

Phenotypic characterization of a population of Galați players pigeon breed blue flecked white and white unicolor variety

¹Horia Ionescu, ¹Teofil E. Oroian, ²Miklos Botha

¹ University of Agricultural Sciences and Veterinary Medicine, Faculty of Animal Husbandry and Biotechnology, Cluj-Napoca, Romania; ² SC Bioflux SRL, Cluj-Napoca, Romania. Corresponding author: H. Ionescu, bn13hoi@yahoo.com

Abstract. A total of 34 pigeons of blue flecked white and 15 white variety of Galați players breed, both sexes were undertaken to the study. It has been estimated the average values and dispersion indices of some morphological parameters (body weight, total length, beak length, wingspan, queue length, feet length) which are considered breed specific characters. The study highlighted the fact that the body weight in the two color varieties shows significant differences between males and females. It was highlighted that unicolor white variety shows superior beak length superior toward the white blue variety. Wingspan and feet length in both varieties falls within the breed standard values between 61.85 and 62.9, and 7.71 and 7.51 cm respectively.

Key Words: *Columba livia domestica*, flight and game, unicolor white variety, blue flecked white variety.

Introduction. In Romania the history of breeding the ornamental (flying and playing) pigeons last for several decades, during which farmers were occupied with the creation, formation and rearing of many Romanian breeds, such as: Timisoara player, Galati player Romanian flyer, Naked neck, Transylvania player etc (Ionescu & Oroian 2015; Herman 2009). As breed creation require several steps, the pigeon breed creators and improvers in their work of selection focused on the fly, play and color of birds. The breeders second concern targeted color stabilization, aiming to achieve a symmetrical design, the so-called "color written". Should be mentioned that color patterns can carry not only morphological traits but also behavioral as phenotype manifestation (Petrescu-Mag et al 2014a,b; Botha et al 2013, 2011, 2007). Then, on the third and final stage, the selection focused on promoting specimens with pure eyes and more spectacular head line (Péterfi 1970, 1961). The pigeons of Galati player breed are raised for sportive and for recreational purposes (Stănescu et al 2007; Popa 2004; Popescu 1985).

The aim of the present paper is to evaluate the homogeneity of an autochthon novel breed with respect to the elaborated standard, and to underline the new tendencies of the breed improvement.

Material and Method. The study used as tools: observation, shooting and body measurements. Studies on pigeons were performed on the first author own farm, located in the town of Bistrita Nasaud, Bistrita County and in neighboring counties Cluj and Mures at various brideries owned by breeders who breed Galati players. Given that there are preferences among farmers who prefer a variety of color or another, the exact locations where measurements were performed was established after identification farms where blue flecked white and white variety are raised. Studies have been focused on conformation and constitution of the birds. The analyzed stock consisted of 17 pairs of white flecked blue and 8 males and 7 females white unicolor variety. Measurement of conformation and constitution were performed with specialized tools, electronic weighing scales, and caliper for measuring length for 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. Statistics were processed using student test (T).

Results and Discussion. Average value for variable indices for pigeons of Galati player blue flecked white variety, are presented in Table 1, and for white unicolor variety in Table 2.

Table 1

Average and dispersion indices to variety flecked white on blue

<i>Character</i>	<i>MU</i>	<i>Sexes</i>	<i>n</i>	<i>x ± sx</i>	<i>s</i>	<i>V%</i>	<i>t</i>	<i>Difference</i>
Body weight	g	♂	17	368.04±1.51	6.26	1.70	4.31	12.86
		♀	17	355.18±2.57	10.60	2.99		
Beak length	mm	♂	17	11.94±0.22	0.92	7.68	0.47	0.35
		♀	17	12.29±0.42	1.72	14.02		
Queue length	cm	♂	17	11.19±0.24	1.00	8.98	3.05	1.1
		♀	17	12.29±0.27	1.10	8.99		
Thoracic perimeter	cm	♂	17	22.65±0.54	2.24	9.90	2.69	1.7
		♀	17	24.35±0.32	1.32	5.42		
Total length	cm	♂	17	31.79±0.32	1.30	4.09	4.15	1.91
		♀	17	33.7±0.48	1.99	5.911		
Wingspan	cm	♂	17	61.94±0.46	1.91	3.09	1.35	0.96
		♀	17	62.9±0.55	2.25	3.09		
Feet length	cm	♂	17	7.71±0.90	0.36	4.60	2.5	0.4
		♀	17	7.31±0.06	0.36	4.89		

