Variance Estimation between Different Body Measurements at the Males Population from Romanian Mioritic Shepherd Dog Breed

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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 26 males from Romanian Mioritic Shepherd Dog breed. The animals were registered with the Romanian Mioritic Association Club from Romania. The statistical data showed that there is a large variance for body length and tail length, a middle variance for the croup width and thorax width and a small variance for height at withers, height at middle of back, height at croup, height at the base of the tail, depth of thorax, thoracic perimeter, elbow height and height of the hock. We recommend of breeders dogs from this breed to take account in genetic improvement programs, of values presented in this paper.

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

1. Introduction

In dogs populations, 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 informations 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 was carried growth and development until to that stage.
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 realises 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 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 [1].

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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 [2].
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 26 males 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 26 males from Romanian Mioritic Shepherd Dog. Analyzing the table we see that, the average height at withers was 72.60±0.494 cm and extreme values ranged between a minimum of 68 cm and a maximum of 79.50 cm. Within the group of males, it was established a small variability (CV = 3.59%) of height at withers. From the value of security indices of the mean (Sx%=0.68%), shows that the average established for this character satisfy us as precision.
Regarding of the height at the middle back, was determined an average of 73.37±0.943 cm, and the individual values ranged between a minimum of 71 cm and a maximum of 79 cm. In the group studied there is a small variability (CV=3.63%) for the height at the middle back, and the average that was established satisfy us as accuracy (Sx%=1.29%).
The average of height of the croup (the iliac bone) at the 26 males taken in this study was 72.56±1.015 cm and individual values registered ranging from a minimum of 69 cm and a maximum of 78.50 cm. The variability of this character into the group was low (CV=3.96%) and the average that was established satisfy us as accuracy (Sx%=1.40%).
At the males taken into this study, the upper body line increases from withers to middle of the back with 0.77 cm, after that it decrease at croup (iliac bone) with 0.81 cm. Due to these small differences, it can appreciate that the upper body line is straight at the males of Romanian Mioritic Shepherd Dog breed.
The average of height at the basis of the tail (coccys) was 60.20±1.356 cm and average of security index (Sx%=2.25%), shows that the average that was established satisfy us as accuracy.

Table 1. Mean values and dispersion indices for the 12 body measurements at 26 males 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 hock
N	26	26	26	26	26	26	26	26	26	26	26	26
Mean	72.60	73.37	72.56	60.20	12.55	79.50	48.10	35.33	20.00	88.81	39.27	20.90
Mean error	0.494	0.943	1.015	1.356	0.694	0.943	3.831	0.629	0.786	1.655	0.661	0.284
Std. dev.	2.61	2.66	2.87	3.033	2.08	4.99	12.11	2.439	2.081	5.492	2.195	0.943
Variance	6.85	7.125	8.24	9.20	4.30	24.92	146.76	5.95	4.33	30.16	4.81	0.89
CV	3.59	3.63	3.96	5.04	16.57	43.39	25.18	6.71	10.41	6.18	5.59	4.51
SX%	0.68	1.29	1.40	2.25	5.53	1.19	7.96	1.78	3.93	1.86	1.68	1.36
Minimum	68	71	69	57	10	71	34	33	16	81	36	20
Maximum	79.5	79	78.50	63	15	90	57	37	22	96	42	23

The average of croup width was 12.55±0.694, and the individuals value ranged from a minimum of 10 cm and a maximum of 15 cm.

The variability of croup width into the males group was middle (CV=16.57%) and the average did not satisfy us as accuracy (Sx%=5.53%).

The 26 males taken into this study had an average body lenght of 79.50±0.943 cm and individual values ranged between a minimum of 71 cm and a maximum of 90 cm. Within the group of males, the variability for the body lenght was big (CV=43.39%) and the average that was established satisfy us as accuracy (Sx%=1.19%).

Reporting of body length (79.50 cm) at withers height (72.60 cm), result at the 26 males of Romanian Mioritic Shepherd Dog breed a ratio of 1.1:1.

The lenght of the tail measured at 10 males had a mean value of 48.10±3.831 cm and limit values ranged between a minimum of 34 cm and a maximum of a 57 cm. The variability of the lenght of the tail was big (CV=25.18%) into the group and the average did not satisfy us as accuracy (Sx%=7,96%).

The 26 males taken in this study had a mean value of depth of the thorax of 35.33±0.629 cm, and the individual values ranged between a minimum of 33 cm and a maximum of 37 cm. The variability of depth of the thorax was small (CV=6.71%) within the group of males.

The average established for this character sastisfy us as accuracy (Sx%=1.78%).

Calculating the ratio between the depth of thorax and the height at the withers, it was found that in male analyzed, the mean value of depth of thorax represented 48.66% from the height of the withers.

Regarding width of the thorax, it had an average of 20±0.786 cm and individual values ranged between a minimum of 16 cm and a maximum of 22 cm. The width of the thorax variability between the males from group was middle (CV=10.41%), and the average established satisfy us as accuracy (Sx%=3.93%).

The thorax perimeter had a mean value of 88.81±1.655 cm and the individual values ranged between a minimum of 81 cm and 96 cm.

The variability of thorax perimeter was smal (CV=6,18%) within the group of the males.

The security index of the average satisfy us as accuracy (Sx%=1.86%).

The height at the elbow had a mean value of 39.27±0.661 cm and individual value ranged between a minimum of 36 cm and a maximum of 42 cm. Within the group of males, the variability of the height at elbow was small (CV=5.59%), and the average satisfy us as accuracy.

The height at the hock of 26 males taken in this study, had a mean value of 20.90±0.284 cm, and the individual value ranged between a minimum of 20 cm and a maximum of 23 cm. For this character, the variability within the group was small (CV=4.51%), and the average satisfy us as accuracy (Sx%=1.36%).

4. Conclusions

Following measurements and statistical processing of 12 characters at 26 males from Romanian Mioritic Shepherd Dog, from Romanian Mioritic Association Club, the statistical data showed that there is a large variance for body length and tail length, a middle variance for the croup width and thorax width and a small variance for height at withers, height at middle of back, height at croup, height at the base of the tail, depth of thorax, thoracic perimeter, elbow height and height of the hock. We recommend of breeders dogs from this breed to take account in genetic improvement programs, of values presented in this paper.

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