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Phenotypic characterization of a population of pigeons, Galati players breed, black flecked white and red flecked white variety

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Abstract. A total of 53 pigeons were undertaken to the study, both sexes, which of 36 individuals representing the black spotted white variety and 1 individuals representing the red spotted white variety. The study revealed that the body weight was within the minimum standard of the breed in both sexes being 346.22 and 345.66 g respectively. There where not found any difference in the mean length of beak (12 mm) and tail length (13.5 cm) considering the both color varieties. The total length of the body ranged between 33-33.07 cm, wingspan with values between 63.94-64.33 cm, was found in accordance with the breed standard for both color varieties.
Key Words: *Columba livia domestica*, flight and game, black flecked white variety, red flecked white variety.

Introduction. In Romania the breeding of flying and playing pigeons has a long history, many farmers were occupied for decades with the creation, formation and breeding of precious Romanian breeds. Such breeds are: Timisoara player, Galati player, Romanian flyer, Naked neck, Transylvania player, Red of Târgovişte etc. (Herman 2009; Burduşel 2006; Bonațiu 1985).

In same category (small animals) we also can mention the works of some contemporary specialists in the field of breed creation with novel genetic strains as the first Romanian rabbit breeds in the history, Transylvanian Giant (Zmaranda 2015a; Petrescu-Mag et al 2014a,b, 2012, 2011, 2009; Blaga & Burny 2014) and Rabbit of Cluj (Zmaranda 2015b; Botha et al 2014a, 2013, 2011).

In developing race, were driven along time, several steps. In the first stage, the selection focused on the fly, play and color. Then, in the second stage was passed to fix color, aiming to achieve a symmetrical design, the so-called color ''written''. Then, on the third and final stage, the focus was on selecting specimens with pure eyes and a head line as spectacular (Péterfi 1970, 1961).

Breading the pigeons of Galati players breeds can aim for the pigeon sport: players stay and for recreational purposes (Popa 2004; Popescu 1985; Stănescu et al 2007).

The aim of the present study was to establish the phenotype characters of the two studied color variety and see if this fits the breed standard to see genetic stability and homogeneity of the considered population. This demarche has the same importance in terms of genetic conservation just like other works conducted on economically important farm species (Botha et al 2014b; Oroian et al 2014; Hettig et al 2012; Zăhan et al 2014, 2011, 2010, 2009).

Material and Method. The studies (measurements) on pigeons were conducted on the first author's private stock, located in the Bistrita town, Bistrita-Nasaud County, and on several consecrated Galati player stock, in neighboring counties (Cluj and Mures). Given that there are preferences among farmers who prefer a variety of color or another, the

exact locations of studies were established after identifying breeders with the desired flecked varieties. Studies have been performed of conformation and constitution.

Within the variety was served a total of 18 pairs of individuals according to criteria of conformation and constitution of individuals with and without game play.

Measurement of conformation and constitution were performed with specialized tools, electronic weighing scales, respectively calliper for length, considering the following external morphological characters:

G – body weight;
Lt - total length;
Lc - beak length;
A – wingspan;
LCZ - queue length;
Lp - feet length;
Pt - thoracic perimeter.

Data were statistically analyzed by estimating the mean and dispersion indices. Testing was done by student test (T).

Results and Discussion. The tools used in the study were: observation, shooting (photographs), and body measurements.

Average values for the variable indices of measurements of the Galati player pigeons for variety black flecked white, are presented in Table 1 for red flecked white in Table 2.

Table 1

Average and dispersion indices for black flecked white variety

Character	*M.U.*	*Sexes*	*n*	*x ± sx*	*s*	*V%*	*t*	*Difference*
Body weight	g	♂	18	362.7±0.99	4.2	1.15	20.00	16.48
		♀	18	346.22±1.90	8.0	2.33		
Beak length	mm	♂	18	11.94±0.28	1.21	10.14	0.91	0.33
		♀	18	11.61±0.28	1.19	10.29		
Queue length	cm	♂	18	13.7±0.28	0.97	8.94	1.08	0.37
		♀	18	13.33±0.22	1.26	7.27		
Thoracic perimeter	cm	♂	18	23.83±0.28	1.20	5.03	2.85	1.00
		♀	18	22.83±0.25	1.09	4.80		
Total length	cm	♂	18	33.05±0.33	1.43	4.33	3.32	1.33
		♀	18	34.38±0.36	1.53	4.47		
Wingspan	cm	♂	18	64.05±0.30	1.30	2.03	0.39	0.11
		♀	18	63.94±0.44	1.89	2.96		
Feet length	cm	♂	18	6.97±0.04	0.18	2.59	1.73	0.26
		♀	18	6.71±0.03	0.16	2.40		

