Characters Analysis of Genetic Improvement at the Males Population from Romanian Mioritic Shepherd Dog Breed

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Abstract

The aim of this paper was to analyze, within a group of 26 males from Romanian Mioritic Shepherd Dog breed, 13 characters of genetically improved, characters stipulated in, „Selection sheet and body measurements for Romanian shepherds". The animals were registered with the Romanian Mioritic Association Club from Romania. Romanian Mioritic Shepherd Dog, was selected from a natural population breed in Carpathian Mountains. In order to develop a genetic improvement program at this effective of 26 males from Romanian Sheperd Dog breed, found in evidence of Romanian Mioritic Association Club from Romania, should be considered the following conclusions on variance those 13 characters studied in this paper, respectively, the variability was middle for the width of skull and ear and low for the other 11 characters analyzed. Also, this paper highlighted the following reports of the characters analyzed at the males taken in the study: the ratio between the average of length and width skull was 1.005:1, the ratio between the average of length skull and the average of length muzzle was 1.31:1 and between average of the width of skull and the muzzle was 1.82:1. By Comparing between them length, width and depth of muzzle, resulted a ratio of 1.38:1:1.10.

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

1. Introduction

Genetic improvement is a science that aims to the change in mean phenotypic values of animal populations exploited by man which contributes to obtaining some performance of economically interest. This is based on exploitation and valorification of the existing variability of the animal species of economic interest [1].

At dogs, as well as other animal species [2], 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 was carried growth and development until to that stage[4].

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 [3].

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

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environment where the animals develops and performs [1].
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].
The aim of the present paper was to estimate variance at 13 body measurements using 26 males from Romanian Mioritic Shepherd Dog breed. The animals were registered with the Romanian Mioritic Association Club from Romania.

2. Materials and methods

Due to the impossibility to observe the isolated action and effect of each gene from polygenic systems causing them, selection of quantitative characters should be discussed in terms of mean, variance, covariance, given the fact that the changes are due to frequency change of genes and hence the frequency of genotypes [1].
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 [3].
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. The food can be comprised from diverse components animal and vegetal bot, 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 [4].
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 13 characters, length of head, length of skull, width of skull, length of muzzle, width of muzzle, depth of muzzle, perimeter of muzzle, length of ear, width of ear, distance between the ears, distance between the eyes, length hair at withers and metacarpal perimeter, 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 13 body measurements at 26 males from Romanian Mioritic Shepherd Dog. Analyzing the table 1 we see that, at the 26 males, average length of head was 29.30±0.391 cm, while individual values ranged between a minimum of 26 cm and a maximum of 33 cm. Variability of this character within the group was low(CV=6.79 %) and the security index of the average satisfy us as precision (Sx%=1.33 %).
Length of skull was averaged 16.80±0.331 cm, and the individual values ranged between a minimum of 14 cm and a maximum of 20 cm.
For length of skull, the variability was low within the lot (CV=9.82%) and the average satisfied us as precision (Sx%=1.97 %).
Width of skull, at those 26 males taken in this study, had a mean value of 16.73±0.405 cm, and individual limits ranged between a minimum of 14 cm and a maximum of 23 cm. Within the lot, this character had a middle variability (CV=12.37 %), and the security index of the average satisfy us as precision (Sx%=2.42 %).
The ratio between the average length of skull (16.80 cm) and width of skull (16.73 cm) was 1.005:1 at the males taken in this study and the difference between these characters was 0.07 cm for length.
Length of muzzle had an averaged 12.73±0.218 cm and the individual values varied between a minimum of 10 cm and a maximum of 16 cm. Variability of this character in the group of males

was low (CV=8.72 %) and the average satisfied us as precision (Sx%=1.71 %). In average, length of skull (16.73 cm) is longer than length of muzzle (12.73 cm) with 40 cm. The ratio between the average of length of skull and the average of length of muzzle is of 1.31:1 at the males taken in study.

Width of muzzle at those 26 males was in average of 9.20±0.200 cm and the individual values ranged between a minimum of 9 cm and a maximum of 10 cm. For this character, the variability within the group was low (CV=4.86 %) and the average satisfied us as precision (Sx%=2.17 %). Between the average of width of skull (16.73 cm) and the average of width of muzzle there is a difference of 7.53 cm and a ratio of 1.82:1 at the males taken in this study.

