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THE INCUBATION PERFORMANCES OF DIFFERENT BREEDS OF DOMESTIC DUCKS

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Abstract

Biodiversity domestic livestock species that produce various products is very important in the context of human population growth, but equally for meeting the demand for certain types of special foods especially appreciated by gourmets. Thus, the ducks can provide a wide range of products with high organoleptic and nutritional quality that can meet different consumer categories.This requires analysis of different indices of breeding duck breeds in order to improve them through various means, such as controlling the storage conditions of the eggs (the term, the microclimate in storage room) and incubation parameters.The study was done at the web-footed farm in Moara Domneasca, the biobase of the University of Agriculture Science and Veterinary Medicine from Bucharest, on the collection of duck breeds that consisted of: Barbarie, Pekin, Indian Running and Campbell.We observed six incubation series at an interval of seven days each. Incubation was done using a Smart Performer volume incubator with a capacity of 10.000 eggs.

Key words: *breeds, ducks, incubation, performance, products.*

INTRODUCTION

Ducks are birds that can get top quality food, but also a number of by-products such as lint, which is also of superior quality, or foa gras, considered a delicacy worldwide. Also, the breast provided by this species is highly appreciated, and as well the meat. To obtain and improve these yields it should be continued the research on the artificial incubation. By obtaining superior results in incubation, such as a low percentage of clear eggs, smaller number of ducklings dead in egg or greater number of viable ducklings hatched, the yields will also be higher.

Because of the great variability of domestic breeds of ducks, the incubation period of the eggs it's different as follows: Barbarie 34-35 days, Pekin 28 days and 27 days forCampbell and Indian Running. This implies that the conditions of incubation should be differentiated also. (Popescu - Micloșanu, 2007).

The hatching percent and embryo viability depend of the incubation factors;so if just one of these factors is not properly secured during incubation or regularly inspected, incubation will be affected and the production will decrease.

MATERIALS AND METHODS

To analyze and compare the results obtained in incubation, we used the livestock from the didactic farm owned by the University of Agriculture Science and Veterinary Medicine from Bucharest that is located in Ilfov county.In this farm, the Faculty of Animal Husbandry keeps the collection of several breeds and lines of ducks and geese.

The analyzed livestock were: Barbarie (40 females and 10 males), and Pekin, Indian Runner and Campbell (50 females and 15 males each).In the experiment were incubated 100 eggs from Barbarie and 100 eggs from Pekin, in 6 consecutive series, at a distance of 7 days each, the eggs being between 4-7 days old.For Indian Runner and Campbell breeds were incubated 150 eggs each per series, the age of the egg and the number of series beeing the same as in the first two cases.

The temperature, humidity and turning of the eggs are the most important factors of incubation. Thus, the optimal incubation temperature has been ensured at the level of 37.7° to 37.8°C and the humidity was between 65-70%. The turning of the eggs was made at an interval of two hours until the tenth day of

incubation with 45°, then the turning of the eggs was gradually slowed until the day the eggs were moved in the hatchery.In the hatchery, the temperature was 37.6 and the humidity 80% in order to facilitate the hatching of ducklings.
We followed for each breed the number of clear eggs, the number of dead ducklings, and hatching percent, including fertility and main statistical indicators.

RESULTS AND DISCUSSIONS

After incubation of the six series, there were obtained the results shown below.

Table 1. Results obtaind for Barbarie duck (for year 2015)

Barbarie	Eggs	Duck lings	Clear eggs	Ded in shell	% E[1]	% F[2]	%M[3]
Series1	100	50	28	22	50	72	28
Series2	100	51	26	23	51	74	26
Series3	100	47	32	21	47	68	32
Series4	100	56	25	19	56	75	25
Series5	100	53	27	20	53	73	27
Series6	100	49	30	21	49	70	30
Total	600	306	168	126			
Average	100	51	28	21	51.00	72	28
StDev	0	3.16	2.61	1.41	3.16	2.61	2.61
Variab Coef (%)		6.20	9.31	6.73	6.2	3.62	9.31

Table 1 presents the results obtained for Barbarie in 2015, it can be observed that from the 600 eggs placed in incubation, 306 produced viable ducklings, 168 eggs were clear and the other 126 were dead in shell.
In Table 2 are presented the results optained from Pekin breed recorded in 2015: 450 viable ducklings, 92 clear eggs and 58 dead in shell.

