 characters studied in this paper, respectively, there is a large variance for the height at the middle back, the height at the croup, the height at the base of the tail, the width of the croup, the length of the tail, the depth of the thorax, the thorax perimeter, the height of the elbow and for the height at the withers, the body length and the height at the hocks, the variance is middle.

Key words: body measurements, females, Romanian Mioritic Shepherd Dog

1. Introduction

At dogs, as well as other animal species, the exterior of body is one of the basic criteria for selection. By assessing the exterior body it can be obtained information for affiliation about of breed, the degree of improvement of the breed with respect to its standard, the presence of defects which reduce the biological value of animals, animal health, state maintenance, and how carried growth and development until to that stage was.
In complex and full assessment of dogs, are important the health status of animals, the appetite, temperament, behavior towards neighboring animals and to the examiner, the skills, origin and transmission of useful qualities at descendants [1].
It is recognized that the phenotypic value of one character at the isolated individuals or at one population is the consequence, in the first place, of the type of gene (additive or non-additive), quality and their combination (genotypes), as well as of interaction which it realizes genes with the environment where the animals develops and performs [2].
If known phenotypic value of a character in a population and its variance, in this case, by special statistical methods, it can estimate the value of additive genetic variance, non-additive and environmental variance, of that population. An estimate of additive and non-additive genetic

* Corresponding author: Dronca Dorel
Tel: 0256 277 144, Email: ddronca@animalsci-tm.ro

variance suggests "genetic reserves" existing in population and it can focus us on which method to turn our attention to change more effectively the population genetic structure [2].
The aim of the present paper was to estimate variance at 12 body measurements using 23 females from Romanian Mioritic Shepherd Dog breed. The animals were registered with the Romanian Mioritic Association Club from Romania.

2. Materials and methods

Romanian Mioritic Shepherd Dog is an excellent shepherd, watch and company dog, at which breeding is important to remember the factors that contribute to its success [1].
Romanian Mioritic Shepherd Dog was selected by from a natural population breed in Carpathian Mountains, for which reason they are resistant and rustic for feeding and maintenance [3]. The food can be comprised from diverse components animal and vegetal both and it can be administered as mush or granules.
Romanian Mioritic Shepherd Dog has the ability to adapt at different breeding conditions which are accepted easily. The better it feels when it is maintained in the yard, where it has enough room to move, play and rest.
The somatometry consists in to measure of body regions of the dog, in order to obtain the data on the overall development of the animal and the proportions between different parts of it. In order to achieve correct of body measurements, the dog should be placed on horizontally ground, in orthostatic position, with body weight uniform distributed on four legs, the head and neck with their natural position and direction. The body regions are measured between certain anatomical points of reference, which can be determined relatively easily and that employing the anatomical basis of the respective region.
At 23 females from Romanian Mioritic Shepherd Dog from Romanian Mioritic Association Club, were measured 12 characters, height at withers, the height at the middle of the back, the height at the croup, the height at the base of the tail, the body length, the tail length, the depth of thorax, the thorax width, the thoracic perimeter, the height at the elbow and the height at the hock, respectively.
The obtained data were statistically processed, to estimate and interpret variance for each character.

3. Results and discussion

In table 1, we presented the mean values and dispersion indices for the 12 body measurements at 23 females from Romanian Mioritic Shepherd Dog. Analyzing the table, we see that, at the 23 females studied, the average height at withers was 67.30±0.68 cm, and individual values had limits of variability between a minimum of 62.00 cm and a maximum of 73.00 cm.
The variability of this character, in the lot of females, was middle (CV=14.15%) and the security index of the mean (Sx%=1.01%), shows us that the average satisfy us as precision.
The height at the middle of back, determined on de basis measurements carried out on 23 females, was in average 64.50±1.50 cm, and the individual values were of 63.00 cm and 66.00 cm, respectively. The security index of the mean (Sx%=2.33), shows us that the mean satisfy us as precision.
The height at the croup (the iliac bone), of the 23 females studied, was in average of 64.00±1.00 cm, and individual values were of 63.00 and 65.00 cm. This mean satisfy us as precision (Sx%=1.56%).
In the females taken in this study, the upper body line decreases from withers to the middle of the back with 2.8 cm and from back to the croup (iliac) with 0.5 cm. On all its length, from the withers at croup (iliac), the upper body line decreased with 3.30 cm.
The average of height at the basis of the tail (coccyx), at the 23 females studied, was 49.00±2.00 cm, and individual values were of 47.00 cm and 51.00 cm. This average satisfy us as precision (Sx%=4.08%).
At the females from Romanian Mioritic Shepherd Dog breed, the difference between the height at the croup (iliac) (64.00 cm) and the height at the basis of the tail (coccyx) (49.00 cm) was of 15.00 cm.
The width of the croup has registered an average of 13.50±0.50 cm, and the individual values were located between 13.00 cm and 14.00 cm. This average satisfy us as precision (Sx%=3.70%).
The body length for all 23 females taken in this study was in average of 74.00±0.82 cm and individual values were located between a