Depth of muzzle was in average 10.10±0.100 cm and individual values ranged between a minimum of 10 cm and a maximum of 10.5 cm.

Variability of depth of muzzle within the group of the males was low (CV=2.18 %) and the average satisfied us as precision (Sx%=0.99 %). Comparing between them, length, width and depth of muzzle, result that the length of muzzle is greater than the width of muzzle with 3.53 cm and than depth of muzzle with 2.63 cm. If we make a ratio between these three characters, result a ratio of 1.38:1:1.10.

Perimeter of muzzle was in average 28.40±2.076 cm and individual values ranged between a minimum of 28 cm and a maximum of 29 cm. Variability of this character within the group is low (CV=1.72 %) and the average did not satisfy us as precision (Sx%=7.42 %).

Length of ear was in average 14.83±0.682 cm and individual values ranged between a minimum of 14 cm and a maximum of 16 cm. Variability of this character within the group was low (CV=4.63 %) and the average satisfied us as precision (Sx% =4.59 %).

Width of ear at the males measured has averaged 13.70±0.66 cm, and individual values ranged between a minimum of 11.5 cm and a maximum of 19 cm. Variability of this character within the group was middle (CV=10.17 %) and the average satisfied us as precision (Sx%=4.82 %).

The 26 males taken in the study had a distance between the ears of 14.40±0.244 cm and the individual values ranged between a minimum of 14 cm and a maximum of 15 cm. Within the group of the males was recorded a low variability (CV=3.80 %) for the distance between the ears and the average satisfied us as precision (Sx%=1.69 %).

Distance between eyes was in average 8.90±0.100 cm and the individual values recorded distances ranged between a minimum of 8.5 cm and a maximum of 9.0 cm. Variability of this character was lower (CV=2,51 %) and the average satisfied us as precision (Sx%=1.12 %).

Length of hair at withers was averaged 12.50±0.449 cm and individual values ranged between a minimum of 11 cm and a maximum of 14 cm. This character showed a low variability (CV=9.52%) in the group, and the average satisfied us as precision (Sx%=3.59%).

The metacarpal perimeter was in average 16.75±0.250 cm and individual values ranged between a minimum of 16 cm and a maximum of 17 cm. Variability of this character was low (CV=2.99%) within group, and the average satisfied us that precision (Sx%=1.49%).

Table 1. Mean values and dispersion indices for the 13 body measurements at 26 males from Romanian Mioritic Shepherd Dog

Item	Head length	Skull length	Skull width	Muzzle length	Muzzle width	Muzzle depth	Muzzle perimeter	Ear length	Ear width	Distance between the ears	Distance between the eves	Length hair at withers	Metacarpal perimeter
N	26	25	26	26	26	26	26	26	26	26	26	26	26
Mean	29.30	16.80	16.73	12.73	9.20	10.10	28.40	14.83	13.70	14.40	8.90	12.50	16.75
Mean error	0.391	0.331	0.405	0.218	0.200	0.100	2.076	0.76	0.66	0.244	0.100	0.449	0.250
Std. dev.	1.99	1.65	2.069	1.11	0.447	0.22	5.085	1.861	1.483	0.547	0.223	1.19	0.50
Variance	3.98	2.75	4.28	1.12	0.200	0.05	25.86	3.46	2.20	0.300	0.05	1.41	0.25
CV	6.79	9.82	12.37	8.72	4.86	2.18	17.90	12.55	10.17	3.80	2.51	9.52	2.99
SX%	1.33	1.97	2.42	1.71	2.17	0.99	7.88	4.96	4.82	1.69	1.12	3.59	1.49
Minimum	26	14	14	10	9	10	28	14	11.5	14	8.5	11	16
Maximum	33	20	23	16	10	10.5	29	16	19	15	9	14	17

4. Conclusions

In order to develop a genetic improvement program at this effective of 26 males from Romanian Sheperd Dog breed, found in evidence of Romanian Mioritic Association Club from Romania, should be considered the following conclusions on variance those 13 characters studied in this paper, respectively, variability was middle for width of skull and ear and low for the other 11 characters analyzed.

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