Table 2. Results obtaind for Pekin duck (for year 2015)

Pekin	Eggs	Ducklings	Clear eggs	Ded in shell	% E	% F	%M
Series1	100	77	14	9	77	86	14
Series2	100	80	12	8	80	88	12
Series3	100	76	13	11	76	87	13
Series4	100	74	15	11	74	85	15
Series5	100	73	17	10	73	83	17
Series6	100	70	21	9	70	79	21
Total	600	450	92	58			
Average	100	75	15.33	9.67	75.00	84.67	15.33
StDev	0	3.46	3.27	1.21	3.46	3.27	3.27
Variab Coef (%)		4.62	21.30	12.53	4.62	3.86	21.30

[1]hatching percent
[2]fecundity
[3]percentage of dead duckling in shell

Table 3 shows the performance achieved by the Running Indian by incubation of 900 eggs: 530 viable ducklings, and from the other 370 eggs remaining, 222 were clear, and 148 were recorded as eggs from which ducklings have failed to hatch.

Table 3. Results obtaind for Indian Running duck (for year 2015)

Indian Running	Eggs	Ducklings	Clear eggs	Ded in shell	% E	% F	% M
Seria1	150	86	34	30	57.33	77.33	22.67
Seria2	150	90	37	23	60.00	75.33	24.67
Seria3	150	93	39	18	62.00	74.00	26.00
Seria4	150	92	40	18	61.33	73.33	26.67
Seria5	150	83	35	32	55.33	76.67	23.33
Seria6	150	86	37	27	57.33	75.33	24.67
Total	900	530	222	148			
Average	150	88.33	37.00	24.67	58.89	75.33	24.67
StDev	0	3.93	2.28	5.99	2.62	1.52	1.52
Variab Coef (%)		4.45	6.16	24.28	4.45	2.02	6.16

Table 4. Results obtaind for Campbell duck (for year 2015)

Campbell	Eggs	Ducklings	Clear eggs	Ded in shell	% E	% F	% M
Seria1	150	116	19	15	77.33	87.33	12.67
Seria2	150	113	26	11	75.33	82.67	17.33
Seria3	150	118	24	8	78.67	84.00	16.00
Seria4	150	120	115	15	80.00	90.00	8.67
Seria5	150	115	20	15	76.67	86.67	13.33
Seria6	150	110	26	14	73.33	82.67	17.33
Total	900	692	130	78			
Average	150	115.33	21.33	13.00	76.89	85.56	14.22
StDev	0	3.56	5.05	2.90	2.37	2.94	3.36
Variab Coef (%)		3.09	23.66	22.29	3.09	3.44	23.66

In the fourth table the results obtained are presented for the Campbell breed.
For this breed, from the incubation of 900 eggs, were obtained 692 ducklings, 130 clear eggs and 78 eggs with dead ducklings in shell.
From Table 5 and Figure 1 it can seen that the eggs with the highest percentage of fecundity were obtained from Campbell (85.56%) and Pekin (84.67%), in opposite pol beeing Barbarie (72%).The lowest percentage of dead in shell was found at Campbell (14.22%) followed by Pekin (15.33%) and highest at

Barbarie (28%). For the percentage of hatching the best breed is also Campbell (76.89%), followed closely by Pekin (75%).The breed with the lowest percentage of hatching was Barbarie (51%). The coefficient of variation is greater for dead in shell compared with the other two incubation parameters studied, and based on race, Campbell (23.66%) and Pekin (21.30%).

Table 5. Statistical results obtained from breeds of ducks studied in the year 2015

Breed	Specification	% E	% F	% M
Barbarie	Average	51.00	72	28
	StDev	3.16	2.61	2.61
	Variab Coef	6.2	3.62	9.31
Pekin	Average	75.00	84.67	15.33
	StDev	3.46	3.27	3.27
	Variab Coef	4.62	3.86	21.30
Indian Running	Average	58.89	75.33	24.67
	StDev	2.62	1.52	1.52
	Variab Coef	4.45	2.02	6.16
Campbell	Average	76.89	85.56	14.22
	StDev	2.37	2.94	3.36
	Variab Coef	3.09	3.44	23.66

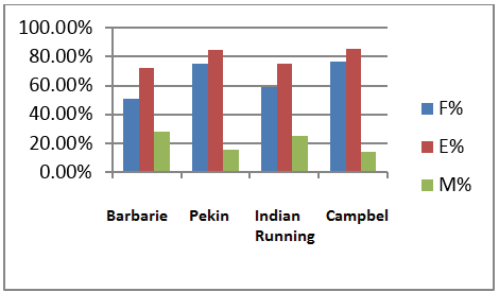

Figure 1. Fecundity, hatching percentage and the mortality for each breed

CONCLUSIONS

From the analysis undertaken one can draw some conclusions.

1. The differences between the results obtained from the four breeds were quite large.
2. The worst results were obtained from the Barbarie breed, this due largely to a very pronounced dimorphism which complicates the process of mating, so the fecundity is quite low, average percentage of hatching of this breed beeing 51%.
3. The best hatching percentage was reached by Campbell (76.89%) and Pekin (75%) breeds, who have a fairly high percentage of fecundity of 85.56% (Campbell) and 84.67% (Pekin).

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