MU – measurement unit, n – number of studied individuals.

The difference of body weight of 16.48 g in favor of males, is highly statistically significant, with an average value of 362.7±0.99 g for males being superior to prior communicated values by Herman (2009) in which males have an average weight of 333.5 g, the breed standard being established between 300-350 g.

Differences in body weight in both sexes can be attributed to the good maintenance and conditions, as well as to selections made for heavier weights that support the achievement of a further physical effort required to play and fly.

The homogeneity of this character is very good, reflected by the coefficient of variation of 1.15% to 2.33% in males and females.

Character selection is important in beak length, which differentiates breeds and a variety of other in a race. Breeders give a great importance to this character, reflected in the average and dispersion indices obtained. For this statistic we found a difference of 0.33 mm, which is statistically insignificant. The found average value in males (11.94±0.28 mm) and females (11.61±0.28 mm) is lower than those reported by Herman (2009) (14.7 mm in average), the breed standard being 12-17 mm. These differences in length of the beak we can assign it to the selection made by breeders who prefer over time as short beak.

Average queue length obtained on the 18 pairs of pigeons was found 13.7±0.28 cm in males and 13.33±0.22 cm in females, compared with the average of 12.9 cm, communicated by Herman (2009). We can notice a difference of 0.37 cm in favor of males which is statistically significant. In this case the variability of the character is reflected by the standard deviation of 0.97 for males which is low compared to that found for females (1.26). In both sexes we find the values of homogeneity of this nature being 8.94 in males and 7.27 in females.

The thoracic perimeter we see a difference of 1 cm in favor of males, and in statistical terms is significant. The average value of 23.83±0.28 cm for males and 22.83±0.25 cm for females is lower toward 24 cm reported by Herman (2009), the breed standards being 24-26 cm.

From a statistically point of wives the difference for overall length is very significant (1.33 cm) being in favor of females with an average value of 33.05±0.33 cm in males and 34.38±0.36 cm in females. Similar values was communicated by Herman 92009), respectively 34.4 cm. The breed standard indicating values between 31-34 cm.

The difference of 0.11 cm in wingspan in favor of males is not statistically significant. The average value for this character was found 64.05±0.30 cm in males and 63.94±0.44 cm in females. Similar value (63.9 cm) was given by Herman (2009). Breed standard includes values between 60 and 65 cm. Wingspan differences can fluctuate depending on the variety of color. The homogeneity of this character is very good, the coefficient of variation of 2.03% in males and 2.96 in females.

Feet length difference of 0.26 cm in favor of males is statistically significant, with average values of 6.97±0.04 cm and 6.71±0.03 for males and females respectively, is lower compared to the value of 7.4 cm reported by Herman (2009). Breed standard for this character present values between 7.5-8.5 cm. The homogeneity of the character is very good, with coefficient of variation of 2.59% to 2.40% in males and females.

Regarding the red flecked white variety, the difference of 0.96 g for body weight in favor of females, is highly statistically significant, the average value measured being 345.66±2.03. Herman (2009) reported lower value for males (333.5 g average). According to the breed standard the body weight should fit 300-350 g. Differences in weight in both sexes can be attributed to good maintenance conditions, as well as to selections made for higher weights to supports the achievement of a further physical effort required for the breed performances. The homogeneity of this character is very good, the coefficient of variation of 1.76% to 1.17% in males and females.