minimum of 65.00 cm and a maximum of 79.00 cm.
The variability for the body length, inside the lot of female, was middle (CV=17.46%) and the average satisfy us as precision (Sx%=1.11%).
Reporting the body length (74.00 cm) to height of the withers (67.30 cm), results that in the females from Romanian Mioritic Shepherd Dog breed, a ratio of 1.10:1 there is.
The length of the tail at all 23 females was in average of 45.67±2.67 cm and the individual values were located between 43.00 and 51.00 cm.
For this character, the average did not satisfy us as precision (Sx%=5.84%).
The depth of the thorax was, in average, for all 23 females measured, of 36.22±1.49 cm and the individual values were between a minimum of 29.00 cm and a maximum of 40.00 cm.
The variability for the depth of the thorax, inside the lot, was big (CV=49.62%). The average did not satisfy us as precision (Sx%=4.11%).
Calculating the percentage of the depth of the thorax (36.22 cm) from the height at the withers (67.30 cm) it has been found that, at females, the

depth of the thorax represents, in average, 52.82% from the height of the withers.

The width of the thorax at the females taken in this study was in average of 19.00 cm.
The thorax perimeter, determined at the 23 females, was in average of 80.50±1.26 cm, and the individual values were located between a minimum of 78.00 cm and a maximum of 84.00 cm.
The variability from this character was big (CV=62.92%) and the average satisfy us as precision (Sx%=1.56%).
The height at elbow, at all 23 females taken in this study, was in average of 37.25±0.95 cm and the individual values ranged between a minimum of 36.00 cm and a maximum of 40.00 cm.
This character presented a big variability (CV=47.32%), inside the lot of female measured.
The security index (Sx%=2.54%) shows us that the average satisfy us as precision.
The height at hocks, for all 23 females measured, was in average of 19.33±0.33 cm and the individual values were located between 19.00 cm and 20.00 cm.
The variability from this character was middle (CV=19.25%) and the average satisfy us as precision (Sx%=1.72%).

Table 1. Mean values and dispersion indices for the 12 body measurements at 23 females From Romanian Mioritic Shepherd Dog

Item	Withers height	Middle back height	Croup height (iliac)	Base of tail (coccyx)	Croup width	Body lenght	Tail lenght	Thorax depth	Thorax width	Thorax perimeter	Height at elbow	Height at hocks
N	23	23	23	23	23	23	23	23	23	23	23	23
Mean	67.30	64.50	64.00	49.00	13.50	74.00	45.67	36.20	19.00	80.50	37.20	19.30
Mean error	0.68	1.50	1.00	2.00	0.50	0.82	2.67	1.49	0.00	1.26	0.95	0.33
Std. dev.	3.25	2.12	1.41	2.83	0.71	3.84	4.62	4.47	0.00	2.52	1.89	0.58
Variance	10.58	4.50	2.00	8.00	0.50	14.76	21.33	19.90	0	6.33	3.58	0.33
CV	14.15	106.0	70.71	141.4	35.36	17.46	153.9	49.60	0.00	62.90	47.30	19.20
SX%	1.01	2.33	1.56	4.08	3.70	1.11	5.84	4.11	0.00	1.56	2.54	1.72
Minimum	62.00	63.00	63.00	47.00	13.00	65.00	43.00	29.00	19.00	78.00	36.00	19.00
Maximum	73.00	66.00	65.00	51.00	14.00	79.00	51.00	40.00	19.00	84.00	40.00	20.00

4. Conclusions

In order to develop a genetic improvement program at this effective of 23 females from Romanian Mioritic Shepherd Dog breed, found in evidence of Romanian Mioritic Association Club from Romania, should be considered following conclusions regards the variance those 12 characters studied in this paper, respectively the variability is big for the height at the middle of back, the height at the croup, the height at the basis of the tail, width of the croup, the length of the tail, the depth of the thorax, the thorax

perimeter and the height at the elbow and, for the height of the hocks, the variability is middle.

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