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STUDIES REGARDING THE EVOLUTION OF BODY MASS IN WHITE RHINE DUTCH BREED, RAISED IN BIHOR COUNTY

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Abstract

The paper presents partial results regarding the identification and characterization of some domestic poultry populations from Bihor County, for example Anseriformes, species Anser anser (domestic goose - White Rhine Dutch Breed). Today, flocks of this breed are disseminated in households, having high degree hybrids. In Bihor County, there have been made studies in three poultry farms that own this breed, of pure state. The number of individuals analyzed was 22 males and 88 females. The provided data brings new and valuable information, regarding the history of population growth observed in the area, aiming at the same time, concrete issues: externalization of the character of race and joining the international standards, morpho-productive skills, performance in breeding activity, used in poultry bred in the northwest of the country. The achieved values of growth, both for youth and adult specimens, slightly exceed the breed standard, males (6.4 kg from 6 kg), while females are below the reference values (4, 7 Kg vs. 5 Kg)

Key words: White Dutch Rhine breed, body mass, growth performance

INTRODUCTION

Although this species is characterized by a strong seasonality in egg production, people prefer this kind of species for other valuable productions, namely meat, down and fatty liver, consequently, suited for achieving the very best of traditional products, especially in the west part of the country. On the other hand, the advantages lie in the fact that these populations are susceptible to extensive livestock farming, poultry exploiting resources that are highly inaccessible to other species (grassland, water surface).

In 1982, Romania imported birds that belong to populations of White Dutch Rhine breed, which were used to cross with Landaise breed in order to obtain hybrids of meat producers. These populations have spread in the west part of the country, starting with the poultry platform from Arad.

MATERIAL AND METHODS

The material used in the experiment consisted of birds of both sexes and different ages (hatching in the juvenile period, reaching sexual maturity, the active period of reproduction). There have been studied populations from three poultry farms C1, C2 and C3. The total number of individuals studied was 22 males and 88 females as follows: farm C1: 35 pieces (7 males and 28 females); farm C2: 28 pieces (6 males and 26 females); farm

C3: 45 pieces (9 males and 36 females). Food consumption was recorded gravimetrically and expressed quantitatively, individually and daily (g.n.c / piece / day).

Following the centralization of data regarding the weight gain (youth) or egg production (adults) and those related to food consumption, the feed conversion index was also calculated and as a synthetic indicator of the efficiency of food revaluation at the populations studied (Kg.n.c /kg weight gain or g.n.c / egg product).

RESULTS AND DISCUSSION

The dynamics of mass weight in young geese of both sexes are pointed out in table 1şi 2.