In beak length, we found a difference of 0.34 mm, being statistically insignificant. The average values of 11.66±0.33 mm for males and 12±0.46 mm for females is lower than those reported by Herman (2009) where the average beak length was 14.7 mm. All findings are in accordance with the breed standard (12-17 mm). These differences in length of the beak can be assigned to the selection in this direction, made by breeders who prefer over time a short beak.

Table 2

Average and dispersion indices in the red flecked white variety

Character	*M.U.*	*Sexes*	*n*	*x ± sx*	*s*	*V%*	*t*	*Difference*
Body weight	g	♂	9	345.66±2.03	6.10	1.76	0.38	0.96
		♀	8	346.62±1.43	4.06	1.17		
Beak length	mm	♂	9	11.66±0.33	1.00	8.57	0.60	0.34
		♀	8	12.00±0.46	1.30	10.91		
Queue length	cm	♂	9	12.88±0.42	1.26	9.84	0.48	0.24
		♀	8	13.12±0.29	0.83	6.35		
Thoracic perimeter	cm	♂	9	22.00±0.47	1.41	6.42	1.62	0.88
		♀	8	21.12±0.29	0.83	3.95		
Total length	cm	♂	9	33.77±0.36	1.09	3.23	1.26	0.77
		♀	8	33.00±0.50	1.41	4.28		
Wingspan	cm	♂	9	64.33±0.33	1.00	1.55	1.20	0.71
		♀	8	63.62±0.49	1.40	2.21		
Feet length	cm	♂	9	7.07±0.06	0.19	2.80	1.07	0.09
		♀	8	6.98±0.06	0.18	2.58		

MU – measurement unit, n – number of studied individuals.

Average queue length obtained in the two pigeon sexes 12.88±0.42 cm is males and 13.12±29 cm in females, compared with the average of 12.9 cm, communicated by Herman (2009), are slightly different. A difference of 0.24 can be noticed in favor of females, which is statistically significant. In this case the variability of this character is reflected by the standard deviation of 1.26 which is higher than that of females of 0.83. In both sexes we find the values of homogeneity of this character being 9.84% and 6.35% in males and females respectively.

For the thoracic perimeter we see a difference of 0.88 cm in favor of males, value which is statistically significant. Our findings with average values of 22±0.47 cm in males and 21.12±0.29 cm in females are different with 2 cm by those reported by Herman (2009). The breed standard prescript is for 24-26 cm.

From a statistically point of view the difference for the total length (0.77 cm) is very significant, being in favor of males, with an average value of 33.77±0.36 cm 33±0.50 cm for females. Our findings are 34.4 cm lower according to data's provided by Herman (2009). The breed standard indicating values between 31-34 cm.

With a wingspan difference of 0.71 cm in favor of males, the data in not statistically significant, with an average of 64.33±0.33 cm for males and 63.62±0.49 cm for females. Our findings are similar to 63.9 cm reported by Herman (2009). Breed standard includes values in the range of 60-65 cm for this character. Wingspan differences can fluctuate depending on the variety of color. The homogeneity of this character is very good, with coefficient of variation of 1.55% in males and 2.21% in females.

Feet length present a difference of 0.09 cm in favor of males, value which is statistically significant, averaging 7.07±0.06 cm and 6.98±0.06 cm for males and females cm respectively, which are lower values compared to 7.4 cm according to Herman (2009). Breed standard provide values for this character between 7.5-8.5 cm.

Homogeneity character is very good, the coefficient of variation of 2.80% to 2.58% in males and females respectively.

Conclusions. Analyzing the characters referred to two color variety Galati player pigeon breed, we find the body weights within the breed standard in both sexes respectively 345.66 g and 346.22 g. The average length of beak in both color varieties was found 12 mm. Average queue length of 13.5 cm present not differences between varieties. The total length of the body does not differ from one variety to another, ranging between 33-33.07 cm. Wingspan of the both varieties fit into standard of the breed with values between 63.94-64.33 cm. As an overall conclusion we can observe some new tendencies in the improvement of the breed (*e.g.* beak length, feet length, body weight), and also a very scrupulous work done by the breeders in respect with the elaborated standards. Therefore the future of these two varieties of Galati player pigeon breeds is ensured according to the statistics presented in this paper.

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