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THE SPECIFIC OF DUCK EGG PRODUCTION (Anas platyrhynchos domesticus) RAISED IN BIHOR COUNTY

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Abstract

In this paper there are presented partial results regarding the identification and characterization of some domestic poultry populations, for example Anseriformes, species Anas platyrhynchos domesticus, Pekin race. The researches were made in three private poultry farms from Oradea and Bihor County. A total of 105 specimens of Pekin breed were studied, that is: 15 males and 90 females.Studies were made upon the morpho-productive indices and upon the quality of hatching eggs (weight, shell thickness, index format, Haugh index). The total number of eggs from all the three farms was 3232.17 pieces, respectively, 98.9 eggs / hen / period. Egg weight changed together with the advancing in age of the birds, starting from the value of 78, 7 ± 1.0 g / at the beginning of egg laying and reaching up to 81.2 ± 1.3 g at the end of the egg laying. The mineral crust of the egg showed a decreasing thickness during the egg laying cycle, tapering from a thickness of 0.392 ± 0.007 mm(at the beginning), up to a thickness of 0.375 ± 0.008 mm at the end. Haugh index fits within the values recommended by the literature (78-82 UH), with maximum values in the laying peak of 80.7 UH.

Key words: Pekin breed, eggs, quality, heel thickness

INTRODUCTION

In the XVI-th century, when being imported from China by the British and being crossed with local populations of different breeds, Pekin breed has spread elsewhere in Europe, in peoples' households, including in our country. Being a breed of heavy weight, it is suitable to raise them for meat production or to fatten them for fatty liver, or why not, as genitor for the formation of high-yielding hybrids.

In Romania, the official import of Pekin genetic material took place in 1982, when they were brought from the company Cherry Valey from UK, 2 lines of this breed (001 and 005), which led to the formation of the Romanian duck hybrid for meat, named Rora.

Some of the flocks were used to improve work at the former Avicola Arad, a situation that favored the spread of valuable genitors among local populations from Banat and Bihor. The Pekin breed shows valuable morpho-productive indexes and an amazing capacity of acclimatization, consequently, suited both for extensive and intensive operating systems.

MATERIAL AND METHODS

There were studied three populations of Pekin ducks (Anas platyrhynchos domesticus), in three private farms from Bihor county. The poultry farms were named C1, C2 and C3, with a total of 105 specimens, distributed as follows: in farm C1: 35 pieces (5 males and 30 females); farm C2: 28 pieces (4masculi and 24 females), farm C3: 42 pieces (6 males and 36 females).

In order to obtain experimental results there were used working methods recommended by literature (B. Sauveur, 1988; Vacaru-Opriș I. et al., 2000.2002).

The quantifying of the number of egg production was made by calculating the egg laying intensity and making the graphical representation for the curve of egg laying. They used the following method:

I.P. =
$$\frac{Q \times 100}{N \times K}$$
, where:

 $N \times K$

- I.P. = laying intensity, egg laying rate;

- Q = quantity of eggs produced by a bird in K days

- N = number of birds which record the entire egg production ("Q")

The thickness of mineral shell was determined by individual measurements with caliper, over portions of mineral shell collected from the round end, from the middle are and the pointed end of each egg to be studied. Before measurements, the shell membranes were removed adherent to internal and external shell, the shell sections were rinsed with distilled water and then dried. The final value, resulting from each studied egg, represented the arithmetical mean of the three determinations and was expressed in millimeters (mm).

In order to appreciate better the quality of hatching eggs, there were calculated two synthetic indexes which give relevant information regarding the morphological and internal quality of breeding eggs, namely: the index of egg format and Haugh index. There were used the following formula:

> I.F. = $\frac{dm}{DM} \times 100$, where: - I.F. = index of egg format (%); - dm, DM = large and small diameters of egg (cm).

U.H. = 100log (h-1.7 X $G^{0,37}$ + 7,57) , where:

- U.H. = Haugh index (Haugh measurement);

-h = height of the dense white, measured near the vitellin membrane of the yolk (mm)

- G = egg weight (g).

The analyzed eggs were compared with reference values from literature (B. Sauveur, Garlic MG, 1999; Vacaru-Opriș I. et al., 2002).