Table 1

Body weight dynamics (g) in goose youth males, White Rhine Dutch breed

Fowl age	C1 (n = 7)			C2 (n = 6)			C3 (n = 9)			Populations mean(g)
	$\bar{X} \pm S_{\bar{x}}$ (g)		V%	$\bar{X} \pm S_{\bar{x}}$ (g)		V%	$\bar{X} \pm S_{\bar{x}}$ (g)		V%	
1 day	162,3	±5,1	4,93	160,5	±4,7	4,47	157,8	±4,1	3,81	160,2
1wks	660,9	±17,3	5,40	639,4	±16,4	4,93	609,9	±14,6	4,25	636,7
2 wks	1167,3	±29,2	5,87	1119,5	±28,1	5,40	1061,2	±25,2	4,63	1116,0
3wks	1662,6	±40,8	6,34	1597,7	±39,5	5,86	1513,6	±35,7	5,04	1591,3
4wks	2157,8	±52,6	6,81	2076,0	±51,2	6,32	1966,0	±46,3	5,45	2066,6
5wks	2655,1	±64,9	7,28	2554,8	±63,5	6,78	2418,1	±56,8	5,86	2542,7
6wks	3153,7	±71,3	7,74	3033,7	±69,8	7,25	2870,1	±62,5	6,21	3019,2
7wks	3652,2	±77,6	8,21	3512,5	±75,6	7,71	3322,2	±68,2	6,69	3495,6
8wks	4150,8	±84,0	8,68	3991,4	±81,7	8,17	3774,2	±74,0	7,10	3972,1
9wks	4233,3	±90,4	9,15	4071,5	±87,4	8,63	3856,9	±79,7	7,51	4053,9
10wks	4315,9	±96,7	9,62	4151,5	±93,8	9,10	3939,7	±85,4	7,98	4135,7
11wks	4398,4	±103,1	10,09	4231,6	±99,1	9,56	4022,4	±91,1	8,33	4217,5
12wks	4481,0	±109,5	10,56	4311,6	±105,9	10,02	4105,1	±96,8	8,74	4299,2
13wks	4563,5	±115,8	11,03	4391,7	±111,3	10,49	4187,9	±102,5	9,15	4381,0
14wks	4646,1	±122,2	11,50	4471,7	±118,0	10,95	4270,6	±108,3	9,52	4462,8
15wks	4728,6	±128,6	11,97	4551,8	±124,6	11,41	4353,3	±114,0	9,97	4544,6
16wks	4811,2	±134,9	12,44	4631,8	±130,1	11,87	4436,1	±119,7	10,38	4626,4
17wks	4893,7	±141,3	12,90	4711,9	±136,5	12,34	4518,8	±125,4	10,80	4708,1
18wks	4976,3	±143,7	13,37	4791,9	±138,7	12,80	4601,6	±127,8	11,29	4789,9
19wks	5058,8	±146,1	13,84	4872,0	±140,8	13,26	4684,3	±130,2	11,62	4871,7
20wks	5141,4	±148,5	14,31	4952,0	±143,0	13,72	4767,0	±132,6	12,05	4953,5
21wks	5223,9	±150,9	14,78	5032,1	±145,2	14,19	4849,8	±135,0	12,44	5035,3
22wks	5306,5	±153,3	15,25	5112,1	±147,3	14,65	4932,5	±137,5	12,85	5117,0
23wks	5389,0	±155,7	15,72	5192,2	±149,5	15,11	5015,2	±139,6	13,26	5198,8
24wks	5471,6	±158,1	16,19	5272,2	±151,7	15,58	5098,0	±142,3	13,30	5280,6
25wks	5554,1	±160,5	16,66	5352,3	±153,9	16,04	5180,7	±144,6	14,08	5362,4
26wks	5622,8	±162,8	17,13	5431,7	±156,0	16,50	5267,4	±147,1	14,49	5440,6
27wks	5691,4	±165,2	17,60	5511,0	±158,2	16,96	5354,1	±149,6	14,95	5518,8
28wks	5760,1	±167,6	18,06	5590,4	±160,4	17,43	5440,7	±151,9	15,32	5597,1
29wks	5828,8	±170,0	18,53	5669,8	±162,5	17,89	5527,4	±154,2	15,73	5675,3
30wks	5897,4	±172,4	19,00	5749,1	±164,7	18,35	5614,1	±156,2	16,17	5753,5
31wks	5966,1	±174,8	19,47	5828,5	±166,9	18,81	5700,8	±159,1	16,55	5831,8
32wks	6034,7	±177,2	19,94	5907,8	±169,0	19,28	5787,4	±161,4	16,20	5910,0
33wks	6103,4	±179,6	20,41	5987,2	±171,2	19,74	5874,1	±163,8	17,37	5988,2