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

The difference of 12.86 g in body weight in favor of males, statistically is highly significant, with an average for this character of 386.04±1.51 g. Herman (2009) reported an average value of 333.5 g for males. The breed standard is established between 300-350 g. The higher values obtained for body weight by our measurements can be attributed to a favorable maintenance of the birds, as well as to selections made for heavier weights that supports the achievement of a further physical effort required for play and fly. The homogeneity of this character is very good, reflected by the coefficient of variation of 1.70% and 2.99% in males and females respectively.

An important character which is subjected to selection is the beak length, which is considered a breed/variety defining attribute. Therefore breeders treat this aspect very careful which is reflected by the average valued and dispersion indices obtained. For this trait we find a difference of 0.35 mm, which is statistically insignificant. The average values obtained in our studies of 11.94±0.22 mm and 12.29±0.42 mm in males and females respectively is lower than 14.7 mm reported by Herman (2009). The breed standard fits between 12-17 mm. These differences in length of the beak can be assigned to the selection made by breeders who prefer over time a short beak.

The average queue length obtained on the 17 pairs of pigeons was 11.19 ± 0.24 cm in male and 12.29 ± 0.27 cm in females, compared with the average of 12.9 cm, communicated by Herman (2009). We can notice a difference of 1.1 cm in favor of females which is statistically significant. In this case the variability of this character is reflected by the standard deviation of 1 for males, which is lower compared to that of females (1.10). In both sexes we find the values of homogeneity of this trait being 8.98 in males and 8.99 in females.

Regarding the thoracic perimeter we observed a difference of 1.7 cm in favor of females, which is statistically significant. The obtained average values for this trait was 22.65 ± 0.54 cm for males and 24.35 ± 0.32 cm for females. Similar value (24 cm) is reported by Herman (2009). The breed standard provides values for this character as 24-26 cm.

From a statistically point of view difference in total length (1.91 cm) is very significant being in favor of females. Males presented an average value of 31.79 ± 0.32 cm and females 33.7 ± 0.48 cm. This is a lower value than the 34.4 cm provided by Herman (2009). The breed standard indicating values between 31-34 cm for this trait.

The difference of 0.96 cm for wingspan in favor of females is not statistically significant. The average values recorded for males were 61.94 ± 0.46 cm and 62.9 ± 0.55 cm for females, which are lower values than 63.9 cm reported by Herman (2009). Breed standard includes values between 60 and 65 cm for this trait. Wingspan differences can fluctuate depending on the color variety. The homogeneity of this character is very good, the coefficient of variation being 3.09% in both sexes.

Feet length with a difference of 0.4 cm in favor of males is statistically significant, averaging 7.71 ± 0.90 cm and 7.31 ± 0.06 cm for males and females respectively, in contrast with the 7.4 cm described by Herman (2009). The breed standard providing values between 7.5-8.5 cm for this character. Homogeneity of this character is very good, with the coefficient of variation of 4.60% and 4.89% for males and females respectively.

Table 2

Average and dispersion indices in white variety

<i>Character</i>	<i>MU</i>	<i>Sexes</i>	<i>n</i>	<i>x ± sx</i>	<i>s</i>	<i>V%</i>	<i>t</i>	<i>Difference</i>
Body weight	g	♂	8	370.75 ± 2.67	7.57	2.04	0.34	1.18
		♀	7	369.57 ± 2.12	5.62	1.52		
Length beak	mm	♂	8	13.5 ± 0.32	0.92	6.85	0.53	0.36
		♀	7	13.14 ± 0.59	1.57	11.97		
Queue length	cm	♂	8	13.62 ± 0.56	1.59	11.72	1.51	1.2
		♀	7	12.42 ± 0.57	1.51	12.16		
Thoracic perimeter	cm	♂	8	24.87 ± 0.89	2.53	10.17	2.37	3.02
		♀	7	21.85 ± 0.91	2.41	11.02		
Total length	cm	♂	8	36.25 ± 0.36	1.03	2.85	1.81	1.11
		♀	7	35.14 ± 0.5	1.34	3.82		
Wingspan	cm	♂	8	62.3 ± 0.57	1.62	2.60	0.43	0.45
		♀	7	61.85 ± 0.86	2.28	3.69		
Feet length	cm	♂	8	7.51 ± 0.15	0.45	6.0	2.11	0.36
		♀	7	7.15 ± 0.08	0.22	3.11		