RESULTS AND DISCUSSION

The number of egg production and the laying intensity are represented in table 1. The number of eggs produced per laying cycle was approximately of 98, 9 pcs, the maximum performance being achieved by the birds form population C2 (101.5 pieces). These values were consistent with the breed standard (90-100 pieces.) (Vance I., 1981)

Fowl		C1			C2		C3			Po	Population avarage			
age	No.	Eggs	Laying.	No.	Eggs	Laying.	Nr.	Eggs	Laying	No.	Eggs	Laying		
(weeks)	1		(%)	nen 4	laid/day	(%)	nen 7	ald/day	(%)	16		(%) 19		
U	22	1.0	5 71	4	1.5	5 71	1	0	5.00	22	17	10		
24	32	1,8	5,/1	20	1,5	5,71	40	2,0	5,00	33	1,8	5.4		
25	32	5,2	16,33	26	5,4	20,71	40	/,4	18,57	33	6,0	18.4		
26	32	8,6	26,94	26	10,0	38,57	40	14,6	36,43	33	11,1	33.9		
27	32	12,0	37,55	26	13,4	51,43	40	19,4	48,57	33	14,9	45.7		
28	32	15,4	48,16	26	15,2	58,57	40	22,3	55,71	33	17,6	54.0		
29	32	18,8	58,78	26	17,1	65,71	40	24,6	61,43	33	20,2	61.7		
30	32	22,2	69,39	26	19,3	74,29	40	28,0	70,00	33	23,2	70.9		
30-31	32	25,6	80,00	26	21,2	81,43	40	31,7	79,29	33	26,2	80.1		
32-33	32	25,1	78,39	26	20,8	80,00	40	31,4	78,57	33	25,8	78.9		
34-35	32	24,6	76,79	26	20,4	78,57	40	30,9	77,14	33	25,3	77.4		
36-37	32	24,1	75,18	26	19,9	76,43	40	30,3	75,71	33	24,7	75.7		
38-39	32	23,5	73,57	26	19,3	74,29	40	29,4	73,57	33	24,1	73.8		
40-41	32	23,0	71,96	26	18,8	72,14	40	28,6	71,43	33	23,5	71.8		
42-43	32	22,5	70,36	26	18,2	70,00	40	27,4	68,57	33	22,7	69.5		
44-45	32	22,0	68,75	26	17,8	68,57	40	26,9	67,14	33	22,2	68.0		
46-47	32	21,5	67,14	26	17,6	67,86	40	26,6	66,43	33	21,9	67.0		
48-49	32	20,9	65,24	26	17,5	67,14	40	26,3	65,71	33	21,5	65.9		
50-51	32	20,3	63,33	26	16,0	61,43	40	24,0	60,00	33	20,1	61.5		
52-53	32	19,7	61,43	26	15,4	59,29	40	23,4	58,57	33	19,5	59.7		
54-55	32	19,0	59,52	26	15,0	57,86	40	22,6	56,43	33	18,9	57.8		
56-57	32	18,4	57,62	26	14,7	56,43	40	22,3	55,71	33	18,5	56.5		
58-59	32	17,8	55,71	26	14,5	55,71	40	22,0	55,00	33	18,1	55.4		
60-61	32	16,9	52,86	26	14,1	54,29	40	21,1	52,86	33	17,4	53.2		
62-63	32	16,2	50,71	26	13,7	52,86	40	20,0	50,00	33	16,7	51.0		
64-65	32	15,5	48,57	26	13,4	51,43	40	18,9	47,14	33	15,9	48.7		
Total eggs 3116,80		2637,70			3942.00			3232.1	7					

Eggs yield and laying intensity in the 3 Pekin ducks farms

eggs/hen	97,4	101,5	98,6	98,9

The egg weight changed directly proportional with the birds' advancing in age, starting from 78.7 ± 1.0 g / at the beginning of egg laying and reaching at the end to a value of 81.2 ± 1.3 g*(table 2).

Table 2

Laying	C1farm			C2 farm			(C3 farm		Farm mean		
moment	$\overline{x} \pm$	$S_{\overline{X}}(g)$	V%	$\overline{\mathbf{x}} \pm \mathbf{s}$	$S_{\overline{X}}(g)$	V%	$\overline{\mathbf{x}} \pm \mathbf{x}$	$S_{\overline{X}}(g)$	V%	x ±	$S_{\overline{X}}(g)$	V%
Onset (24 wks)	77,4	±1,1	9,4	81,7	±1,0	9,8	76,9	±1,0	9,1	78,7	±1,0	9,5
Peak (30-31wks.)	79,2	±0,9	9,8	82,8	±1,1	10,1	77,6	±1,1	10,3	79,9	±1,0	10,1
Plateau (38-39 wks)	79,5	±1,0	10,4	83,2	±1,3	11,8	78,1	±1,3	10,8	80,3	±1,2	10,9
Ceasing (60-61 wks	81,2	±1,3	11,5	83,6	±1,4	13,2	78,8	±1,3	12,9	81,2	±1,3	12,7