Table2

Body weight dynamics (g) in goose youth females, White Rhine Dutch breed

Fowl age	C1 – Oradea (n = 28)			C2 – Biharia (n = 26)			C3 - Oşorhei (n = 36)			Populations mean(g)
	$\overline{X} \pm S_{\overline{x}}$ (g)		V%	$\overline{X} \pm S_{\overline{x}}$ (g)		V%	$\overline{X} \pm S_{\overline{x}}$ (g)		V%	
1 zi	160,9	±3,7	4,24	159,8	±3,4	3,80	156,4	±2,9	3,50	159,0
1wks	581,4	±11,5	4,41	553,5	±10,8	3,98	513,7	±9,1	3,68	549,5
2 wks	1007,3	±19,2	4,58	952,4	±18,3	4,17	869,3	±15,2	3,86	943,0
3wks	1422,4	±26,9	4,76	1340,8	±25,7	4,35	1228,4	±21,4	4,04	1330,5
4 wks	1842,9	±42,5	4,93	1734,4	±39,9	4,53	1585,7	±33,3	4,22	1721,0
5 wks	2263,4	±58,1	5,10	2128,1	±54,1	4,72	1943,1	±45,2	4,40	2111,5
6 wks	2683,9	±73,7	5,27	2521,7	±68,3	4,90	2300,4	±57,1	4,57	2502,0
7 wks	3104,4	±77,4	5,44	2915,4	±71,7	5,09	2657,7	±60,8	4,75	2892,5
8 wks	3184,1	±81,0	5,62	2981,4	±75,2	5,27	2721,5	±64,5	4,93	2962,3
9 wks	3263,8	±84,7	5,79	3047,5	±78,6	5,45	2785,2	±68,2	5,11	3032,2
10wks	3343,5	±88,3	5,96	3113,5	±82,0	5,64	2849,0	±71,8	5,29	3102,0
11wks	3423,2	±92,0	6,13	3179,6	±85,5	5,82	2912,8	±75,5	5,47	3171,8
12 wks	3502,9	±95,6	6,31	3245,6	±88,9	6,00	2976,5	±79,2	5,65	3241,7
13wks	3582,6	±99,3	6,48	3311,7	±92,3	6,19	3040,3	±82,9	5,83	3311,5
14 wks	3662,2	±102,9	6,65	3377,7	±95,8	6,50	3104,1	±86,6	6,01	3381,3
15wks	3741,9	±106,6	6,82	3443,7	±99,2	6,55	3167,8	±90,3	6,19	3451,2
16wks	3821,6	±110,2	6,99	3509,8	±102,6	6,50	3231,6	±94,0	6,37	3521,0
17wks	3901,3	±113,9	7,17	3575,8	±106,1	6,92	3295,4	±97,7	6,54	3590,8
18wks	3981,0	±117,5	7,34	3641,9	±109,5	7,11	3359,1	±101,3	6,72	3660,7
19wks	4020,8	±121,2	7,51	3686,5	±112,9	7,29	3409,3	±105,0	6,90	3705,5
20wks	4060,6	±124,8	7,68	3731,1	±116,4	7,40	3459,5	±108,7	7,08	3750,4
21wks	4100,3	±128,5	7,85	3775,6	±119,8	7,66	3509,7	±112,4	7,26	3795,2
22wks	4140,1	±130,0	8,03	3820,2	±120,8	7,84	3559,9	±113,7	7,44	3840,1
23wks	4179,9	±131,4	8,20	3864,8	±121,9	8,02	3610,0	±115,0	7,62	3884,9
24 wks	4219,6	±133,1	8,37	3909,4	±122,7	8,21	3660,2	±116,3	7,80	3929,8
25 wks	4259,4	±134,6	8,54	3954,0	±124,0	8,39	3710,4	±117,5	7,98	3974,6
26wks	4299,2	±136,3	8,72	3998,6	±124,9	8,70	3760,6	±118,8	8,16	4019,5
27wks	4338,9	±137,5	8,89	4043,2	±126,2	8,76	3810,8	±120,1	8,34	4064,3
28wks	4378,7	±139,1	9,06	4087,8	±127,1	8,80	3861,0	±121,4	8,51	4109,2
29wks	4418,5	±140,6	9,23	4132,4	±128,3	9,13	3911,1	±122,7	8,69	4154,0
30wks	4458,2	±142,2	9,40	4177,0	±129,1	9,31	3961,3	±124,0	8,87	4198,9
31wks	4498,0	±143,7	9,58	4221,6	±130,2	9,49	4011,5	±125,2	9,05	4243,7
32wks	4537,8	±145,4	9,75	4266,2	±131,4	9,68	4061,7	±126,5	9,23	4288,6
33wks	4577,6	±146,8	9,92	4310,8	±132,3	9,86	4111,9	±127,8	9,41	4333,4