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

Considering the white variety, the difference of 1.18 g in body weight in favor of males is statistically highly significant, the average being 370.75 ± 2.67 g for males which is higher value in contrast with communicate high the value of 333.5 g communicated by Herman (2009). The breed standard for this character is between 300-350 g. Our higher value in terms of body weight of the males specimens is do the new tendencies to focus selection for heavier weights in order to supports the new physical challenges (play and fly) of the breed. This aim was also supported by an enhanced and adequate nutrition approach. The homogeneity of this character is very good, proved by the coefficient of variation of 2.04% and 1.52% in males and females respectively.

Considering the second selection criteria which is the beak length (breed/variety depending trait), its great importance is reflected by the average and dispersion indices obtained. The measured difference of 0.36 mm is statistically insignificant. The average values of 13.5 ± 0.32 mm in males and 13.14 ± 0.59 mm in females is lower than the average of 14.7 mm reported by Herman (2009). Our findings and those reported by Herman (2009) both fits the breed standard which is established between 12-17 mm. These differences in length of the beak can assigned to the selection preferences of the breeders who prefer over time a short beak.

Average queue length obtained from the 8 males and 7 females emphasized an average of 13.62 ± 0.56 cm in males and 12.42 ± 0.57 cm in females, comparing with the average of 12.9 cm communicated by Herman (2009). For this trait we can notice a difference of 1.2 cm in favor of females which is statistically significant. In this case the variability of this character is reflected by the standard deviation of 1.59 which is low compared to that of females (1.51). Regarding the values of homogeneity of this character regarding sexes we found a value of 11.72 in males and 12.16 in females.

At the thoracic perimeter we see a difference of 3.03 cm in favor of males and from a statistically point of view it is considered significant. Average values of 24.87 ± 0.89 and 21.85 ± 0.91 cm in males and female respectively is similar to the value 24 cm found by Herman (2009). The breed standards prescribe 24-26 cm for this trait.

Regarding the total body length we found a difference of 1.11 cm in favor of males which is statistically very significant. The measured absolute average values being 36.25 ± 0.36 cm for males and 35.14 ± 0.5 cm for females, which are higher values than the amount of 34.4 cm provided by Herman (2009). The breed standard indicating values for this character between 31-34 cm.

The difference of 0.45 cm in wingspan in favor of males in not significant statistically. The average values of 62.3 ± 0.57 cm in males and 61.85 ± 0.86 cm in females is lower than the value of 63.9 cm reported by Herman (2009). Breed standard includes values between 60 and 65 cm for this trait. Differences in wingspan can fluctuate inner breed depending on the variety of color. The homogeneity of this character is very good, reflected by the coefficient of variation of 2.60% and 3.69% in males and females respectively.

In terms of feet length we found a difference of 0.36 cm in favor of males which is statistically significant, averaging 7.51 ± 0.15 cm and 7.15 ± 0.08 cm for males and females respectively, comparing with the 7.4 found by Herman (2009). The breed standard present values between 7.5 and 8.5 cm for this character. Homogeneity character is very good, showed by the coefficient of variation of 6.0 in males and 3.11 in females.

Conclusions. In terms of body weight in both color varieties there was found a slight non-significant difference between sexes in favor of the white unicolor variety. The length of the beak was found slightly superior for the white unicolor variety, in comparison with blue flecked white variety. Regarding the queue length the white unicolor variety is superior with about of 2 cm in both sexes compared to the blue flecked white variety. The wingspan in both varieties falls within the breed standard values between 61.85 and 62.9 cm. Feet length in both color varieties is between 7.71 cm and 7.51 cm fitting the breed standard. As an overall conclusion we can see slightly new tendencies in the improvement of the above mentioned varieties, emphasizing when enhanced (body

weight, queue length) when diminished (beak length) morphological traits, underlining the breed future perspectives.