Dynamics of the incubation eggs (g), during laying period in Pekin breed

The mineral crust showed a decreasing thickness, during the laying period, tapering, from a thickness of 0.392 ± 0.007 mm, the onset of laying up to a thickness of 0.375 ± 0.008 mm at the end. (Table 3)

Table 3

D	vnamics of the	incubation eg	gs shell thickn	ess (mm).	during l	laving	period in	Pekin breed	
	J			(),		B			

Laying	C1 farm			C2 farm			C3 farm			Farm mean		
moment	$\overline{\mathbf{x}} \pm \mathbf{s}$	x (mm)	V%	$\overline{\mathbf{x}} \pm \mathbf{s}$	$\overline{\mathbf{x}}$ (mm)	V%	$\overline{\mathbf{x}} \pm \mathbf{s}$	$S_{\overline{x}}$ (mm)	V%	$\overline{\mathbf{x}} \pm \mathbf{s}_{\overline{\mathbf{y}}}$	(mm)	V%
Onset (24 wks)	0,390	±0,008	10,9	0,375	±0,007	11,4	0,411	±0,007	15,3	0,392	±0,007	13,2
Peak (30-31wks)	0,381	±0,006	12,6	0,369	±0,011	12,3	0,405	±0,009	13,3	0,385	±0,008	12,8
Plateau (38-39 wks)	0,379	±0,011	13,2	0,371	±0,014	11,9	0,401	±0,012	14,2	0,384	±0,012	13,1
Ceasing (60-61 wks)	0,371	±0,008	14,8	0,362	±0,009	14,5	0,393	±0,005	15,5	0,375	±0,008	15,0

Template index presented values in the range of variation from 67.4 to 68.4 % (Table 4), and Haugh index fitted in the values recommended by literature (78-82 UH) with maximum values of peak egg laying (80.7 UH) (Table 5). As an objective, we want the improvement of egg production, potential of breed reaching up to 200 pieces/eggs (Dodu, 2010). Best quality of eggs was observed in eggs produced by birds from the population of C2.

Table 4

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Laying	C1 Farm		C2 Farm		C3 Farm	Farm mean		
moment	$\overline{\mathbf{X}} \pm \mathbf{S}_{\overline{\mathbf{X}}}$ (%)	V%	$\overline{\mathbf{X}} \pm \mathbf{S}_{\overline{\mathbf{X}}}$ (%)	V%	$\overline{\mathbf{X}} \pm \mathbf{S}_{\overline{\mathbf{X}}}$ (%)	V%	$\overline{\mathbf{X}} \pm \mathbf{S}_{\overline{\mathbf{X}}}$ (%)	V%
Onset (24wks)	67,2 ±1,2	11,8	65,6 ±0,9	9,6	69,3 ±1,4	15,9	67,4 ±1,2	13,2
Peak (30-31 wks	68,9 ±1,3	10,2	66,2 ±1,2	10,3	70,2 ±1,6	17,2	68,4 ±1,3	14,6
Plateau (38-39 wks	66,5 ±1,1	10,4	65,1 ±0,8	9,1	68,7 ±1,2	14,3	66,8 ±1,0	11,2
Ceasing (60-61 wks	65,4 ±0,8	9,6	64,3 ±0,7	8,1	67,2 ±1,1	11,5	65,6 ±0,9	10,1

Dynamics of the shape index values (%), during laying period in Pekin breed

Table 5

Dynamics of the Haugh index (U.H.), during laying period in Pekin breed

Laying		C1 Farm		C2 Farm			C3 Farm			Farm mean		
moment	$\overline{\mathbf{x}} \pm \mathbf{s}$	x (U.H.)	V%	π±	$S_{\overline{x}}(U.H.)$	V%	$\overline{\mathbf{x}} \pm \mathbf{s}_{\overline{\mathbf{y}}}$, (U.H.)	V%	$\overline{\mathbf{x}} \pm \mathbf{s}$	x (U.H.)	V%
Onset (24wks)	80,4	±1,4	11,4	80,6	±1,3	14,6	78,5	±1,0	12,7	79,8	±1,2	12,8
Peak (30-31wks)	80,6	±1,2	12,3	81,7	±1,4	11,4	79,7	±1,1	10,8	80,7	±1,3	11,5
Plateau (38-39 wks)	79,2	±1,3	10,1	79,5	±1,2	12,3	78,8	±1,0	14,9	79,2	±1,2	12,8
Ceasing (60-61 wks)	77,2	±1,3	13,5	78,0	±1,0	11,1	77,2	±0,9	11,5	77,5	±1,1	12,2

CONCLUSIONS

Egg production was characterized by an intensity value of 80% on peak egg laying, respectively by an average number of 98.9 eggs, deposited during productive period. The valuable Pekin breed specimens could be used for crosses, in order to form bilinear hybrids

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