Young males tend to have an increased growth during 1day-eight weeks of age (average weight of 160.3 g - 3972.1 g), after which weight gain is performed at a lower intensity, accomplishing at the age of 33 weeks, an average weight of 5988.2 g.

The best performance was recorded by the birds from farm C1 (6103.4 ± 179.6 g at the end of juvenile period). Initially, the populations had a good homogeneity, but then after presenting the potential of growth, herds have become increasingly heterogeneous (v = 18.37% -20.41% at 33 weeks).

In the case of females, weight gain tends to be more intense until week 7 and week 8 (from 159.0 g to 2892.5 g), followed by a more attenuated linear progression than in the males' case and they reach, at 33 weeks an

average mass weight of 4333.4 g / head, the best performance being achieved again by the birds from farm C1 (4577.6 ± 146.7 g)

This spectacular evolution of weight during the first 7-8 weeks of age is related to the restriction of access on the pastures by youth and the restriction of foddering the pastures with existing resources on farms.

Thus, over 19 weeks of productive time (usually January-June), males produce an average mass weight of 6493.8 g, starting from a value of 5988.2 g, i.e a weight gain of about 8.5% (table 3). The best performance was achieved by the males from population C1 (an average of 6581.2 g / piece), after the end of breeding season (54 weeks).

Table 3

Body weight dynamics (g) in goose mature males, White Rhine Dutch breed

Fowl age (weeks)	C1(n = 5)			C2 (n = 5)			C3(n = 7)			Populations means (g)
	$\overline{X} \pm S_{\overline{x}}$ (g)		V%	$\overline{X} \pm S_{\overline{x}}$ (g)		V%	$\overline{X} \pm S_{\overline{x}}$ (g)		V%	
34	6103,4	±179,6	20,41	5987,2	±171,2	19,74	5874,1	±163,8	18,37	5988,2
35	6129,9	±179,9	20,46	6011,6	±171,7	19,80	5898,5	±164,5	18,48	6013,3
36	6156,5	±180,1	20,50	6035,9	±172,2	19,86	5922,8	±165,2	18,53	6038,4
37	6183,0	±180,4	20,55	6060,3	±172,6	19,92	5947,2	±166,0	18,66	6063,5
38	6209,6	±180,7	20,59	6084,6	±173,1	19,98	5971,5	±166,7	18,74	6088,6
39	6236,1	±181,0	20,64	6109,0	±173,6	20,03	5995,9	±167,4	18,86	6113,7
40	6262,7	±181,2	20,68	6133,4	±174,1	20,09	6020,3	±168,1	18,96	6138,8
41	6289,2	±181,5	20,73	6157,7	±174,6	20,15	6044,6	±168,9	19,05	6163,9
42	6315,8	±181,8	20,77	6182,1	±175,0	20,21	6069,0	±169,6	19,18	6188,9
43	6342,3	±182,1	20,82	6206,5	±175,5	20,27	6093,4	±170,3	19,29	6214,0
44	6368,8	±182,3	20,87	6230,8	±176,0	20,33	6117,7	±171,0	19,35	6239,1
45	6395,4	±182,6	20,91	6255,2	±176,5	20,39	6142,1	±171,7	19,43	6264,2
46	6421,9	±182,9	20,96	6279,5	±177,0	20,45	6166,4	±172,5	19,58	6289,3
47	6448,5	±183,1	21,00	6303,9	±177,4	20,51	6190,8	±173,2	19,64	6314,4
48	6475,0	±183,4	21,05	6328,3	±177,9	20,56	6215,2	±173,9	19,72	6339,5
49	6501,6	±183,7	21,09	6352,6	±178,4	20,62	6239,5	±174,6	19,86	6364,6
50	6528,1	±184,0	21,14	6377,0	±178,9	20,68	6263,9	±175,4	19,93	6389,7
51	6554,7	±184,2	21,18	6401,3	±179,4	20,74	6288,2	±176,1	20,07	6414,7
52	6581,2	±184,5	21,23	6425,7	±179,8	20,80	6312,6	±176,8	20,13	6439,8