Acknowledgements. The first author would like to extend his gratitude to the president of the Messenger Pigeon Breeders Association Mr. Burcă Ioan, Eng. Pojum Ștefan, Prof. Ionescu Elena, Mr. Hădărău Vlad, Eng. Iușan Darius, Eng. Purcelean Cristian, Mr. Purcelean Alin, Ms. Chifa Roxana Adriana, and not at least to Prof. Ognean Laurențiu from the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, physiology department for their technical support.

References

- Botha M., Petrescu-Mag I. V., Hettig A., 2013 The first full morphological description of the Cluj Rabbit (*Oryctolagus cuniculus*). North-Western Journal of Zoology 9(2): 441-442.
- Botha M., Hettig A., Petrescu-Mag I. V., 2011 The Rabbit of Cluj: a new phenotype obtained, maintained and improved in Cluj-Napoca (Transylvania), Romania. ABAH Bioflux 3(1): 42-47.
- Botha M., Bud I., Ștefan R., 2007 Ethological studies on Californian rabbit females. Proceedings of the International Scientific Symposium "Animal breeding in a view of a sustainable agriculture", Bulletin USAMVB Timișoara, ISSN 1221-5287, 40(2): 47-50.
- Herman C., 2009 A study of Romanian pigeon races. PhD Thesis, University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Romania.
- Ionescu H., Oroian T. E., 2015 Phenotypic characterization of a population of pigeons Galați players breed, black flecked white and red flecked white variety. ABAH Bioflux 7(2): 177-182.
- Popa G., 2004 [They so created a standard]. "Porumbelul" Magazine, Published by the "Albatros" - Pigeon Breeders Association, Cluj-Napoca, Romania, 1:6-7. [In Romanian].
- Petrescu-Mag R. M., Oroian I. G., Botha M., Covrig I., Petrescu-Mag I. V., 2014a Morphological, productive and reproductive characterization of the Transylvanian giant rabbit (*Oryctolagus cuniculus*): first statistical report. North-Western Journal of Zoology 10(2): 400-403.
- Petrescu-Mag I. V., Oroian I. G., Botha M., Covrig I., Vesa S. C., 2014b Transylvanian Giant Rabbit (*Oryctolagus cuniculus*): Rustic means also aggressive. Rabbit Gen 4(1): 56-59.
- Péterfi Ș., 1970 [Domestic pigeon breeding]. Ceres Publishing House, Bucharest, Romania.
- Péterfi Ș., 1961 [Domestic pigeon breeding]. Agro – Forestry Publishing House, Bucharest, Romania, pp. 49-58. [In Romanian].
- Popescu G., 1985 [Romanian pigeons breeding]. Sports – Tourism Publishing House, Bucharest, Romania, pp. 173-182.
- Stănescu S., et al 2007 [Guide for pigeon breeders]. Published by SC Farmavet SA, Bucharest, Romania. [In Romanian].

Received: 19 March 2015. Accepted: 24 October 2015. Published online: 06 November 2015.

Authors:

Horia Ionescu, University of Agricultural Sciences and Veterinary Medicine, Faculty of Animal Husbandry and Biotechnology, Romania, Cluj-Napoca, 400372, Calea Mănăștur Street, No. 3-5, e-mail: bn13hoi@yahoo.com
Teofil Eugen Oroian, University of Agricultural Sciences and Veterinary Medicine, Faculty of Animal Husbandry and Biotechnology, Romania, Cluj-Napoca, 400372, Calea Mănăștur Street, No. 3-5, e-mail: teoroian@yahoo.ro
Miklos Botha, SC Bioflux SRL, Romania, Cluj, Cluj-Napoca 400488, 54 Ceahlău Street, e-mail: miklosbotha@yahoo.com
This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

How to cite this article:

Ionescu H., Oroian T. E., Botha M., 2015 Phenotypic characterization of a population of Galați players pigeon breed blue flecked white and white unicolor variety. ABAH Bioflux 7(2): 183-187.