In females, the increase of growth is also low, reaching an average of 4715.5 g / piece (head) at an age of few weeks, which is an extra weight of approx. 8.8% (table 4). The maximum weight of females in the population reached C2, at the age of 54 weeks.

Table 4

Body weight dynamics (g) in goose mature females, White Rhine Dutch breed

Fowl age (weeks)	C1 (n = 27)		C2(n = 22)		C3 (n = 34)		Population means (g)
	$\bar{X} \pm S_{\bar{X}}$ (g)	V%	$\bar{X} \pm S_{\bar{X}}$ (g)	V%	$\bar{X} \pm S_{\bar{X}}$ (g)	V%	
34	4577,6 ±146,7	9,92	4310,8 ±132,30	9,86	4111,9 ±127,80	9,41	4333,4
35	4603,0 ±147,4	10,32	4336,3 ±133,21	10,24	4137,3 ±128,39	9,74	4358,9
36	4628,5 ±148,1	10,72	4361,7 ±134,12	10,62	4162,8 ±128,98	10,07	4384,4
37	4654,0 ±148,7	11,13	4387,2 ±135,03	11,01	4188,3 ±129,57	10,40	4409,8
38	4679,4 ±149,4	11,53	4412,7 ±135,94	11,39	4213,8 ±130,16	10,73	4435,3
39	4704,9 ±150,1	11,94	4438,2 ±136,86	11,77	4239,2 ±130,74	11,06	4460,8
40	4730,4 ±150,8	12,36	4463,6 ±137,77	12,15	4264,7 ±131,33	11,39	4486,2
41	4755,9 ±151,4	12,74	4489,1 ±138,68	12,54	4290,2 ±131,92	11,72	4511,7
42	4781,3 ±152,1	13,15	4514,6 ±139,59	12,92	4315,7 ±132,51	12,05	4537,2
43	4806,8 ±152,8	13,53	4540,1 ±140,50	13,30	4341,1 ±133,10	12,38	4562,7
44	4832,3 ±153,5	13,95	4565,5 ±141,47	13,68	4366,6 ±133,69	12,70	4588,1
45	4857,8 ±154,2	14,36	4591,0 ±142,32	14,06	4392,1 ±134,28	13,03	4613,6
46	4883,2 ±154,8	14,78	4616,5 ±143,23	14,45	4417,6 ±134,87	13,36	4639,1
47	4908,7 ±155,5	15,16	4642,0 ±144,11	14,83	4443,0 ±135,46	13,69	4664,6
48	4918,9 ±156,2	15,57	4652,1 ±145,06	15,21	4453,2 ±136,04	14,02	4674,8
49	4929,1 ±156,9	15,94	4662,3 ±145,97	15,59	4463,4 ±136,63	14,35	4684,9
50	4939,3 ±157,5	16,37	4672,5 ±146,84	15,98	4473,6 ±137,22	14,68	4695,1
51	4949,5 ±158,2	16,73	4682,7 ±147,79	16,36	4483,8 ±137,81	15,01	4705,3
52	4959,7 ±158,9	17,18	4692,9 ±148,70	16,74	4494,0 ±138,40	15,34	4715,5

CONCLUSIONS

Populations of White Dutch Rhine breed, being examined in Bihor county, are characterized by males' growth of mass weight close to development standard of mass weight, while for females, weight gain was lower , however, fits within the potential of the breed.

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